Darwin Plus:
Overseas Territories Environment and Climate Fund

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	DPLUS055
Project title	Saving the Iguana Islands of Turks and Caicos
Territory(ies)	Turks and Caicos Islands
Lead organisation	Royal Society for the Protection of Birds (RSPB)
Partner institution (s)	San Diego Zoo Global (SDZG), Turks & Caicos National Trust (TCNT), Department for Environment and Coastal Resources (DECR), Department of Agriculture (DoA), Environmental Health Department (EHD), Waterloo Investment Holdings Ltd (WIHL).
Darwin Plus Grant value	£199,620
Start/end date of project	1st April 2017 – 31st March 2020
Project leader name	Sarah Havery
Project website/Twitter/blog etc.	
Report author(s) and date	Sarah Havery, Shelley Bridgewater, Charlie Butt, Giuliano Colosimo, Glenn Gerber, Zatanya Handfield, Della Higgs, Paul Mahoney, B Naqqi Manco, Kenrick Neely, Eric Salamanca, Winema Sanders-Penn, Karen Varnham and Lormeka Williams. August 2020.

1 Project Summary

Invasive alien vertebrates (IAV) are one of the greatest threats to native reptiles in the UK Overseas Territories (Dawson et al., 2014); and biosecurity controls that prevent new arrivals are the most effective way of reducing this threat and sustaining any IAV eradication efforts. DPLUS055 aimed to address the need for effective biosecurity plans for two offshore islands in the Turks and Caicos Islands (TCI) where there is an urgent need to protect threatened native wildlife, particularly globally important reptile populations.

TCI is a UK Overseas Territory consisting of eight main islands and about 30 smaller islands split into two groups, the Turks Islands and the Caicos Islands, separated by the Turks Island Passage. The islands are situated to the south of the Bahamas in the West Indies and geographically form the southern end of the Bahamas Lucayan archipelago.

Turks and Caicos rock iguanas (*Cyclura carinata*) are found only in TCI and a small sub-population on Booby Cay in the Bahamas (IUCN, 2020). These iguanas now occupy less than 10% of their historic range, largely due to the impact of invasive mammalian predators such as feral cats and dogs. (IUCN, 2020). Ongoing habitat loss and spread of IAV (feral cats, dogs and rodents) continue to threaten this species and management efforts are required.

Two of the largest remaining populations of rock iguana are found on Little Water Cay and Big Ambergris Cay, see Fig. 1, where iguanas are at significant risk from rat and feral cat predation and further rat incursion.

The overall objective of the project was to secure the population of the rock iguana through the establishment of effective biosecurity plans/IAV control on Little Water Cay and Big Ambergris Cay, and the identification of islands for future restoration.

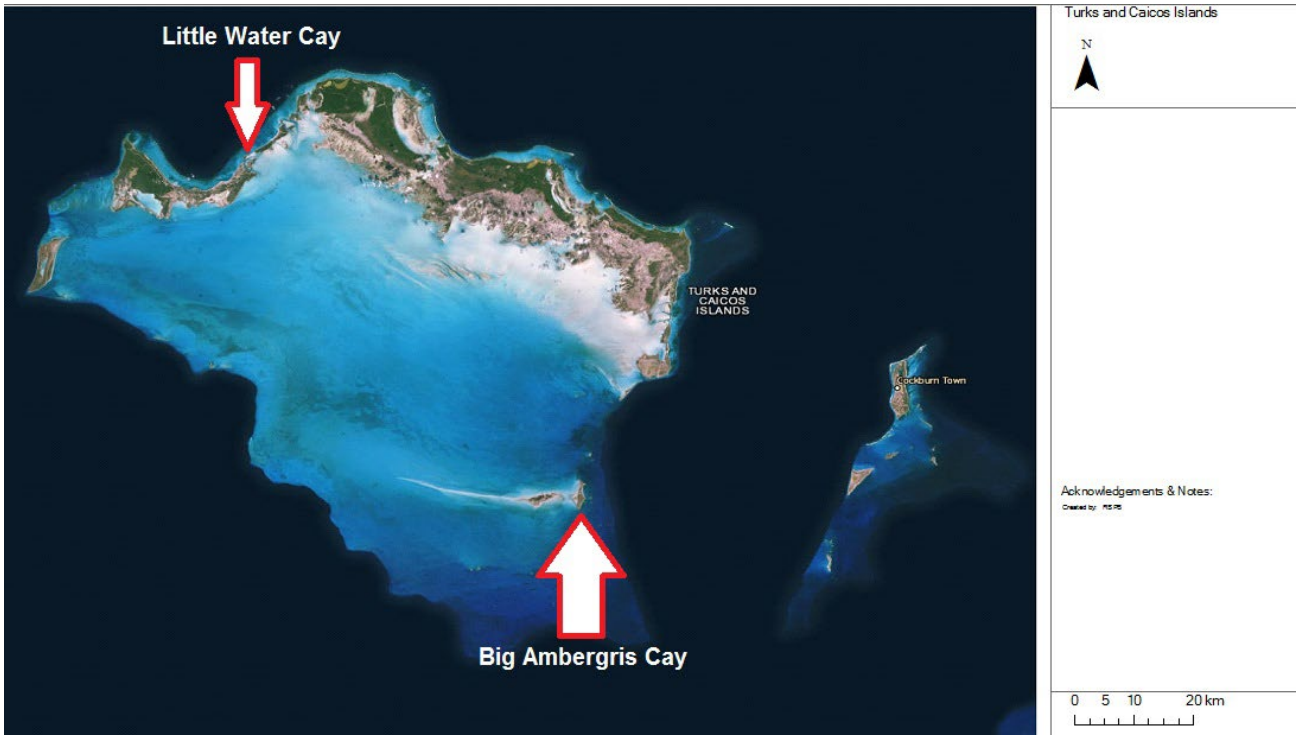

Figure 1: A satellite image of the Turks and Caicos indicating the locations of the two project sites, Little Water Cay and Big Ambergris Cay.

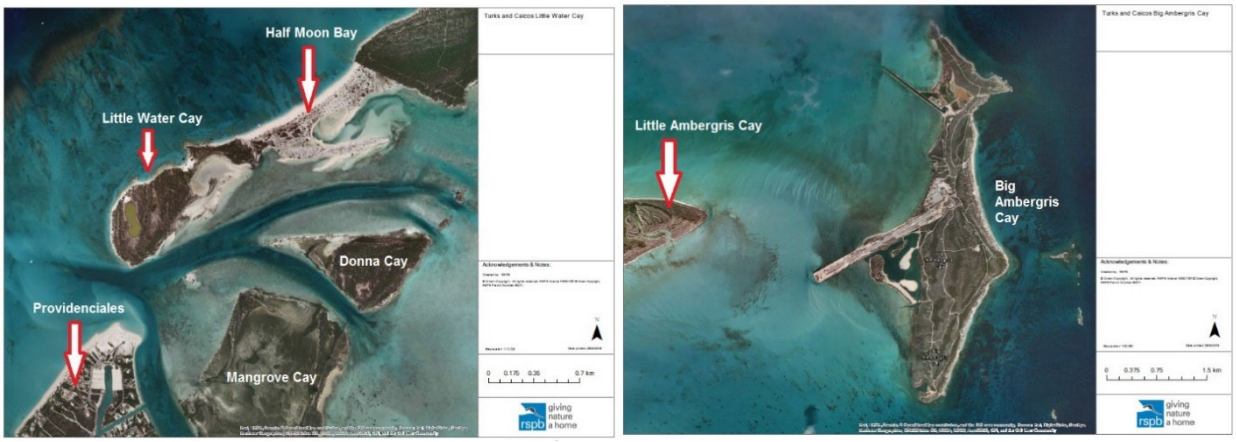

Figure 2: (LEFT) A satellite image of Little Water Cay and the surrounding cays and (RIGHT) A satellite image of Big Ambergris Cay indicating its proximity to Little Ambergris Cay.

Little Water Cay, a 43ha island leased and managed by project partner Turks & Caicos National Trust (TCNT), is situated close to the main inhabited island of TCI, Providenciales (Fig. 2). Little Water Cay (also known as Iguana Island) is part of the Princess Alexandra National Park and is the most accessible site in TCI for tourists to view the rock iguanas and is therefore a significant tourism destination. Introduced black rats *Rattus rattus* and feral cats *Felis catus* were present on Little Water Cay at the start of the project and rat control had been ongoing since 2015/16 as part of an EU BEST funded project.

Additionally, a synergistic privately funded project (the 'Pine Cay Save the Iguana' project) began in June/July 2017 aiming to eradicate feral cats and black rats from the chain of islands connected via sand bars to, and including, Little Water Cay. This project engaged most of the

project partners and further increased the importance of DPLUS055 by increasing the urgency for biosecurity plans and training to be in place. Although disrupted by the impacts of Hurricanes Irma and Maria, this project was successfully delivered by August 2019.

Big Ambergris Cay, a 450ha island situated south of the main Caicos islands chain, is privately owned and is undergoing intensive development for tourism (Fig. 2). As well as iguanas, the island supports a significant population of an endemic subspecies, the Turks Island boa *Epicrates chrysogaster chrysogaster*. Four individual invasive mammals have been found and removed previously on Big Ambergris Cay, and at the start of the project the island was believed to be free of IAVs. Following the impacts of Hurricanes Irma and Maria in September 2017 (see Section 2), the infrastructure development on Big Ambergris Cay recommenced at a rapid pace.

2 Project Stakeholders/Partners

This cross-sector partnership-based project has been the first of its kind in the Turks and Caicos Islands. The project had aimed to, and was successful in, building capacity and collaboration between the in-Territory partners: Turks and Caicos National Trust (TCNT), Turks and Caicos Islands Government's Department of Environment and Coastal Resources (DECR), Department of Agriculture (DoA) and Environmental Health Department (EHD); the private company responsible for managing Big Ambergris Cay, Waterloo Investment Holdings Ltd (WIHL) [previously called Ambergris Cay Facilities Ltd], and the international non-governmental organisation partners Royal Society for the Protection of Birds (RSPB) and San Diego Zoo Global (SDZG).

All partners have brought specialist technical skills and experience, in a variety of different disciplines, that complement each other and together provided a strong partnership for project delivery. All partners have been involved in project planning, monitoring and evaluation and decision-making, formally through a total of four steering group meeting conference calls over the course of the project (meeting minutes in **Annex 6.2**) with each partner delivering their own set of arising actions, as well as through one to one conversations with the project leader.

A project partners' meeting was held on the 31st October 2018, which formed the mid-term evaluation where the progress of the project to date was reviewed by all partners and direction set for the remainder of the project (agenda and minutes in **Annex 6.3**). All project partners attended a 3-day Species Conservation Planning workshop in July 2019 to review progress against the previous 2002 Species Action Plan and provided input to set the future direction of Turks & Caicos rock iguana conservation, with the output being an updated IUCN Conservation and Management Plan for Turks & Caicos rock iguanas due to be published online in 2020 (**Annex 6.5**). An external evaluation took place in February 2020, where all partners were consulted on the outcomes of the project and could provide feedback (report in **Annex 6.4**).

A significant development during the project was the addition of the Environmental Health Department (EHD) of Turks and Caicos Government to the partnership in Year 2. Through the development of the Biosecurity Plan for Big Ambergris Cay (**Annex 6.15**) the need to address the source of the incursions of rodents was identified. Initiating rodent control at South Dock was identified as a key action to reduce the likelihood of rodents accessing the barge to Big Ambergris. EHD, whose remit includes vector control and port health, have been a pivotal addition to the partnership in initiating this additional project activity.

The biannual trip schedules of the international partners were drafted and circulated with the partnership with plenty of notice to allow for work programme planning to fully utilise the expertise of the partners and to allow for more skill-sharing between partners. Photographs are provided in **Annex 6.6,** and examples of collaboration during project activities include:

- TCNT, DoA and RSPB completed rodent monitoring checks on Little Water Cay and collected data on rodent presence/absence in April 2017;
- SDZG and TCNT staff collected data on the iguanas at Half Moon Bay (a sand bar that connects Little Water Cay and Water Cay, see Fig. 2);

- TCNT set up and independently led biosecurity trails (**Annex 6.9**) on Little Water Cay with guidance from RSPB;
- DoA and RSPB jointly coordinated the South Dock stakeholder meeting;
- EHD has been independently leading rodent control at South Dock;
- DECR and TCNT staff are jointly leading public awareness activities in TCI;
- Staff on Big Ambergris Cay worked alongside the team contracted to complete the island-wide rodent assessment of the island in October - November 2018;
- DoA, TCNT, RSPB and SDZ held a meeting with two Ministers and the Governor in February 2020 to highlight the importance of biosecurity;
- TCNT continue to complete regular biosecurity checks as part of the warden's work schedules and this is included as part of their management plan for this heritage site (**Annex 6.7**).

Through this project, links have been made with the in-Territory partners and the GB Non-Native Species Secretariat (GB NNSS)'s project 'Tackling Invasive Non-Native Species in the UK Overseas Territories', which has supported TCI Government partners with drafting of biosecurity legislation for TCI and has enabled the drafting of a biosecurity policy led by EHD and DoA (**Annex 6.10**).

Additional stakeholders have engaged with the project throughout, inputting to workshops and field activities. These additional stakeholders include the Turks and Caicos Islands' Ports Authority, the Turks and Caicos Islands Society for the Prevention of Cruelty to Animals (TCSPCA), Pine Cay Homeowners Association and Meridian Club (the management authorities for Pine Cay, who supported the synergistic feral cat and rat eradication effort) and tour operator Big Blue Collective. Staff from these stakeholders attended various project activities such as the project launch event in 2017, the South Dock biosecurity meeting in March 2019 and the Iguana Conservation Planning workshop in July 2019. The Ports Authority have supported activities led by EHD in establishing rodent control at South Dock, the main international port for the country. Two Ministers (the Minster of Environment and Tourism and the Minister of Health) have engaged with the project events, providing opening addresses to the attendees of the project launch and 2019 workshop. The current Governor, Nigel Dakin, and his family engaged with the 2019 workshop, promoting the project on social media.

The project also enabled significant co-funding from partners and additional stakeholders throughout the course of the project (see Section 9.2). Additional funds have also been provided by the University of North Carolina and the San Diego Zoo Institute for Conservation Research to expand the study of Turks Island boas by initiating a radio-telemetry project on Big Ambergris Cay. Additional funds from RSPB and San Diego Zoo and support provided by GB NNSS in response to the incursion of invasive green iguanas to the Turks and Caicos Islands, reported via the partnership, enabled a green iguana assessment and workshop in February 2020.

The greatest challenge during the project for the primary stakeholders (the project partners in TCI) was the impacts of Hurricanes Irma and Maria during Year 1. Due to the impacts of these hurricanes, project activities were paused from September 2017 to January 2018. These devastating hurricanes disrupted infrastructure and hampered local travel. The emergency response from the project included provision of much-needed boating equipment to allow staff to continue to reach Little Water Cay. A new boat engine and lock have been purchased enabling the staff to use a slightly larger boat, which not only improves access to Little Water Cay but is safer for regular use by staff. A trailer and boat safety equipment have also been purchased for TCNT staff through the project.

3 Project Achievements

3.1 Outputs

DPLUS055 had five outputs, aiming to (1) establish baseline and trend data for iguanas, boas, and invasive predators and monitor human impacts, (2) develop biosecurity plans for two

islands, (3) rapidly survey other offshore islands for reptiles and invasive predators to inform future management planning, (4) training and capacity building across the partnership and (5) effective project management.

The output indicators have mostly been achieved over the course of the project. The evidence of this, and the challenges faced, are as follows:

Output 1: Baseline data established and short-term trends identified for Little Water Cay and Big Ambergris Cay for iguanas, boas, humans and predators

1.1 *Transect lines, capture-mark-recapture sites and camera networks in place on both islands and data collected for 3 consecutive years on selected reptile and predator species*: Establishing baselines and monitoring of relative abundance of iguanas and boas is essential for the project partnership to monitor the impact of conservation intervention (see Section 3.2). Prior to DPLUS055, no recent iguana transect data existed. Baseline data of relative abundance of iguanas were collected across Little Water Cay and Big Ambergris Cay in Year 1 and transects were repeated annually to assess short-term changes. The results have indicated that the population is stable (see San Diego Zoo Global's (SDZG) technical report **Annex 6.11** and database **Annex 6.12**).

Throughout the duration of DPLUS055 a total of 696 iguana individuals were captured as part of SDZG's long-term capture-mark-recapture (CMR) study. For each processed individual basic morphometrical measurements, such as body mass, snout-vent length and tail length were recorded (see SDZG's technical report **Annex 6.11** and database **Annex 6.12**). From SDZG's long-term study since 2004, the sex ratio, morphometrics and age structure have stayed consistent on Little Water Cay and SDZG has expanded their CMR study on Big Ambergris Cay and extended to additional islands and sites – Half Moon Bay, Mangrove, Donna, Lizard and Bird.

Comparison of boa surveys conducted on Big Ambergris Cay between 2017 and 2020 suggest the population has remained stable over the project period. Further, comparison of data collected during the grant period with that collected prior suggests the population has remained stable for some time. A radio-telemetry study of boas was also completed during the grant period. Nineteen boas were tracked for up to a year revealing some snakes barely moved while others were wide ranging. We found that snakes do not actively avoid areas with other snakes, they do not use the same diurnal refugia consistently, and they require an average home range of just under 1 ha (see SDZG's technical report **Annex 6.11)**. These data will be used to guide management recommendations going forward.

1.2 *Effects of humans on iguanas is documented*: Unregulated interactions between humans and iguanas (and in general between humans and wildlife) can potentially influence animal size, physiology and behaviour. To establish if and how human interaction was potentially affecting any aspect of iguana biology morphological characteristics of sampled iguanas were compared from areas with high and low human impact (evidenced in SDZG's technical report (**Annex 6.11**).

Iguanas living in areas subject to unregulated supplemental feeding were found to be significantly larger than iguanas from adjacent sites/islands not subject to supplemental feeding. Iguanas in these areas were consistently up to twice the mass of iguanas in neighbouring areas or islands not subject to human visitation.

Blood samples were taken from iguanas to investigate if supplemental feeding might be associated with physiological differences in stress hormone levels, standard blood gas and chemistry parameters, and several important trace minerals. Significantly higher levels of cholesterol and triglycerides were found in iguanas in the high human impact site on Big Ambergris Cay compared to the low impact site but this result was inconclusive when considering the large variation observed in these parameters elsewhere which appeared unrelated to levels of human impact. Similarly, increased levels of selenium and decreased levels of cobalt were found in some high impact sites compared to low impact sites but the variation in these parameters was not consistent across sites/islands suggesting other factors may be involved. It's possible much of the variation observed in physiological parameters was due to seasonal and annual fluctuations. More sampling is required to

understand this further prior to publication, ideally in a single season and year to control for these potentially confounding parameters.

The impact of road mortality on Big Ambergris Cay was the most evident negative human impact on iguanas (evidenced in SDZG's technical report **Annex 6.11**). With the development of the island for tourism recommencing in 2018 following a change in ownership, road mortality of iguanas increased with the increasing levels of construction and workers/people on the island (Fig. 3). During the 2018 and 2019 sampling periods, there were 75 or more construction workers on Big Ambergris Cay. In contrast, during the 2017 and 2020 sampling periods there were fewer than half this number, and in 2015 there were no construction workers on the island. Road mortality rates were highest in those areas of the island with the most people and traffic. Figure 3(b) shows the increase in mortality associated with increased vehicular use and high traffic areas.

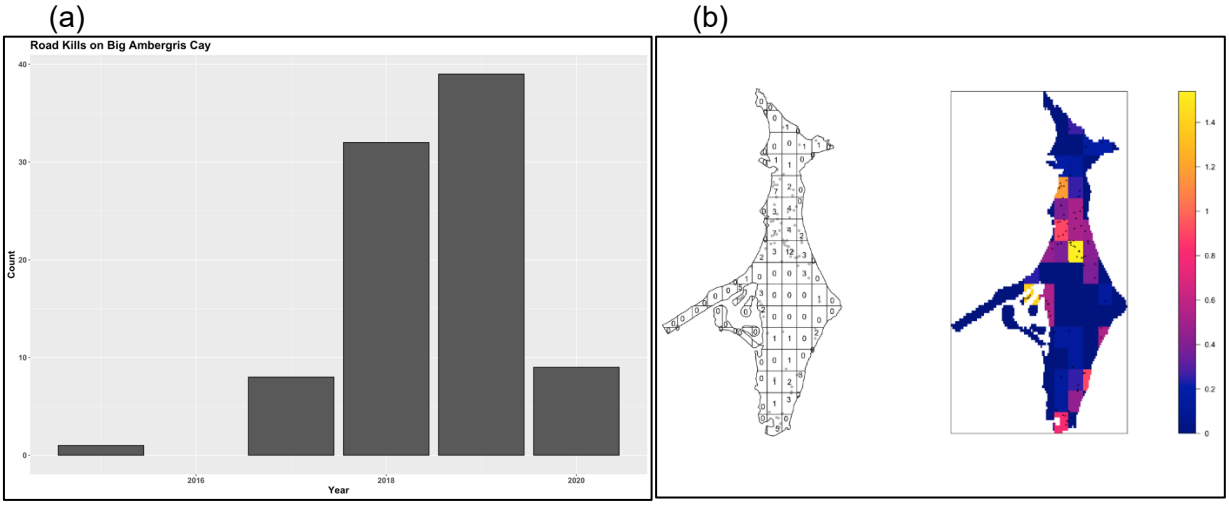

Figure 3. (a) Number of road-kill iguanas recorded across years. No field work was performed in 2016. The year 2015 was not part of the DPLUS055 project, but San Diego Zoo Global data is shown for comparative purposes; **(b)** Point pattern analysis of road killed iguanas on Big Ambergris Cay. Map on the left shows the number of road-kill iguanas distributed across the island. The map on the right shows that areas with higher traffic of heavy machinery have 1.4 road-kills per 100 m^2.

1.3 *Recommendations for managing tourists accessing Little Water Cay from neighbouring unmanaged access points made to the Department for Environment and Coastal Resources (DECR)*: Half Moon Bay, a 1 km long sandbar connecting Little Water Cay to Water Cay, is not currently subject to any formal management and is suffering from uncontrolled tourism and invasive plants, notably Australian pine trees (*Casuarina equisetifolia)*. Based on the results of the human impacts studies and on the observed interactions between tour operators, tourists and iguanas during this project, SDZG provided a list of management recommendations to DECR and the Turks and Caicos National Trust (TCNT) (document in **Annex 6.13**).

Efforts to address these recommendations have been undertaken by TCNT, notably with initiating warden presence at Half Moon Bay, the installation of 'Iguana Etiquette / Respect Rocky' signage (evidenced in **Annex 6.14**) and ad hoc face to face engagement with tour operators. TCNT and DECR are jointly making progress towards enabling TCNT to manage this site, however this has been put on hold given the impacts of the Covid-19 pandemic on these organisations and the tourism industry.

In response to these recommendations, RSPB has provided match funding to contract a consultant to produce a costed plan for managing the invasive Australian pines at Half Moon Bay. This document is currently in development and will be used to inform a DECR/TCNT management plan for Half Moon Bay in the future.

1.4 *Recommendations on conserving reptiles made to Ambergris Cay Facilities Ltd [now Waterloo Investment Holdings Ltd]*: An updated road rules document was sent to Waterloo

Investment Holdings Ltd (WIHL) by SDZG, based on previous guidance requested by the Island Manager before the start of the project (document provided in **Annex 6.25)**. Face to face meetings were held on every trip between SDZG staff and the Island Manager to communicate road mortality figures and the actions required to reduce iguana mortality.

The road mortality rate dropped in early 2020 due to a reduction in the number of construction workers present on the island. The Island Manager has made reducing iguana mortality a priority and includes road rules within new staff inductions, however further efforts to implement the recommendations made are required to fully address this issue.

Output 2: Biosecurity/ IAV plans developed, approved and implemented for Little Water Cay and Big Ambergris Cay

2.1 *Cat presence/absence quantified by the end of the second year of fieldwork*: Feral cat monitoring was completed ad hoc by the project team in Years 1 and 2 through camera trapping, and intensive monitoring was completed in Year 3 as part of the 'Pine Cay Save the Iguana' project (evidenced in the technical report provided in **Annex 6.15**). Trial cameras, footprints and scats were used to determine presence, traveling routes, optimal trap locations and to confirm the identity of each feral cat where detected. Between July 2017 (when the project started but was paused due to the impacts of Hurricanes Irma and Maria) and August 2019, a total of 45 feral cats were captured using live traps and euthanised. Of these, only two were caught or recovered on Water Cay, the remainder were on Pine Cay. There were over 2,700 trapping nights in 2017 and over 2,100 hours in 2019 (see **Annex 6.15** for further details). The project was completed in August 2019 and appears to have been successful in eradicating all feral cats from the adjoining Pine Cay, Water Cay and Little Water Cay. There has already been anecdotal evidence of increased sightings of juvenile iguanas by Pine Cay staff following the eradication effort. Further transects are required to demonstrate the overall benefits of the eradication to the iguana population.

2.2 *Additional control and monitoring activities recommended in the biosecurity plan are undertaken by local staff on Little Water Cay*: Building on the outputs of the 'Pine Cay Save the Iguana' project, where black rats were eradicated from Pine Cay, Water Cay, Little Water Cay and seven additional neighbouring cays, the Biosecurity Plan was adapted in 2019 to focus on long-term monitoring and incursion response rather than long-term control (plan provided in **Annex 6.16**). The updated Biosecurity Plan has been integrated into the management plan and budget for Little Water Cay (evidenced in **Annex 6.7**) and, following training and with equipment provided by the project, weekly biosecurity checks have continued to be completed by TCNT wardens (database provided in **Annex 6.17**).

2.3 *Rodent incursion protocol in place as part of biosecurity plan on Big Ambergris Cay*: Following the impacts of Hurricanes Irma and Maria, and the recommencing development for tourism on Big Ambergris Cay in 2018, both rats and mice were accidently introduced to the island before the team had finalised the biosecurity plan (document provided in **Annex 6.18**). Fortunately, incursion response equipment had already been provided to Big Ambergris Cay staff in 2017, and the project partners were able to remotely support Big Ambergris Cay staff with the response.

WIHL, the company responsible for Big Ambergris Cay, provided additional match funding to enable an island-wide intensive rodent assessment to determine if the rodents were now established and to provide recommendations to inform the biosecurity plan (see Fig. 4). An experienced team were contracted and fortunately found no sign of established populations of rats and mice on Big Ambergris (full report provided in **Annex 6.19**). However, whilst the team were on island there was another incursion of a male black rat which was caught and euthanised – highlighting further the seriousness of the biosecurity risk. Further to this, in 2020 another incursion of mice on Big Ambergris Cay was confirmed (see technical reports in **Annex 6.20**).

Figure 4: A map of Big Ambergris Cay showing the locations of where rodent monitoring tools were deployed during the island-wide assessment in November 2018.

The recommencement of the islands' development for tourism, with large amounts of construction materials and equipment being imported, has made establishing biosecurity very challenging, and has resulted in the project being reactive to incursions. Although DPLUS055 has not been able to prevent the incursions of rodents to Big Ambergris Cay, it has provided training, equipment and technical expertise to local staff at possibly the most critical time to prevent establishment of invasive rodents on Big Ambergris Cay. This also led to the project being adapted to include a focus on minimising the chances of rodents getting on the barge at South Dock, see indicators 2.6 and 2.7.

2.4 *Rodent incursion protocol and biosecurity signage in place, and knowledge of importance of biosecurity increased amongst key stakeholder groups specifically tour operators on Little Water Cay*: A rodent incursion protocol is included as part of the Little Water Cay biosecurity plan and has been integrated into the island's management plan (see indicator 2.2 and evidenced in **Annex 6.7**). Since August 2019 one rat incursion has been effectively responded to on Little Water Cay. Signage has been designed and installed in key sites on Little Water Cay and the adjacent Half Moon Bay sandbar (signage design is evidenced in **Annex 6.14** and photographs included in **Annex 6.6**).

2.5 *Island biosecurity plans signed off by DECR and TCNT Council*: DECR has copies of the Biosecurity Plans on file and TCNT Council have approved the Little Water Cay biosecurity plan, evidenced with the budget and staff allocation and updated management plan (see **Annexes 6.7 and 6.8).**

2.6 *Biosecurity policy drafted by DECR with input from the project team*: During the Species Conservation Planning workshop in 2019, biosecurity legislation was identified as one of the top priority future actions. In response to this partnership request, links were made with the in-Territory Government partners and the GB Non-Native Species Secretariat. GBNNSS has supported TCI Government partners with further biosecurity training opportunities, provided resources towards the drafting of biosecurity legislation for TCI and has enabled the drafting of a biosecurity policy led by Environmental Health Department (EHD) and Department of Agriculture (DoA) (draft policy provided in **Annex 6.10**). Through secured Darwin Plus funding in 2020 (DPLUS121), the partnership will finalise the biosecurity policy and will continue to support TCI Government partners to advance the legislation.

2.7 *Improved awareness of biosecurity among dock staff, clients and companies at South Dock*: Through the development of the Big Ambergris Cay biosecurity plan, the need to work with South Dock stakeholders on Providenciales was identified. South Dock is the main international port of TCI, and the main location from where materials and equipment are transported to Big Ambergris Cay. A meeting, hosted by DoA, was held in March 2019

with key stakeholders, notably EHD and the Ports Authority. The meeting discussed the principles of Integrated Pest Management (see presentation slides in **Annex 6.21**) and offered the project's support in terms of training and equipment. Feedback forms were completed indicating a desire to establish biosecurity/Integrated Pest Management at South Dock (forms provided in **Annex 6.22**). As a result, EHD became a formal partner of the project (signed MoU in **Annex 6.23**) and Integrated Pest Management was initiated at South Dock.

2.8 *Integrated Pest Management initiated at South Dock*: In July 2019, a workshop was held between RSPB and EHD staff outlining the requirements of Integrated Pest Management. The equipment was provided, and RSPB staff assisted EHD staff with setting up rodent control at South Dock (presentation slides in **Annex 6.21**, photographs in **Annex 6.6**). EHD and the Ports Authority are working to clean up South Dock, which will be completed over the next few years (removing old containers and other types of harbourage no longer used). This has supported EHD's priority work area of Port Health as well as supporting the implementation of the biosecurity plan for Big Ambergris Cay. Positive progress has been made, however further work is required to engage with barge operators and to expand the rodent control effort at South Dock to minimise the likelihood of rodents accessing the barge servicing Big Ambergris Cay.

Output 3: Restoration/protection strategy for offshore islands following 'rapid survey' for reptiles and rodents.

3.1 *Rapid survey methods devised by end of year 1*: A trial of the monitoring methods for rats and cats was completed on Little Water Cay in April 2017 and a protocol was produced for the rapid survey methodology, evidence in technical report **Annex 6.24**.

3.2 *Rapid surveys implemented on 10 offshore cays through first, second and third project year and data shows extent of reptile and rodent populations*: A total of 12 offshore cays were surveyed for rodents, cats, iguanas and other native reptiles, six around Little Water Cay (Donna, Mangrove, Fort George, Grouper, Lizard, Bird) and six around Big Ambergris (Bush, Little Ambergris, Six Hills, Fish, Middleton and Long), evidence in technical reports **Annex 6.11** and **Annex 6.24**. Night surveys for boas were completed on Little Ambergris and Long Cay.

3.3 *Updated IUCN TCI Iguana conservation management plan – to include the iguana restoration strategy agreed by DECR/TCNT/IUCN Iguana specialists group*: Six of the offshore islands surveyed were able to opportunistically be built into the 'Pine Cay Save the Iguana' project, through additional resource allocation by the project partners, resulting in an attempt to eradicate black rats from these islands completed in 2019. Unfortunately, the eradication of rats from Mangrove Cay has failed (rat presence confirmed in February 2020). Further surveys are required in 2021 to determine if the eradication attempts on Donna, Lizard, Bird, Fort George and Grouper Cays were successful.

A Species Conservation Planning workshop was held over three days in July 2019 to set the future direction for conservation efforts to protect the TCI rock iguana. A website with workshop outputs was established and an IUCN Iguana Specialist Group-supported Conservation and Management Plan for the Turks and Caicos rock iguana has been produced. As part of this plan, further iguana islands were prioritised for (a) Biosecurity; (b) IAV eradication; (c) iguana translocations; and (d) site protection; and includes a note on planning for climate resilience in the future species conservation efforts (plan provided in **Annex 6.25**). This Plan will be used to direct the future conservation work for this species.

3.4 *Baseline iguana population estimates collected on additional cays (Pine, Water, Donna, Mangrove, Fort George, Grouper, Lizard, Bird*): Throughout the project transect data were collected to calculate the relative abundance of iguanas on different islands. Baselines of relative abundance of iguanas have been established for Pine, Water, Donna, Mangrove, Fort George, Grouper, Lizard and Bird Cays (data provided in SDZG's technical report **Annex 6.11** and database **Annex 6.12**). The data will be used in future years as a baseline to document changes in iguana population size and relative abundance on individual islands, especially to monitor the impact of the 2019 feral cat and rat eradication efforts.

The small cays of Bird and Lizard are almost identical in size (0.45 and 0.41 hectares, respectively) and characteristics, and are geographically very close to each other. Neither of these two cays have cats but Bird Cay has rats and Lizard Cay does not. A preliminary analysis of iguana age structure revealed that while Bird Cay has mostly adult individuals (predominantly males) and very few juveniles (12 adults and 2 juveniles), the trend is completely opposite on Lizard Cay (5 adults - predominantly females, and 10 juveniles). This hints to a possible effect of rats potentially preying on hatchlings and juveniles, and thereby skewing the age structure of iguana populations. However, these results will need to be substantiated with further data collection on additional islands with and without rats prior to drawing conclusions.

Output 4: Capacity and efficacy of personnel within the project team (in TCI and the UK) to implement essential monitoring and biosecurity activities to address invasive vertebrates increased

4.1 *Project team members develop competencies outside areas of specialism at the beginning of project*: See Section 2. Over the course of the project, team members and staff from wider stakeholders have been involved in project activities aiming to improve cross-organisational collaborative working and to share skills and experiences, photographic evidence is provided in **Annex 6.6**. In Year 1 biosecurity training from experts was delivered to 10 project partner staff on Little Water Cay and eight project partner staff on Big Ambergris Cay (feedback forms in **Annex 6.22**). In March 2018 and February 2020 DECR led plant surveys on Little Water Cay in collaboration with TCNT, evidence in the Vegetation Assessment Report **Annex 6.26**, enhancing knowledge of the flora of this site.

Twelve people learnt about Integrated Pest Management and how this could be applied to South Dock and feedback was collated from all attendees (completed feedback forms in **Annex 6.22**). Targeted Integrated Pest Management training was delivered to eleven EHD staff. Training of three Big Ambergris Cay staff on rodent monitoring and incursion response was delivered as part of the rodent assessment, report in **Annex 6.19.**

4.2 *Project team members confidence to address IAV issues increases through them independently developing plans/applications for future work*: DPLUS055 enabled the project partners to be directly engaged in the synergistic privately-funded 'Pine Cay Save the Iguana' project. Through this, DoA developed euthanasia protocols for feral cat eradication/control (detailed in the projects' technical report, **Annex 6.15**), which will be used to inform future feral cat management in TCI. Through the partnership and DPLUS055, the eradication effort was expanded to include neighbouring islands (see indicator 3.3). Additional match funding has been inputted to the project by WIHL, RSPB, SDZG and others (see Section 9). Further funding has been secured in 2020 through the UK Government's Darwin Plus Initiative to support and expand the legacy of DPLUS055. The project, entitled "DPLUS121: Strengthening Biosecurity to Protect Turks & Caicos' Iguana Islands", includes significant match funding from all of the project partners, as detailed in Section 9.2.

4.3 *Improved unsupervised performance of team members:* One-to-one training of eleven TCNT staff by RSPB and 'Pine Cay Save the Iguana' project staff on biosecurity methods and monitoring of biosecurity tools was delivered throughout the project. Four of these staff members are still employed by TCNT (see sections 3.3 and 5 about staff retention). These staff are independently leading on biosecurity on Little Water Cay. TCNT set up and independently led biosecurity trails (**Annex 6.9**) on Little Water Cay with guidance from RSPB. EHD staff have continued to independently lead on rodent control at South Dock and have expanded Integrated Pest Management to the port on Grand Turk.

Output 5: Project managed and monitored effectively

5.1 *Project monitoring plan developed in first 3 months and reviewed quarterly*: The project monitoring plan has been prepared with input from project partners and was an active document updated quarterly as a tool to monitor project implementation progress (final version of monitoring plan in **Annex 6.1**).

5.2 *Regular communication maintained between the team; biannual skype calls and annual visits and reports from managers:* All partners have been involved in project planning,

monitoring and evaluation and decision-making, formally through a total of four steering group meeting conference calls over the course of the project (meeting minutes in **Annex 6.2**) with each partner delivering their own set of arising actions, as well as through one to one conversations with the project leader. A project partners meeting was held on the 31st October 2018 which formed the mid-term evaluation, where the progress of the project to date was reviewed by all partners and direction set for the remainder of the project (agenda and minutes in **Annex 6.3**). An external evaluation took place in February 2020, where all partners were consulted on the outcomes of the project and could provide feedback (report in **Annex 6.4**).

5.3 *Annual face to face project meetings take action to address any challenges and maintain engagement of senior managers within project partners:* See indicator 5.2 above. The project leader visited TCI annually and ensured informal face to face meetings were held with project partners where possible.

5.4 *Technical and financial reporting to RSPB and Darwin accurate and on time and to high standard:* All technical and financial reporting was received by project partners and submitted to Darwin by RSPB by prior agreed deadlines.

3.2 Outcome

Project outcome: ***The critically endangered Turks and Caicos Iguana is secured through the establishment of effective biosecurity plans/invasive vertebrate control on two offshore islands, and the identification of islands for future restoration.***

As a result of conservation intervention, including the outputs of this project, the Turks & Caicos rock iguana was down-listed on the IUCN red list from Critically Endangered to Endangered in 2019 (IUCN, 2020). The full assessment is provided as **Annex 6.27**. The overall population is stable, as evidenced in SDZG's technical report (**Annex 6.11**). Biosecurity plans are being implemented on two offshore islands (Little Water Cay and Big Ambergris Cay), with the existing management plan updated and budget allocated for Little Water Cay (evidence in **Annex 6.7** and **6.8**). Further iguana islands had been identified for restoration in Year 1, and the project partnership were able to provide match funding to include six of these identified islands into the synergistic 'Pine Cay Save the Iguana' rat and feral cat eradication project completed in 2019. Further iguana islands were prioritised within the Conservation and Management Plan for the Turks and Caicos rock iguana, a plan detailing the actions needed for the next four years (plan provided in **Annex 6.25**). This plan will be used to direct the future conservation work for this species.

The outcome indicators have mostly been achieved over the course of the project. The evidence of this, and the challenges faced, are as follows:

1. *Number of iguanas is stable and/or increasing on two target cays from the baseline*: Baseline data of relative abundance of iguanas on Little Water Cay and Big Ambergris Cay were collected in Year 1 and repeated annually. No significant differences were observed in the relative abundance, sex ratio, or age structure of iguana populations on either island; therefore, the populations are currently stable, and this indicator has been achieved (evidenced in SDZG's technical report **Annex 6.11**).

   The increased infrastructure development activities on Big Ambergris Cay are significant however, and the impact of increased road mortality observed in the project could impact the population status of iguanas beyond the project. Recommendations on actions to reduce road mortality were made to WIHL (document in **Annex 6.25)** and face to face meetings were held. The road mortality dropped in early 2020 due to a reduction in the number of construction workers present on the island. The Island Manager has made reducing iguana mortality a priority and includes road rules within new staff inductions, however further efforts to implement the recommendations made are required to fully address this issue.

2. *Incursions of invasive predators on Big Ambergris Cay are reduced in frequency and managed effectively:* In Year 1, in response to the invasion of rats and mice within six months following Hurricanes Irma and Maria, an incursion response was initiated by Waterloo Investment Holdings Ltd staff with support from RSPB and SDZG. In Year 2, an

island-wide rodent assessment was completed with match funding provided by WIHL (evidence provided in report in **Annex 6.19**), which indicated that fortunately a rodent population has not yet established following the invasions in Year 1. Despite some effort towards addressing and implementing the recommendations made following the assessment, a further mouse incursion was recorded in Year 3.

The number of incursions were a direct result of the increased importation of materials, equipment and people with the recommenced development of the island in 2018. The project has provided the training, equipment and partner support to Big Ambergris Cay staff to manage incursions. Without this project, it is highly probable that rodents would have established on Big Ambergris Cay. The project has highlighted the need to reduce the likelihood of rodents arriving from Providenciales, and therefore led to the involvement of TCI Government's Environment Health Department with rodent control at South Dock.

3. *Management plans' IAV component strengthened with clear methodologies for ground staff and timetable for IAV control activities*: Annual biosecurity training has been completed with TCNT staff on Little Water Cay (evidenced in **Annex 6.6**), with biosecurity integrated into work plans and annual budget, and the management plan for Little Water Cay has been updated. Annual biosecurity training has been completed with WIHL staff on Big Ambergris Cay and has been integrated into existing staff work programmes to some degree, i.e. knowledge and skills to initiate incursion responses (evidenced in **Annex 6.20**). No natural resource management plan exists for Big Ambergris which has been identified as a gap to be addressed during the delivery of the 2020-24 species action plan (see indicator 5).

4. *Biosecurity plans agreed by TCNT Council, Big Ambergris Cay management, tourist operators and developers and approved by TCI Cabinet*: The Little Water Cay biosecurity plan has been completed (plan provided in **Annex 6.16**) and agreed by TCNT Council, evidenced with the specific budget and staff allocation to biosecurity and the updated management plan (evidence provided in **Annex 6.7** and **6.8**).

   The Big Ambergris Cay biosecurity plan was updated and finalised in Year 3, incorporating the recommendations from the rodent assessment (plan provided in **Annex 6.18**). WIHL have been supportive of the principles outlined in the biosecurity plan (evidenced through meeting minutes **Annex 6.30,** and feedback forms **Annex 6.22**). However, further effort is required to support WIHL with the full implementation of the biosecurity plans.

5. *Strategy for priority island restoration/protection published with actions agreed by the project team*: Twelve offshore cays were surveyed for rodents, cats and reptiles (evidenced in report in **Annex 6.24**). Six of these have since been included in the 'Pine Cay Save the Iguana' rat and feral cat eradication project completed in 2019. Further iguana islands were prioritised for (a) Biosecurity; (b) invasive alien vertebrate eradication; (c) iguana translocations; and (d) site protection within the IUCN Iguana Specialist Group-endorsed Species Action Plan for the Turks & Caicos rock iguana (plan provided in **Annex 6.25**), an output of this project's' species conservation planning workshop held in July 2019. This Plan will be used to direct the future conservation work for this species.

3.3 Monitoring of assumptions

All the key assumptions outlined in the log frame (Annex 1) were monitored quarterly through the projects' monitoring plan (**Annex 6.1**). Over the course of the project two of these assumptions did not hold true. Details of these assumptions and the arising mitigation measures are outlined below:

Assumption: *Fieldwork is not rendered impossible through hurricanes or other natural phenomena*: In Year 1 the second bi-annual trip, originally planned for September and November 2017, was cancelled due to Hurricanes Irma and Maria, see Section 2. This led to project activities being paused from September 2017 to January 2018. For Years 2 and 3 the international partners planned fieldwork to avoid the main hurricane season months (September/October).

Assumption: *Staff retention and progression allows them to implement and share skills*: Since the hurricanes and the associated socio-economic disruption which followed in Year 1, there were TCNT staff changes in both management and wardens on Little Water Cay, resulting in limited retention of the experience/skills developed in TCNT over Year 1. Unfortunately, over

Years 2 and 3 TCNT continued to have high staff turnover of wardens responsible for Little Water Cay and, at times, they have been understaffed. There was also a change in the Director of the organisation during Year 3. Fortunately, TCNT's project manager (Della Higgs) has remained engaged with the project over Years 2 and 3, and has provided continuity and oversight of the project activities and equipment, including the boat equipment purchased under the project. The challenge of retaining staff in the NGO conservation sector in TCI is discussed in Section 5.

One risk not considered in the log frame was that invasive predators would invade Big Ambergris Cay before the biosecurity plan and incursion response protocols had been finalised, endorsed and implemented. This meant the project team had to be reactive rather than proactive over Year 2, resulting in setbacks in establishing the biosecurity plan. Ensuring an appropriate response and follow-up has been one of the greatest challenges for the project (evidenced in the technical reports in **Annex 6.20**).

4 Project support to environmental and/or climate outcomes in the UKOTs

The project has supported local partners to address the following TCI government priorities:

- Revised National Parks Ordinance (2016); management of protected areas;
- The National Tourism Policy and Strategic Implementation Plan (2015); enhancing ecotourism; and
- The Environment Charter (2001, principle 7); control invasive species.

All team members, but particularly the more inexperienced members, have benefited from the cross-team training and development, increasing the number of personnel in TCI who can carry out techniques required for implementing biosecurity and rodent control (monitoring, surveillance, analysis, adaptive management and action), and how to embed this into day-to-day management of sites and work programmes of staff. This is an important outcome for all the partners involved.

This project is the first time such a cross government department/private-public partnership for invasive alien vertebrate management has been attempted in TCI. It has proved successful and has set a foundation for future collaboration, allowing for more cost-effective use of government resources and inputs from the private sector to achieve national conservation goals, which will benefit the environment and tourism.

The output of the Species Conservation Planning workshop has outlined the need for national biosecurity legislation (see Section 6) and this project and partnership is likely to be used as a case study in Turks & Caicos Government's Environment Strategy, which is being developed over 2020/21.

5 Gender equality

The project team (18 people) comprised 50% women, ranging from technical delivery of biosecurity and awareness raising to Director-level project steering support.

Through this project and the synergistic 'Pine Cay Save the Iguana' project, women are starting to be seen in lead fieldwork and technical roles in TCI (such as leading on biosecurity checks and rodent control), which culturally is generally viewed as a man's role. This project has provided an inclusive environment where women can lead in fieldwork roles. To demonstrate this, below is a quote from Aravana Lucsama, a part-time warden with the Turks and Caicos National Trust (TCNT) about her role in the project:

"This was the first time that I had ever done work like this… To see a woman, leading and doing work like this, work that 'normally' men do, has inspired me to seek a degree in Conservation Management… As a young woman, I feel I can do anything!"

This project has highlighted, and has started to address, the challenge that conservation jobs in TCI are often not seen as a career, particularly in the NGO sector, and therefore can suffer

from high staff turnover. The TCNT wardens on Little Water Cay are often from disadvantaged backgrounds (in respect to economic status and education) and this project has provided training and support to these roles and the partnership will continue beyond this project with the aim to provide development opportunities for these roles.

6 Sustainability and Legacy

A direct benefit of this project's cross-sector partnership-based approach, and a key step towards the projects' sustainability, was through the identification of the need for national biosecurity legislation. This was identified as the highest priority for biosecurity during the 2019 Species Conservation Planning workshop. Following this partnership request, the GB Non-Native Species Secretariat (GB NNSS)'s project on 'Tackling Invasive Non-Native Species in the UK Overseas Territories', were able to support TCI Government partners with the drafting of national biosecurity legislation and the drafting of a biosecurity policy (**Annex 6.10**). With leadership from the Department of Agriculture (DoA), the partnership will continue to promote the need to advance national biosecurity legislation beyond the project.

In February 2020, a meeting was held with the Governor, the Minister of Health and the Minister of Environment and Tourism to promote the need for biosecurity. As a result, a government budget line was allocated to biosecurity under national security in February 2020. Given the unprecedented impacts of the Covid-19 pandemic, it is unclear on the current status of this, but it has shown clear commitment from the Government to address the need for national biosecurity.

The TCI project partners remain committed to implementing the biosecurity measures and invasive alien vertebrate controls after the project is completed, and new stakeholders are also being involved in this commitment. The Turks and Caicos National Trust (TCNT) have updated their management plan to include the delivery of the Little Water Cay Biosecurity Plan, and their annual budgeting and warden work programmes include ongoing biosecurity checks (evidence in **Annex 6.8**). The Environmental Health Department (EHD) have maintained rodent control at South Dock and have expanded to other ports.

Further funding has been secured in 2020 through the UK Government's Darwin Plus Initiative to support and expand the legacy of DPLUS055. The project, entitled "DPLUS121: Strengthening Biosecurity to Protect Turks & Caicos' Iguana Islands", will maintain a focus on protecting the Turks & Caicos rock iguana, expanding the partnership and project scope aiming to mitigate impacts of invasive vertebrates and uncontrolled tourism across 11 islands, spanning three national parks and three privately-owned islands. Additional match funding is being provided by RSPB, San Diego Zoo Global (SDZG) and the Pine Cay Homeowners Association, who all remain committed to supporting iguana conservation efforts in TCI. The successful application is provided in **Annex 6.28**.

DPLUS055 focussed on skill-sharing between existing staff members of partner organisations, therefore the majority of project staff are continuing in their roles within their respective organisations (the exceptions being Little Water Cay wardens due to high staff-turnover, see Sections 3.3 and Section 5).

7 Lessons learned

One of the greatest successes of the project has been the strengthening of the project partnership, as outlined in Section 2, which has significantly increased the impact of this project and has resulted in significant additional resource input from the partners (see Sections 2, 7.1 and 9.2). The project has highlighted the need for a holistic approach to biosecurity, to reduce the inter-island spread of invasive alien vertebrates and has built the foundation and initiated the steps towards this (such as rodent control at South Dock and the drafting of biosecurity legislation and policy) as well as setting the future direction through the species action plan.

Another success was that the project was able to effectively adapt to the significant impacts of Hurricanes Irma and Maria without having to alter the project's outputs or outcome. An early start to the project and the way the project was designed were critical to this. The initial project design was not over ambitious for the timeframe and budget involved, allowing effective adaptability.

One of the greatest challenges for the team is capacity within already busy work schedules, which has been a challenge for all partners, particularly the local TCI partners. As the project has developed and expanded over three years, and additional projects have been successfully funded, more time is required from the already very busy staff. A future consideration is to ensure that project-funded staff positions are included to allow for the additional work load to be supported and would buffer for the time required for the additional work to become mainstreamed into normal working practices.

Boat maintenance has been a challenge for San Diego Zoo Global (SDZG) and the Turks and Caicos National Trust (TCNT), particularly in Years 1 and 2. Allowing for more budget for boat equipment maintenance and repairs; funding for boat security, and more time in the field trips to get these equipment issues resolved is a future consideration.

The Species Conservation Planning workshop and the external evaluation in Year 3 have been pivotal in setting the future direction of the partnership and identifying the weaknesses of this project (see Section 7.1 below and report in **Annex 6.4**).

7.1 Monitoring and evaluation

Output 5 (Project management/monitoring) covered the methods used for monitoring and evaluation, see Section 3.1. The Project Monitoring Plan, **Annex 6.1**, was prepared with input from all partners and was updated quarterly by the Project leader. It clearly outlines the roles of the partners, deadlines, timeframes and indicates progress. Monitoring and evaluation was the role of one partner, RSPB, who had continually monitored progress through referring to the log frame and project timetable, sharing the information with the partners via email and skype/phone calls. A project partners meeting was held on the 31st October 2018 which formed the mid-term evaluation, where the progress of the project to date was reviewed by all partners and direction set for the remainder of the project (agenda and minutes in **Annex 6.3**).

The project has taken a pragmatic and adaptable approach, which has enabled the project outcome to be delivered (see Section 3.2). Over the project, there were four change requests submitted and approved, two with log-frame changes, to adapt the project to changing circumstances, with the most major changes following the impacts of Hurricanes Irma and Maria.

An external evaluation took place in February 2020, where all partners were consulted on the outcomes of the project and could provide feedback (report in **Annex 6.4**). The evaluation highlighted that '*The project has been very successful and is on course to achieve the main elements of each of the five project outcomes'.*

The evaluation highlighted key successes:

- The project provided a significant stimulus to biosecurity in the Turks and Caicos Islands.
- The presence of the project provided the basis for and stimulus for a cat and rat eradication programme - the 'Pine Cay Save the Iguana' project.
- The project enabled the expansion of the rock iguana research programme undertaken for some years by San Diego Zoo Global (SDZG), giving it a more applied conservation focus.
- The project built capacity in TCI institutions not only in biosecurity but also in project management and technical and financial reporting, in particular for the Turks and Caicos National Trust. The project has built and enhanced relationships between these project partners within the TCI.

The evaluation also highlighted: '*It will take more time to fully integrate an effective biosecurity network and system for TCI in general and the iguana islands in particular'*. The arising recommendations for the project partners were as follows (these have been used to guide next steps for the partnership beyond the project):

- Get more people in post and train them.
- Agree roles and responsibilities across the whole suite of conservation and biosecurity activities.
- Fully implement the adopted biosecurity plans.
- Fully integrate transport agents especially tour operators and shipping companies into this work.

- Consider further awareness raising campaigns to both make people on TCI proud of their incredible native wildlife but also aware of the threats that they face and their part in ensuring their future.

7.2 Actions taken in response to annual report reviews

All feedback received via the two reviews of annual reports was discussed in project steering group meetings (evidenced in **Annex 6.2**). Both reviews were very positive, both scoring 2 (likely to be largely achieved) and were well received by the partnership. The comments received in the reviews were all relatively minor and were able to be addressed by the project team. The feedback and comments from Year 1's review were addressed in the following way:

1. *Please provide project monitoring plan*: See **Annex 6.1**.
2. *Please revise outcome indicator "Big Ambergris Cay remains predator free":* A change request was submitted in January 2019 following the results of the island-wide rodent assessment (detailed in **Annex 6.19**) and was approved, amending this outcome indicator to: "Incursions of invasive predators on Big Ambergris Cay are reduced in frequency and managed effectively".
3. *Please discuss with DI the need of full-scale island wide rodent eradication project (additional funding)*: The project team agreed that it was too early to determine if a full-scale island wide eradication was required following the incursion of rodents on Big Ambergris Cay in Year 1. Waterloo Investment Holdings Ltd (WIHL) provided the needed co-funding to enable an island-wide rodent assessment in 2018 (see **Annex 6.19**) which indicated that fortunately rodents have not established populations. It has, however, further highlighted the crucial need for effective biosecurity.
4. *Please provide feedback forms from all training participants*: The missing completed feedback forms from the biosecurity training in Year 1 have been received and were provided in Annual Report 2 (and evidenced in **Annex 6.22**). Partners provided ideas on how to ensure feedback from all participants is received.

The feedback and comments from Year 2's review was addressed in the following way:

1. *Please provide evidence (eg MoU) of new stakeholder involvement: Environmental Health Department (EHD) of Turks and Caicos Government and the Turks and Caicos Islands Ports Authority:* See **Annex 6.23**. As outlined in Section 2, over the final year of the project EHD became part of the formal partnership whilst Ports Authority became a wider stakeholder – evidence of their engagement in **Annex 6.6** and **6.22.**
2. *Activity 3.4 is focused on the collection of baseline iguana population data on additional cays in the project area and at the beginning of 2019 a survey was apparently conducted. Please add the report to the next report as Annex:* See the technical report from San Diego Zoo Global (SDZG) in **Annex 6.11**.
3. *To assess the quality of the trainings it would be very helpful if the report would include the training programs, list of participant and selection criteria for participants:* The feedback forms and list of participants are provided in **Annex 6.22**. No formal training programme was in place in this project but is recommended for future work. No specific criteria were set to select participants to ensure the project remained as accessible as possible for local partners. The participants were not selected by the international NGOs but by the local partners.
4. *In Annex 3.11 the report intends to show photographic evidence of the involvement of team members in diverse project activities. It would be helpful to add to each photo a short explanation (name of the person, activity, date, place) to make this Annex a useful verification source*: An explanation of the project's photographic evidence has been provided in **Annex 6.6**.
5. *Staff turnover - there is currently little oversight of the use or maintenance of the boat equipment purchased. The team is aware of the problem but there is no evidence of how the team will improve the situation. It is important to understand the root cause of this high staff turnover and take adequate measures in YR3*: The project team have been aware and working to address this issue over the course of the project, which has been challenging to

address given the social-economic impacts of Hurricanes Irma and Maria and the cultural views of working in the NGO conservation sector, as detailed in Section 3.3 and Section 5. The continuity of the Turks and Caicos National Trust's (TCNT) Project Manager over Years 2 and 3, however, has provided oversight of the project activities and equipment.

6. *The team is aware that to sustain the outcome of the project dedicated biosecurity positions are required on both Big Ambergris Cay and Little Water Cay. These positions need additional funding and commitment from the local partner. It may be helpful to prepare in YR3 a detailed job description and discuss with the partners how these two positions could be funded and made operational*: Biosecurity Officer job descriptions were produced and provided to local partners. TCNT has allocated a warden specifically to biosecurity. A Biosecurity Advisor position is due to be recruited in 2020 by RSPB as part of the recently funded DPLUS121 project (application provided in **Annex 6.28**) to ensure the legacy of this project is maintained and the momentum continues to build through the partnership to implement effective biosecurity.
7. *The project team is proposing an additional communication and planning effort with project partners and stakeholders on Big Ambergris Cay to identify means to reduce the impacts of habitat loss and road mortality in YR3:* A meeting was held between RSPB, TCNT and WIHL in 2018 to discuss biosecurity and the importance of minimising habitat loss (meeting notes provided in **Annex 6.30**). SDZG met with the Big Ambergris Cay homeowner's association to discuss the project and some the challenges. Both WIHL and the homeowner's association have been very supportive of implementing biosecurity and minimising iguana road mortality in principle, demonstrated by the additional match funding provided by WIHL for the rodent assessment in 2018. Achieving local ownership of these issues has proved more challenging. Future aims are to engage further with the homeowners' association to work towards achieving local ownership of the habitat loss and road mortality issues.

8 Darwin Identity

Over the course of the project there have been several project communications both locally and internationally using a mix of different tools and media. The Darwin Plus Initiative was recognised in nearly all communication efforts and the Darwin logo used on all project communication materials. There is a good understanding of the input of the Darwin Plus Initiative to enable this work across the project partnership and stakeholders. This project was the first involvement with the Darwin Plus Initiative for some of the partners.

Locally, the project has continued to be communicated through the public awareness campaign and school outreach led by the Turks and Caicos National Trust (TCNT) (funded by EU BEST Initiative in Year 1) and DECR, with the publication of a children's book (**Annex 6.29**) and events and school visits with the project mascot 'Rocky' – a full size iguana costume (see Fig. 5).

(a) (b)

Figure 5: (a) Photographs of the children's book launch by TCNT and DECR in 2019 and (b) Project mascot 'Rocky' visiting a summer school at the youth club on Providenciales in July 2019.

Project posters have been printed and installed in the Little Water Cay visitor centre and TCNT's heritage site on Middle Caicos (Conch Bat Caves). Signage has been produced by TCNT (design in **Annex 6.14**) and installed at key sites (evidenced in **Annex 6.6**). An article on the project was published online and TCNT have been posting updates on project activities on their Facebook page (see Fig. 6).

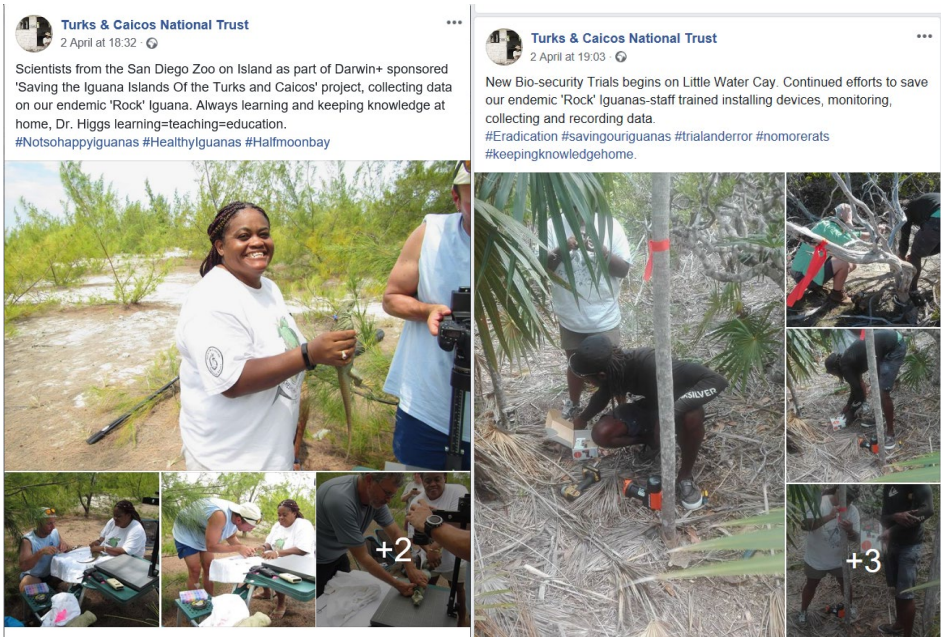

Figure 6: Examples of the Facebook posts by TCNT showing the project activities on Little Water Cay.

Internationally, two blogs have been posted online on RSPB and San Diego Zoo Global's (SDZG) websites: https://community.rspb.org.uk/ourwork/b/biodiversity/posts/saving-the-iguana-islands-of-turks-and-caicos; https://institute.sandiegozoo.org/science-blog/it%E2%80%99s-tough-being-lizard-tci. A magazine article was published in Birdlife International's magazine and on their website: https://www.birdlife.org/worldwide/news/welcome-iguana-island-land-where-reptiles-rule. The project was presented at the Amphibian and Reptile Conservation Trust (ARC) and British Herpetological Society's Joint Scientific Meeting on 1st December 2018 in the UK.

A website was established around the Species Conservation Planning workshop in July 2019 to host the key outputs and background information: https://sites.google.com/greenblueyou.com/iguanajuly2019/home?authuser=0 The output of the workshop, a Conservation and Management Plan, will be hosted on the IUCN website when finalised following the review process (due to be completed in 2020).

Local radio stations and local TV and press releases were used as outlets to communicate the work of the project, such as this article: http://magneticmediatv.com/2020/02/new-alien-invasion-threatens-tci-rock-iguanas/?fbclid=IwAR3zW3uzbUDOVhmrNROyl3qBlh5qzSRxwOar3MXy6hfV4Wc0WyrBBSieHjk

9 Finance and administration

9.1 Project expenditure

Project spend (indicative) since last annual report	2019/20 Grant (£)	2019/20 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs				
Consultancy costs				
Overhead Costs				

Project spend (indicative) since last annual report	2019/20 Grant (£)	2019/20 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Travel and subsistence				
Operating Costs				
Capital items				
Others				
TOTAL				

**Please see note below, as these figures are indicative

Staff employed (Name and position)	Cost (£)
Rodent & cat survey/biosecurity - K Varnham	
Rodent & cat survey/biosecurity - S Havery	
Financial management – W Cain	
Field team LWC - S. Busuttil/ D Higg	
Field team LWC - B. Diaz Surie	
Field team LWC - C. Hall	
TOTAL	

**Please see note below, as these figures are indicative

Consultancy – description and breakdown of costs	Other items – cost (£)
Conservation plan workshop facilitator External evaluator	
TOTAL	

Capital items – description	Capital items – cost (£)
Biosecurity materials for docks Rodenticide	
TOTAL	

Other items – description	Other items – cost (£)
Custom charges for monitoring tunnels Annual workshop costs Various filed supplies – Markers, Gloves, Notepads, hard disc, clamps, mounting tape, densometer, Protective cases. Project sample analysis	
TOTAL	

**Please note that these figures are still under review with the auditor, so at present these figures are indicative. Once the auditor has sent in their report, then the figures will be confirmed.

9.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
Ambergris Cay Facilities	
RSPB	
San Diego Zoo	
DECR, Turks & Caicos Island Government	
Department of Agriculture, Turks & Caicos Island	
Turks & Caicos National Trust	
TOTAL	

**Please see above comment

Source of funding for additional work after project lifetime	Total (£)
Bill Nygren Foundation	
Darwin Plus Initiative	
RSPB	
San Diego Zoo	
DECR	
TCNT	
DoA	
EHD	
WIHL	
TOTAL	

9.3 Value for Money

The Caribbean is an expensive region, with salary and living costs generally being higher than in the UK. Despite this, this cross-sector partnership-based project represents excellent value for money because it has combined expertise, staff time and other resources of multiple parties, including the Turks and Caicos National Trust (TCNT), Turks and Caicos Government, specialists from international institutions and NGOs and local civil society. Combining experienced local and international actors has enabled collective expertise to focus on securing further investments to restore islands through the 'Pine Cay Save the Iguana' project, further match funding from Waterloo Investment Holdings Ltd (WIHL) to support a rodent assessment and further funding and partner commitment secured to expand this work through the Darwin Plus funded 'DPLUS121: Strengthening Biosecurity to Protect Turks & Caicos' Iguana Islands' project.

Considerable match funding has been secured from partners for project management, US field staff time, use of boats and for inter-island travel and accommodation on Big Ambergris Cay; all of which have been essential for the project to be a success and the latter are very expensive items in TCI. In addition, using San Diego Zoo Global's (SDZG) field station on Providenciales meant accommodation costs have been reduced by >50% compared to regular low budget accommodation costs on islands – options for which are incredibly limited.

Annex 1 Project's full current logframe as presented in the application form (unless changes have been agreed)

Please insert your project's logframe (if your project has a logframe), including indicators, means of verification and assumptions. N.B. if your application's logframe is presented in a different format in your application, please transpose into the below template. Please feel free to contact Darwin-Projects@ltsi.co.uk if you have any questions regarding this.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: (Max 30 words) Improved implementation of Invasive Alien Vertebrate management in TCI and increased capacity to sustain the improvement, resulting in better protection of TCI's natural assets that support the tourist industry.			
Outcome: The critically endangered Turks and Caicos iguana is secured through the establishment of effective biosecurity plans/invasive vertebrate control on two offshore islands, and the identification of islands for future restoration.	No. of iguanas is stable and/or increasing on two target cays from the baseline measured in the first year Incursions of invasive predators on Big Ambergris Cay (BAC) are reduced in frequency and managed effectively Management plans IAV component strengthened with clear methodologies for ground staff and timetable for IAV control activities Biosecurity plans agreed by TCNT Council, Big Ambergris Cay management, tourist operators and developers and approved by TCI Cabinet Strategy for priority island restoration/protection published with actions agreed by the project team.	Updated IUCN Conservation status assessment for Turks and Caicos. Iguana/boa/reptile database for TCI Government Biosecurity plan reports from Big Ambergris Cay. Revised site management plans, annual work plans and budgets TCNT Council meeting minutes, cabinet paper, attendance at tourist and developers seminars and minutes of cabinet meeting Strategy contained within the updated IUCN TCI Iguana conservation management plan.	IAV control and Biosecurity plans are properly implemented by management authorities TCI Government continue to see importance of biosecurity to TCI's native wildlife and related industries Tour operators and developers ready to engage in discussions about biosecurity
Outputs: 1. Baseline data established and short-term trends identified for Little Water Cay (LWC) and Big Ambergris Cay (BAC) for	1.1 Transect lines, capture-mark-recapture sites and camera networks in place on both islands and data collected for 3 consecutive years on selected reptile and predator species 1.2 Effects of humans on iguanas is documented	1.1 Fieldwork reports, Iguana, boa and rat monitoring data 1.2 Peer reviewed publications on iguana-human interactions. 1.3 Tourism management recommendation report.	Fieldwork is not further rendered impossible through hurricanes or other natural phenomena DECR, TCNT, Ambergris Cay developers adopt and implement management recommendations for Little Water Cay and Big Ambergris Cay

iguanas, boas, humans and predators	1.3 Recommendations for managing tourists accessing Little Water Cay from neighbouring unmanaged access points made to DECR 1.4 Recommendations on conserving reptiles made to Ambergris Cay Facilities Ltd.	1.4 Reptile conservation on Big Ambergris Cay - report	
2. Biosecurity/ IAV plans developed, approved and implemented for Little Water Cay and Big Ambergris Cay	2.1 Cat presence/absence quantified by the end of the second year of fieldwork 2.2 Additional control and monitoring activities recommended in the biosecurity plan are undertaken by local staff on Little Water Cay 2.3 Rodent incursion protocol in place as part of biosecurity plan on Big Ambergris Cay 2.4 Rodent incursion protocol and biosecurity signage in place, and knowledge of importance of biosecurity increased amongst key stakeholder groups specifically tour operators on Little Water Cay 2.5 Island biosecurity plans signed off by DECR and TCNT Council. 2.6 Biosecurity policy drafted by DECR with input from the project team 2.7 Improved awareness of biosecurity among dock staff, clients and companies at South Dock 2.8 Integrated Pest Management initiated at South Dock	2.1 Results from survey data. 2.2 Management plan, annual work plan, field officer log books 2.3 Developers include biosecurity measures within applications. 2.4 Tourist operators alert tourists to importance of biosecurity using signs, publicity materials and tour scripts as part of boat trips to Little Water Cay. 2.5 MOU/statement of ongoing collaboration to maintain biosecurity DECR/TCNT/DoA 2.6 DECR submits Cabinet paper and Council minutes 2.7 Reports and feedback forms from biosecurity awareness meetings from DoA and partners 2.8 Report and photographs of pest control efforts at South Dock from DoA and partners	IAV control and biosecurity plans are properly implemented by management authorities – i.e. local technical capacity is not lost Tourist and developers continue current engagement levels with project team Feral cat eradication is fully achieved in 2019
3. Restoration/protection strategy for offshore islands following ‘rapid survey’ for reptiles and rodents.	3.1 Rapid survey methods devised by end of year 1 3.2 Rapid surveys implemented on 10 offshore cays through first, second and third project year and data shows extent of reptile and rodent populations. 3.3. Updated IUCN TCI Iguana conservation management plan – to include the iguana	3.1 Iguana and rodent rapid survey methodology written and distributed to IAV community through IUCN Invasive Species Specialist Group ‘Aliens’ list server and other similar distribution mechanisms/networks. 3.2. Report on effects of rodents on reptiles	Islands are accessible by project team Specialist group members (volunteers) willing to engage in plan development

	restoration strategy agreed by DECR/TCNT/IUCN Iguana specialists group 3.4. Baseline iguana population estimates collected on additional cays (Pine, Water, Donna, Mangrove, Fort George, Grouper, Lizard, Bird)	3.3. Published IUCN TCI iguana conservation plan 3.4. Report summarising baseline population estimates for additional cays	
4. Capacity and efficacy of personnel with the project team (in TCI and the UK) to implement essential monitoring and biosecurity activities to address invasive vertebrates increased	4.1 Project team members develop competencies outside areas of specialism at the beginning of project 4.2 Project team members confidence to address IAV issues increases through them independently developing plans/applications for future work 4.3 Improved unsupervised performance of team members	4.1 Project team feedback forms on fieldwork 4.2 Team member plans/applications for future work. 4.3 Team leaders/line managers assessment and annual appraisals.	Team members are always available for fieldwork and willing to learn new techniques. Staff retention and progression allows them to implement and share skills
5. Project managed and monitored effectively	5.1. Project monitoring plan developed in first 3 months and reviewed quarterly 5.2 Regular communication maintained between the team; biannual skype calls and annual visits and reports from managers 5.3 Annual face to face project meetings take action to address any challenges and maintain engagement of senior managers within project partners 5.4 Technical and financial reporting to RSPB and Darwin accurate and on time and to high standard.	5.1 Monitoring plan and updates. 5.2 Skype meeting minutes and project manager's reports. 5.3 Meeting action points completed, attendance list for annual meetings. 5.4 Technical and financial reports and approval notes from Darwin.	

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 Baseline and trend data for iguanas and boas, humans and predators

1.1 Detailed surveys of iguanas on Little Water Cay: including setting up transects with camera traps

1.2 Monitoring of cats deployed on Little Water Cay, using a variety of detection methods (including motion cameras), establish presence/absence on Little Water Cay
1.3 Impact assessment of human activity on iguanas
1.4 annual survey of native iguanas and boas on Big Ambergris Cay: iguanas, boas, including setting up transects with monitoring cameras
1.5 Management recommendations on tourist management and reptile conservation for LWC and BAC written and management plans updated
1.6 Research paper on human-iguana interactions

2 Development of biosecurity plans

2.1 Develop a biosecurity plan for Little Water Cay - a model for a publicly accessible island
2.2 Consultation on plan across the DECR and DoA with Ambergris Cay, planning and developers: modification as necessary and write up
2.3 Develop a biosecurity plan for Big Ambergris Cay – a model for private islands subject to development pressure
2.4 Consultation on plan, adaptation, modification, write up and sign off by DECR and Big Ambergris Cay management
2.5 Write cabinet paper for the approval of the biosecurity plans and a draft biosecurity policy with the aim of approval/sign off by TCI Government
2.6 Presentation of the biosecurity plans to Planning Department, tourist operators, boat captains, developers and home owners
2.7 Signage developed and installed for landing areas on LWC and BAC
2.8 Publicity materials on biosecurity produced for tour operators
2.9 Biosecurity awareness meeting held for South Dock staff, clients and companies
2.10 Rodent control through Integrated Pest Management initiated at South Dock

3 Rapid survey of offshore cays

3.1 Devise and deploy rapid survey methodology for rodents and iguanas to apply across at least 10 cays surrounding target sites (Donna, Mangrove, Lizard, Bird, Fort George, Grouper, Dellis, Water, Pine, Bush, Little Ambergris, Fish, Six Hills, Long, and Middleton)
3.2 Use the results to update the IUCN conservation management plan for TCI iguanas – to include consultation with the IUCN SSC Iguana Specialist Group
3.3. Research paper on effects of rats on iguanas
3.4 Collect baseline iguana population data on additional cays (Pine, Water, Donna, Mangrove, Fort George, Grouper, Lizard, Bird) prior to 2019 rodent eradication

4. Training and capacity building

4.1 Experts in each area above train others within the project team to undertake the tasks needed for successful implementation of biosecurity plans: monitoring (native wildlife and predators), ongoing surveillance, minimising the risk of introducing rodents through the transport of goods and people, and implementing incursion plans should rodents or other invasive alien vertebrates be detected on Big Ambergris Cay
4.2 Questionnaires for team members and line managers /collation of ad hoc performance feedback/ no. of new initiatives started

5. Project management/ Monitoring

5.1. At project start-up develop and agree project monitoring plan and use it as a project management tool to monitor implementation progress
5.2 Bi-annual skype or conference call for core project team to plan forthcoming work schedule ensuring boats and personnel availability coincide

5.3 Bi-annual internal (project team) technical and financial reporting to RSPB
5.4 3x annual meeting of project team and management in TCI (Providenciales) just prior to the spring fieldwork session (March/April each year) for planning and sharing of data between all project partners from subsequent years.
5.5 Mid-term evaluation with project team
5.6 Final evaluation with external consultants

Annex 2 Report of progress and achievements against final project logframe for the life of the project (<u>if your project has a logframe)</u>

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
Impact: Improved implementation of Invasive Alien Vertebrate management in TCI and increased capacity to sustain the improvement, resulting in better protection of TCI's natural assets that support the tourist industry.		*YR1: Building a strong cross government department/private-public partnership for IAV mgmt.* *YR2: Partnership expanding and developing. Remit of project has expanded to improve biosecurity on main island of TCI* YR3: Strong partnership established, first of its' kind for TCI. Local partners leading on implementing invasive alien vertebrate management. Steps made towards national biosecurity policy and legislation. Further funding secured.
Outcome The critically endangered Turks and Caicos iguana is secured through the establishment of effective biosecurity plans/invasive vertebrate control on two offshore islands, and the identification of islands for future restoration.	No. of iguanas is stable and/or increasing on two target cays from the baseline measured in the first year Incursions of invasive predators on Big Ambergris Cay (BAC) are reduced in frequency and managed effectively Management plans IAV component strengthened with clear methodologies for ground staff and timetable for IAV control activities Biosecurity plans agreed by TCNT Council, BAC management, tourist operators and developers and approved by TCI Cabinet Strategy for priority island restoration/protection published with actions agreed by the project team.	*YR1: Baseline data of iguana numbers collected on both LWC and BAC, evidence in **AR1** Due to the impacts of hurricanes and increased development, BAC now has rats and mice present, evidence in **AR1**. Biosecurity Plan for BAC has been drafted, evidence in **AR1.** 12 offshore cays surveyed for rodents/cats/reptiles, results to be used in management strategy, evidence in **AR1*** *YR2: Data analysis has shown iguana populations stable on both LWC and BAC, evidence in **AR2.** Island-wide rodent assessment completed on BAC and recommendations made. Biosecurity Plan drafted for LWC. Four cays and two islets identified for restoration in YR1 now included within concurrent restoration project* YR3: The Turks & Caicos rock iguana has been down-listed from Critically Endangered to Endangered (**Annex 6.27**) and the population is stable (**Annex 6.11**). To the best of our knowledge, invasive rodents have not established on Big Ambergris Cay in part due to successful responses. Little Water Cay's management plan has been updated to include biosecurity, and TCNT have included biosecurity within their annual budgets for the first time (**Annexes 6.7 and 6.8**). A conservation and management

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
		plan has been produced (**Annex 6.5)** which sets the future strategy and direction for further work.
Output 1. Baseline data established and short term trends identified for Little Water Cay (LWC) and Big Ambergris Cay (BAC) for iguanas, boas, humans and predators	1.1 Transect lines, capture-mark-recapture sites and camera networks in place on both islands and data collected for 3 consecutive years on selected reptile and predator species 1.2 Effects of humans on iguanas is documented 1.3 Recommendations for managing tourists accessing Little Water Cay from neighbouring unmanaged access points made to DECR 1.4 Recommendations on conserving reptiles made to Ambergris Cay Facilities Ltd.	1.1 *YR1: Two sets of four transects completed on both LWC and BAC providing baseline relative abundance of iguanas, evidence provided in **AR1.** YR2: One set of four transects completed on both LWC and BAC, evidence in **AR2.*** YR3: Annual transect data was collected for both LWC and BAC and the results have indicated the population is stable, evidence in report in **Annex 6.11**. 1.2 *YR1: Comparative sites of low and high human activity established on LWC and BAC and two Capture-Mark-Recapture surveys completed, evidence in **AR1.** YR2: road mortality surveys on BAC shown road killed iguanas doubled in 2018 compared to 2017. CMR studies expanded on LWC and BAC, evidence in **AR2**.* YR3: See Section 3.1. Iguanas were found to be much larger in areas of high human impact. The blood analysis did not provide any conclusive results. The greatest impact documented was road mortality on Big Ambergris Cay, evidenced in report in **Annex 6.11**. 1.3 YR3: Recommendations were made to DECR and TCNT through the document provided in **Annex 6.13**. Efforts to address these recommendations have been undertaken by TCNT, warden presence at Half Moon Bay, the installation of 'Iguana Etiquette / Respect Rocky' signage (evidenced in **Annex 6.14**) and ad hoc face to face engagement with tour operators. 1.4 YR3: Recommendations were made to Waterloo Investment Holdings Ltd through the document provided in **Annex 6.25** and through face to face meetings with the island manager. The road mortality dropped in early 2020 due to a reduction in the number of construction workers present on the island. The Island Manager has made reducing iguana mortality a priority and includes road rules within new staff inductions, however further efforts to implement the recommendations made are required to fully address this issue.

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
Activity 1.1 Detailed surveys of iguanas on Little Water Cay: including setting up transects with camera traps		*YR1: Two sets of four walking transects on LWC have been completed giving a baseline estimate of relative abundance of iguanas, evidence in **AR1.** YR2: One set of four transects completed, indicating stable iguana population on LWC, evidence in AR2* YR3: Annual transect data was collected for both LWC and BAC and the results have indicated the population is stable, evidence in report in **Annex 6.11**.
Activity 1.2. Monitoring of cats deployed on Little Water Cay, using a variety of detection methods (including motion cameras), establish presence/absence on Little Water Cay		*YR1: Camera trap trials have been completed which found baiting during the day ineffective, evidence in **AR1.** YR2: Opportunistic monitoring for feral cats on LWC was completed in October 2018* YR3: Intensive monitoring was completed as part of the 'Pine Cay Save the Iguana' project (evidenced in the technical report provided in **Annex 6.15**).
Activity 1.3. Impact assessment of human activity on iguanas		*YR2: Repeated road mortality surveys completed on BAC, evidence in **AR2**. CMR studies expanded in high and low human impact areas on LWC and BAC* YR3: Blood samples have not shown any conclusive negative impacts of iguanas being fed by people. Road mortality on BAC the greatest impact recorded. See Section 3.1.
Activity 1.4. annual survey of native iguanas and boas on Big Ambergris Cay: iguanas, boas, including setting up transects with monitoring cameras		*YR1: Two sets of four driving transects on BAC have been completed giving a baseline estimate of relative abundance of iguanas, evidence in **AR1.** YR2: One set of four transects completed, indicating stable iguana population on BAC, evidence in **AR2*** YR3: Annual transects and night survey data collected, indicating both iguana and boa populations are stable, as evidenced in report in **Annex 6.15**.
Activity 1.5. Management recommendations on tourist management and reptile conservation for LWC and BAC written and management plans updated		YR3: Recommendation documents produced (**Annexes 6.13 and 6.25**).

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
Activity 1.6. Research paper on human-iguana interactions		YR3: Given that the blood data analysis was inconclusive, further study is needed to fully understand the implications of iguanas being fed human food before these results will be published in the future.
Output 2. Biosecurity/ IAV plans developed, approved and implemented for Little Water Cay and Big Ambergris Cay	2.1 Cat presence/absence quantified by the end of the second year of fieldwork 2.2 Additional control and monitoring activities recommended in the biosecurity plan are undertaken by local staff on Little Water Cay 2.3 Rodent incursion protocol in place as part of biosecurity plan on Big Ambergris Cay 2.4 Rodent incursion protocol and biosecurity signage in place, and knowledge of importance of biosecurity increased amongst key stakeholder groups specifically tour operators on Little Water Cay 2.5 Island biosecurity plans signed off by DECR and TCNT Council. 2.6 Biosecurity policy drafted by DECR with input from the project team 2.7 Improved awareness of biosecurity among dock staff,	2.1 *YR2: Opportunistic monitoring completed, no sign seen on LWC. The synergistic 'Pine Cay Save the Iguana' project will intensively monitor for feral cats across Pine, Water and Little Water Cay during Q1 of YR3 which will be reported on in YR3.* YR3: Between July 2017 and August 2019, a total of 45 feral cats were captured using live traps and euthanised. The synergistic 'Pine Cay Save the Iguana' project was successful at removing all feral cats (see **Annex 6.15** for further details). 2.2 *YR1: 10 project partner staff attended biosecurity training on LWC on 10th March 2018, evidence in **AR1.** YR2: TCNT staff leading on biosecurity trials on LWC, evidence in AR2.* YR3: TCNT staff lead on biosecurity checks on LWC (evidenced by database **Annex 6.17**). 2.3 *YR1 Biosecurity plan drafted, evidence in **AR1**. Incursion response initiated in response to rat and mouse invasion, evidence in **AR1.** YR2: Island wide rodent-assessment completed, indicating rodent populations have not established. Biosecurity recommendations made to be integrated into biosecurity plan.* YR3: Biosecurity plan updated. Plan provided in **Annex 6.18**. 2.4 *YR2: Signage designed, evidenced in **AR2**, and currently being printed. Posters installed on LWC and other TCNT sites.* YR3: Signage installed (sign design in **Annex 6.14** and photographs in **Annex 6.6**). 2.5 *YR2: Drafted BAC biosecurity plan shared with DECR. Recommendations to be updated prior to sign-off following island-wide rodent assessment.* YR3: both biosecurity plans completed and provided to DECR. TCNT have integrated the plan into their management plan for LWC and into their annual budgets (**Annexes 6.7 and 6.8**). 2.6 *YR2: Links made with GB NNSS to explore possibility for support with legal drafting of biosecurity legislation.* YR3: Biosecurity policy drafted by

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
	clients and companies at South Dock 2.8 Integrated Pest Management initiated at South Dock	TCI Government (draft document in **Annex 6.10**). Drafting of biosecurity bill supported by GB NNSS. 2.7 *YR2: South Dock stakeholder meeting and presentation on biosecurity and Integrated Pest Management delivered to 12 participants from eight organisations/departments.* 2.8 YR3: Training on Integrated Pest Management delivered to 11 participants from Environmental Health Department (EHD) and Ports Authority. Included establishing rodent control at South Dock (see photos in **Annex 6.6**), which has continued to be monitored and expanded by EHD to other ports.
Activity 2.1. Develop a biosecurity plan for Little Water Cay - a model for a publicly accessible island		*YR2: Biosecurity plan drafted, evidence in **AR2**; biosecurity trails underway, with results to be integrated into Plan.* YR3: Biosecurity plan updated and finalised. Document in **Annex 6.16**.
Activity 2.2. Consultation on plan across the DECR and DoA with Ambergris Cay, planning and developers: modification as necessary and write up		YR3: LWC biosecurity plan provided to all partners for input and consultation. Hard copies of final plans in DECR and TCNT offices.
Activity 2.3. Develop a biosecurity plan for Big Ambergris Cay – a model for private islands subject to development pressure		*YR1: BAC biosecurity plan drafted, evidence in **AR1**. Meetings held with BAC Island Manager to discuss the rat and mouse invasion and a response has been initiated, evidence in **AR1**. Significant progress of implementing biosecurity in YR2 required for BAC to become a model for private islands subject to development pressure. YR2: Island wide rodent-assessment completed, indicating rodent populations have not established. Biosecurity recommendations made to be implemented.* YR3: Biosecurity plan updated. Plan provided in **Annex 6.18**.
Activity 2.4. Consultation on plan, adaptation, modification, write up and sign off by DECR and Big Ambergris Cay management		*YR1: Eight project partner staff attended biosecurity training on BAC, evidence in **AR1.** YR2: Five meetings held with BAC Island Manager, one meeting held with CEO of WIHL. Draft plan shared with DECR.* YR3: BAC biosecurity plan provided to all partners for input and consultation. Hard copies of final plans in DECR and WIHL offices.

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
Activity 2.5. Write cabinet paper for the approval of the biosecurity plans and a draft biosecurity policy with the aim of approval/sign off by TCI Government		YR3: Biosecurity policy drafted by TCI Government (draft document in **Annex 6.10**). Drafting of biosecurity bill supported by GB NNSS. Cabinet paper delayed due to impacts of Covid-19 pandemic (had planned to submit an information paper in March 2020). Will be submitted in the future when timing is more appropriate.
Activity 2.6. Presentation of the biosecurity plans to Planning Department, tourist operators, boat captains, developers and home owners		YR3: Biosecurity, including the importance of the biosecurity plans, were presented at the species conservation planning workshop in July 2019, attended by the project partners and wider stakeholders.
Activity 2.7. Signage developed and installed for landing areas on LWC and BAC		*YR2: Signage designed, **AR2,** currently being printed.* YR3: Signage installed (sign design in **Annex 6.14** and photographs in **Annex 6.6**).
Activity 2.8. Publicity materials on biosecurity produced for tour operators		*YR2: Posters installed in LWC visitor centre and other TCNT heritage sites.* YR3: Posters and signage installed (see above). biosecurity publicity materials designed but not printed due to concerns over potential for littering. Identified need for a targeted approach with tour operators, so ad hoc face to face discussions were decided to be the most appropriate approach during the project.
Activity 2.9. Biosecurity awareness meeting held for South Dock staff, clients and companies		*YR2: stakeholder meeting and presentation on biosecurity and Integrated Pest Management delivered to 12 participants from eight organisations/departments; evidence in AR2.* YR3: Completed in YR2
Activity 2.10 Rodent control through Integrated Pest Management initiated at South Dock		YR3: Training on Integrated Pest Management delivered to 11 participants from Environmental Health Department (EHD) and Ports Authority. Included establishing rodent control at South Dock (see photos in **Annex 6.6**), which has continued to be monitored and expanded by EHD to other ports.
Output 3. Restoration/protection strategy for offshore islands following 'rapid survey' for reptiles and rodents.	3.1 Rapid survey methods devised by end of year 1 3.2 Rapid surveys implemented on 10 offshore cays through first, second and third project year and data shows extent of reptile and rodent populations.	3.1 *YR1: Trial of monitoring methods completed on LWC and a protocol produced, evidence in **AR1.** YR2: Complete* 3.2 *YR1: 12 offshore cay surveys completed for rodents, cats and iguanas, five around LWC and six around BAC. Night surveys for boas were completed on Little Ambergris and Long Cay. evidence in **AR1.** YR2: Iguana presence/absence surveys completed on two cays.* YR3: Complete, evidenced in report in **Annex 6.24.** Six islands surveyed included within

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
	3.3. Updated IUCN TCI Iguana conservation management plan – to include the iguana restoration strategy agreed by DECR/TCNT/IUCN Iguana specialists group 3.4. Baseline iguana population estimates collected on additional cays (Pine, Water, Donna, Mangrove, Fort George, Grouper, Lizard, Bird).	multi-island eradication project in 2019. Further priorities identified in conservation and management plan (**Annex 6.5**). 3.3 YR3: Conservation planning workshop held over three days in July 2019. conservation and management plan setting strategy and direction for future work in **Annex 6.5**.Full notes, photographs and attendee list can be found here: 3.4 *YR2: A set of four transects were completed on Pine, Mangrove, Donna, evidence in **AR2**. Only 2 iguanas were recorded on Pine Cay, iguanas were abundant on Mangrove and Donna. Baseline iguana population estimates are now available for six of the seven cays targeted for eradication in the 'Pine Cay Save the Iguana' project.* YR3: Baselines of relative abundance of iguanas on Pine, Water, Donna, Mangrove, Fort George, Grouper, Lizard and Bird established and evidenced in report **Annex 6.11**.
Activity 3.1 Devise and deploy rapid survey methodology for rodents and iguanas to apply across at least 10 cays surrounding target sites (Donna, Mangrove, Lizard, Bird, Fort George, Grouper, Dellis, Water, Pine, Bush, Little Ambergris, Fish, Six Hills, Long, and Middleton)		*YR1: Trial of monitoring methods completed on LWC. Protocol for Offshore Cays surveys produced, see **AR1**. 12 offshore cay surveys completed for rodents, cats and iguanas, five around LWC and six around BAC. Night surveys for boas were completed on Little Ambergris and Long Cay. Evidence in **AR1.** YR2: Iguana presence/absence surveys completed on two cays (Fort George, Grouper), AR2.* YR3: Rapid survey designed, and completed across 12 offshore islands as evidenced in **Annex 6.24**
Activity 3.2 Use the results to update the IUCN conservation management plan for TCI iguanas – to include consultation with the IUCN SSC Iguana Specialist Group		YR3: The IUCN species action plan has been updated following the July 2019 workshop, with the final draft provided in **Annex 6.5**. The plan will be available online following a final review in 2020 by the IUCN's iguana specialist group.
Activity 3.3 Research paper on effects of rats on iguanas		YR3: The data collected during the project was not sufficient to demonstrate the impact of rats on iguanas. This research will continue and this project will be referenced in any future publication.
Activity 3.4 Collect baseline iguana population data on additional cays (Pine, Water, Donna, Mangrove, Fort George, Grouper, Lizard, Bird) prior to 2019 rodent eradication		*YR2: A set of four transects were completed on Pine, Mangrove, Donna, evidence in **AR2**. Only 2 iguanas were recorded on Pine Cay, iguanas were abundant on Mangrove and Donna.* YR3: Baselines of relative abundance of iguanas on

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
		Pine, Water, Donna, Mangrove, Fort George, Grouper, Lizard and Bird established and evidenced in report **Annex 6.11**.
Output 4 Capacity and efficacy of personnel with the project team (in TCI and the UK) to implement essential monitoring and biosecurity activities to address invasive vertebrates increased	4.1 Project team members develop competencies outside areas of specialism at the beginning of project 4.2 Project team members confidence to address IAV issues increases through them independently developing plans/applications for future work 4.3 Improved unsupervised performance of team members	4.1 *Project team members involved in all project activities improving cross-organisational collaborative working, evidence in **AR1.** YR2: Project team members involved in all project activities improving cross-organisational collaborative working, evidence in AR2.* YR3: See Sections 2 and 3.1. Project team members involved in all project activities improving cross-organisational collaborative working, photographic evidence is provided in **Annex 6.6**. A total of 41 people attended specific biosecurity training opportunities (evidenced with feedback forms and participant lists in **Annex 6.22**). 4.2 *Biosecurity training from experts delivered on LWC and BAC to 10 project partner staff on LWC and 8 project partner staff on BAC, evidence in **AR1.** YR2: TCNT have led on public awareness and schools outreach sharing the knowledge they have learnt through the project, see Section 9. South Dock stakeholder meeting was delivered to 12 participants from eight organisations/departments, see AR2.* YR3: See Section 3.1 Department of Agriculture developed euthanasia protocols for feral cat eradication/control (detailed in the projects' technical report, **Annex 6.15**). Additional match funding has been inputted to the project by Waterloo Investment Holdings Ltd, RSPB, San Diego Zoo and others (see Section 9). 4.3 *YR2: TCNT staff have led on biosecurity trials on LWC with guidance from RSPB, as evidenced in AR2.* YR3: EHD leading Integrated Pest Management, and development of biosecurity policy. TCNT staff leading on biosecurity checks on LWC.
Activity 4.1 Experts in each area above train others within the project team to undertake the tasks needed for successful implementation of biosecurity plans: monitoring (native wildlife and predators), ongoing surveillance, minimising the risk of introducing rodents through the transport of goods and people, and implementing incursion plans		*YR1: Project team members involved in all project activities improving cross-organisational collaborative working, evidence in **AR1.** Biosecurity training from experts delivered on LWC and BAC to 10 project partner staff on LWC and 8 project partner staff on BAC, evidence in **AR1.** YR2: Project team members involved in all project activities improving cross-organisational collaborative working, evidence in AR2.* YR3: Project team

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
should rodents or other invasive alien vertebrates be detected on Big Ambergris Cay		members involved in all project activities improving cross-organisational collaborative working, photographic evidence in **Annex 6.6**.
Activity 4.2 Questionnaires for team members and line managers /collation of ad hoc performance feedback/ no. of new initiatives started		*YR1: Feedback collected from the biosecurity training course held on LWC, evidence in **AR1**. Feedback via email and biannual conference calls, evidence in **AR1**. YR2: Feedback collected from the South Dock stakeholder meeting, evidence in **AR2**. Feedback from mid-term evaluation and biannual conference calls, evidence in AR2.* YR3: Feedback actioned through steering group meetings (**Annex 6.2**) and face to face feedback with project leader. Feedback forms compiled in **Annex 6.22**.
Output 5 Project managed and monitored effectively	5.1. Project monitoring plan developed in first 3 months and reviewed quarterly 5.2 Regular communication maintained between the team; biannual skype calls and annual visits and reports from managers 5.3 Annual face to face project meetings take action to address any challenges and maintain engagement of senior managers within project partners 5.4 Technical and financial reporting to RSPB and Darwin accurate and on time and to high standard.	5.1 *YR1: Not completed. Will be completed during first quarter of YR2. YR2: Completed in Q1 with partner input and updated quarterly.* YR3: Monitoring plan reviewed and updated quarterly by project leader (**Annex 6.1**). Any outstanding activities/outputs/evidence discussed with relevant partner. 5.2 *YR1: Project leader in regular contact with project partners via email. First bi-annual call completed in May 2017, evidence in **AR1**. Second bi-annual conference call cancelled due to hurricane impacts. YR2: Project leader in regular contact with project partners via email, WhatsApp, phone and skype calls. Two conference call steering group meetings were held; in July 2018 and Feb 2019, evidenced in AR2.* YR3: Project leader in regular contact with project partners via email, WhatsApp, phone and skype calls. One steering group meeting held, one workshop with all partners present. 5.3 *YR1: Face-to face meetings completed with all project partners in April 2017 by previous project leader, Elizabeth Radford, and in March 2018 by current project leader. YR2: Face-to face meetings completed with all project partners in October 2018 and March 2019, evidenced in AR2.* YR3: Face-to face meetings completed with all project partners in July 2019 and January 2020. 5.4 *YR1: Project technical reporting from project partners for YR1 have been received by RSPB, evidence in **AR1**. Some financial reporting from project partners is still outstanding. Darwin reporting completed and submitted by the deadline. YR2: Project technical reporting from project partners for YR2 have been received by RSPB. Some financial reporting*

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
		from project partners is still outstanding. Darwin reporting completed and submitted by the deadline. YR3: Impact of Covid-19 pandemic delayed partner reporting, so agreed revised reporting deadline with Darwin. Project technical reporting from project partners for YR3 have been received by RSPB. Darwin reporting completed and submitted by the agreed deadline.
Activity 5.1 At project start-up develop and agree project monitoring plan and use it as a project management tool to monitor implementation progress		*YR1: Not completed. Will be completed during first quarter of YR2. YR2: Completed plan in Q1 with partner input and updated quarterly (evidence AR2).* YR3: Reviewed and updated quarterly by project leader (see **Annex 6.1**)
Activity 5.2 Bi-annual skype or conference call for core project team to plan forthcoming work schedule ensuring boats and personnel availability coincide		*YR1: First bi-annual call completed in May 2017, evidence in **AR1**. Second bi-annual conference call cancelled due to hurricane impacts. YR2: Two conference call steering group meetings were held; in July 2018 and Feb 2019, in addition to Activity 5.5. These meetings were minuted (evidence in **AR2**) and actions for each partner identified.* YR3: One steering group meeting held in year 3. Full project steering group meeting notes provided in **Annex 6.1**
Activity 5.3 Bi-annual internal (project team) technical and financial reporting to RSPB		*YR1: First bi-annual reporting for in-Territory partners postponed due to hurricane impacts Project technical reporting from project partners for YR1 have been received by RSPB, evidence in **AR1**. Some financial reporting from project partners is still outstanding. However, some were not received until significantly after the deadline set within the contract, which increases the pressure on the project leader and finance manager. YR2: Project technical reporting from project partners for YR2 have been received by RSPB. Delays in financial reporting.* YR3: Impact of Covid-19 pandemic delayed partner reporting, so agreed revised reporting deadline with Darwin. Project technical reporting from project partners for YR3 have been received by RSPB. Darwin reporting completed and submitted by the agreed deadline.
Activity 5.4 3x annual meeting of project team and management in TCI (Providenciales) just prior to the spring fieldwork session (March/April each year) for planning and sharing of data between all project partners from subsequent years.		*YR1: The Project launch was completed in April 2017 (**AR1**). An annual meeting was not planned prior to the March 2018 trip due to the impacts of Hurricanes Irma. YR2: A project partners meeting was held in October 2018, which formed the mid-term evaluation (Activity 5.5) which discussed*

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
		results and fieldwork/activities for upcoming year, evidence in AR2. YR3: Meetings held in July 2019 and January 2020 as covered above.
Activity 5.5 Mid-term evaluation with project team		*YR2: A mid-term evaluation was held in TCI on 31 October which was attended by all project partners* ***Complete***
Activity 5.6 Final evaluation with external consultants		YR3: An external consultant was contracted to complete the evaluation in February 2020, with the output report provided in **Annex 6.4**.

Annex 3 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
1	Number of (i) students from the UKOTs; and (ii) other students to receive training (including PhD, masters and other training and receiving a qualification or certificate)	(i) 0 (ii) 1
2	Number of (i) people in UKOTs; and (ii) other people receiving other forms of long-term (>1yr) training not leading to formal qualification	(i) 0 (ii) 0
3a	Number of (i) people in UKOTs; and (ii) other people receiving other forms of short-term education/training (i.e. not categories 1-5 above)	(i) 62 (ii) 23
3b	Number of training weeks (i) in UKOTs; (ii) outside UKOTs not leading to formal qualification	(i) 8 (ii) 0
4	Number of types of training materials produced. Were these materials made available for use by UKOTs?	6 - Training materials were provided to TCI partners.
5	Number of UKOT citizens who have increased capacity to manage natural resources as a result of the project	18
Research Measures		
9	Number of species/habitat management plans/ strategies (or action plans) produced for/by Governments, public authorities or other implementing agencies in the UKOTs	3
10	Number of formal documents produced to assist work in UKOTs related to species identification, classification and recording.	3
11a	Number of papers published or accepted for publication in peer reviewed journals written by (i) UKOT authors; and (ii) other authors	0
11b	Number of papers published or accepted for publication elsewhere written by (i) UKOT authors; and (ii) other authors	0
12b	Number of computer-based databases enhanced (containing species/genetic information). Were these databases made available for use by UKOTs?	1 - San Diego Zoo's reptile database enhanced and shared with TCI Government.
13a	Number of species reference collections established. Were these collections handed over to UKOTs?	0

Code	Description	Totals (plus additional detail as required)
13b	Number of species reference collections enhanced. Were these collections handed over to UKOTs?	1 - Plant collections from Little Water Cay collected by TCI Government.
Dissemination Measures		
14a	Number of conferences/seminars/workshops/stakeholder meetings organised to present/disseminate findings from UKOT's Darwin project work	6
14b	Number of conferences/seminars/ workshops/stakeholder meetings attended at which findings from the Darwin Plus project work will be presented/ disseminated	2
Physical Measures		
20	Estimated value (£s) of physical assets handed over to UKOT(s)	
21	Number of permanent educational/training/research facilities or organisation established in UKOTs	0
22	Number of permanent field plots established in UKOTs	4
23	Value of resources raised from other sources (e.g., in addition to Darwin funding) for project work	

Annex 4 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. weblink, contact address, annex etc)
Webpage	Iguana Islands website, Lee Pagni, 2019.	American	-	Male	-	
Action Plan*	Conservation Management Plan for the Turks & Caicos rock iguana (2020-2024). Havery, S., Gerber, G. & Pagni, L. (2020).	British	British	Female	IUCN	
Manual*	Biosecurity Plan for Little Water Cay, Turks and Caicos Islands: Incorporating Prevention, Surveillance and Incursion Response. Varnham, K. (2020).	British	British	Female	-	
Manual*	Biosecurity Plan for Big Ambergris Cay, Turks and Caicos Islands: Rodents and other mammals. Varnham, K. (2019).	British	British	Female	-	
Children's book*	Sarai Saves the Cay, Zimmermann, A., Avenant, A. & Higgs, D (2019).	Turks & Caicos	Turks & Caicos	Female	-	

Annex 5 Darwin Contacts

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Annex 6 Supplementary material (optional but encouraged as evidence of project achievement)

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.	Yes
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.	No
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.	Yes
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.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	