

Darwin Plus: Overseas Territories Environment and Climate Fund

Final Report

***Important note** To be completed with reference to the Reporting Guidance Notes for Project Leaders:
it is expected that this report will be a maximum of 20 pages in length, excluding annexes*

Darwin Project Information

Project reference	DPLUS041
Project title	Creating a Terrestrial Action Plan for the Chagos Archipelago
Territory(ies)	British Indian Ocean Territory
Contract holder Institution	Chagos Conservation Trust
Partner institutions	British Indian Ocean Territory Administration, ZSL, RBG Kew, IUCN, RSPB
Grant value	£243,074
Start/end date of project	1 st April 2016-31 March 2018 (later potentially extended to 30 th Sept 2019 – though this extension has not now been needed)
Project leader name	Peter Carr
Project website/Twitter/blog etc.	www.chagos-trust.org
Report author(s) and date	Peter Carr (CCT), Helen Pitman (CCT), Alistair Gammell (CCT), Colin Clubbe (RBG Kew), Martin Hamilton (RBG Kew), Heather Koldewey (ZSL), Paul Pearce-Kelly (ZSL), Rachel Jones (ZSL), 11 December 2017.

1 Project Overview

The Chagos Archipelago, also known as the British Indian Ocean Territory (BIOT), is located in the central Indian Ocean and lies about 1,770km east of Mahe (the main island of the Seychelles).

Whilst the marine environment of the Chagos Archipelago is comparatively healthy (though in common with marine areas worldwide being impacted by climate change), there are concerns about the ecological health of the islands, which have been negatively impacted by the direct and indirect consequences of the arrival of humans and by their subsequent exploitation over the past 250 years.

All of the 55 islands of the archipelago are affected by invasive alien species, with rats being the greatest problem on over 50%.



In addition, 'coconut chaos' affects many islands, whereby unmanaged coconut plantations from a historical copra production industry have become rampant and created a monoculture environment. The result has been a marked difference in biodiversity between islands with rats and unmanaged plantations and those that remained less impacted by man, therefore still having native forest and no rats.

Since the restoration of these damaged islands through the removal of the former plantations and their replacement by native forest, and by the eradication of the rats, is perfectly feasible, this project had as its objective the production of a prioritised and costed *Terrestrial Action Plan for the Chagos Archipelago* with emphasis upon invasive species management.

It addressed the following priorities for action identified in the BIOT Interim Conservation Management Framework (September 2014):

- Section 1 – “Understanding and Interpreting the Environments”. Specifically, “Establish detailed baselines for terrestrial environments”;
- Section 2 - “Conserving wildlife and habitats”. Specifically, 1). Develop terrestrial management plans for outer islands, including identification and recommendations for ongoing or future restoration or ecological improvement. 2). Undertake a field-based review of habitat restoration projects underway on DG. 3). Produce an official list of ‘pest’ species.

2 Project Stakeholders/Partners

The key stakeholder was the British Indian Ocean Territory Administration (BIOTA) and through them, the UK government. During Year 1 of the project CCT met roughly every six weeks with BIOT administrator and environment officer to discuss general CCT activities, which included progress of this project, the availability of the new BIOT Patrol Vessel and expedition dates.

During the application process BIOTA agreed to provide the BIOT Patrol Vessel for 21 days as an in kind contribution to the project, which would allow an expedition to occur. The original vessel was decommissioned unexpectedly after the start of project resulting in an 11-month gap between decommissioning of the old vessel and commissioning of the new vessel.

The main challenges were initially the absence of any vessel and later, the costs, availability and use of the new BIOT Patrol Vessel, which resulted in numerous postponements to the dates for the expedition. Additionally, securing time with BIOTA to conduct a planning workshop, due to time limitations of their small team and multiple staff changes throughout the life of the project.

In an attempt to understand and resolve difficulties in establishing the use of the new BIOT Patrol Vessel and expedition dates, a teleconference involving the deputy commissioner for the BIOT and acting BIOT administrator took place on 29/06/2017.

This established that both the number of days available and the dates they would be available were heavily constrained due to the much higher costs of the new vessel and because it was required for other tasks. To extend the number of days to the original promised number, CCT could if it wished, pay an additional £8000/day plus fuel to secure the vessel. This would have amounted to about £90,000 and was financially not an option.

The other stakeholders were representatives from ZSL, RSPB, RBG Kew, an invasive species eradication specialist and an IUCN Red List specialist. All stakeholders were part of the Chagos Atoll Restoration Expedition (CAREX) team and participated in regular meetings during Q1-3 of Year 1 of the project.

CAREX meetings

Team meetings were held at ZSL and RGB Kew across Q1-3 of Year 1 (Evidence: Annex 6, Doc 1). Each meeting included discussions on expedition planning, project deliverables and project timelines during the first year. These regular meetings were crucial and kept all stakeholders up to date and allowed re-evaluation of the project timelines as the planned

expedition was postponed a number of times.

Kew hosted two dedicated project meetings in July and September 2016 to develop the methodology and elicit feedback and specialist input from CCT and the project partners on the development of bespoke vegetation maps (Evidence: Annex 6, Doc 2).

ZSL hosted a dedicated project meeting in September 2016 to discuss the development of species profiles and standard survey methods for the invertebrate taxa groups and an extensive invertebrate database that would form the core reference tool for the survey work and specimen material (Evidence: Annex 6, Doc 6).

The team members from CCT, ZSL and RBG Kew visited the RSPB in November 2016 to meet with island eradication specialists to discuss modification of the RSPB island prioritisation methodology to incorporate plants and invertebrates.

Stakeholder participation

Stakeholders were asked to provide articles on project work that have been used for the CCT website, social media and e-newsletter.

The RBG Kew team was invited to present at the Chagos Conservation Trust event in January 2017. Following a lecture about plant surveys, maps developed for the CAREX project were displayed and participants could discuss BIOT vegetation with the RBG Kew experts on the day. (Evidence: Annex 6, Doc 3).

CAREX planning workshop

A planning workshop was scheduled for January 2017 at which all team members were to present their work to-date and participate in the development of a detailed expedition plan. Unfortunately, because the expedition had been delayed multiple times due to complications with the BIOT Patrol Vessel and no new date in prospect, this workshop was postponed and eventually cancelled.

3 Project Achievements

3.1 Outputs

Output 1: Produce biosecurity recommendations for visitors to the northern atolls

This output has been successfully completed despite the expedition phase of the project being cancelled. The expedition was to provide the opportunity to ground-truth the biosecurity recommendations. Fortunately the biosecurity expert contracted to undertake this work has field experience of the Chagos Archipelago and was therefore capable of producing the output without the expedition.

The biosecurity recommendations provide a background to the current situation on the northern Chagos atolls with regard to invasive alien species and suggests practical and sustainable tasks required to initiate biosecurity. During the first year of this project biosecurity recommendations were submitted to BIOTA (Evidence: Annex 6, Doc 4. Full Report Attachment 1).

Output 2: Produce an IUCN sponsored National Red List for BIOTA

This output was not completed because the expedition phase of the project did not go ahead. The expedition was critical to the output as it was through fieldwork that the Red List was to be ground-truthed. However significant academic work has been completed towards the Red List that has vastly increased the knowledge of the flora and fauna of BIOT. The two most significant contributions were made by RBG Kew for plants and ZSL for invertebrates.

In preparing the flora section of the Red List RBG Kew staff have updated the UKOTs Species and Specimens Database (held at Kew) with all available BIOT plant records. 2548 new records were processed during Year 1 comprising 11 new herbarium vouchers and 2537 observation records mostly derived from data collected by Dr. Colin Clubbe during the 2010

Chagos Archipelago expedition. There are currently 3262 botanical records comprising 719 herbarium vouchers and 2543 observation records. Further, an updated draft of the BIOT plant species checklist (Evidence: Attachment 2) was prepared based on the new records in the UKOTs Species and Specimens Database along with the checklist of the plants of BIOT first produced in 2009, which was based on the holdings of Kew and the collections and field notes of Commander John Topp.

In addition, RBG Kew's field data collection GIS system, that was first developed for use during the 2010 expedition, was updated to include new recording forms and all botanical records available in the UKOTs Species and Specimens Database.

The ArcPad software based GIS was to be used by RBG Kew staff during the expedition to collect voucher and observation data for inclusion in the UKOTs Species and Specimens Database, inform the development of the terrestrial action plan and provide ground-truthing.

RBG Kew have also produced a set of vegetation maps using satellite imagery, expert input and available plant location data to provide a baseline for future conservation actions, particularly the terrestrial rehabilitation of the Chagos Archipelago (Evidence: Attachment 4).

All of the above efforts by RBG Kew have significantly improved the knowledge of flora and the ability to record and monitor it in the future (Evidence: Attachment 3).

Working on the invertebrate section, ZSL experts conducted an extensive literature search for information on BIOT's terrestrial and littoral invertebrates leading to the first ever BIOT invertebrate database. The review covered 503 native and non-native species spanning 30 different Orders, involving considerable research to reconcile taxonomic conflicts in the 1905 Percy Sladen Trust Expedition, Natural History Museum, Barnett & Emms, Stoddart and Lunde data. This most comprehensive database is a significant pillar to be built upon in the future (Evidence: Annex 6, Doc 6).

CCT contracted Dr. Justin Gerlach as the IUCN Red List specialist. To assist planning for the delivery of the Red List assessments of the different taxonomic groups being studied by the project, Dr. Gerlach developed a data recording form (Evidence: Annex 6, Doc 5) that can be utilised in the future if required.

Output 3: Produce an overview of the sequence of events required for the terrestrial rehabilitation of the Chagos Archipelago for conservation

This output was not achieved because the expedition phase of the project did not materialise. The expedition was critical to the output as it provided the opportunity to ground-truth any proposed rehabilitation measures.

Output 4: Produce a prioritised list of the terrestrial management requirements by island with costs

Similar to Output 3, this output was not achieved because the expedition phase of the project did not materialise. The expedition was critical to the output as it provided the opportunity to ground-truth any proposed prioritisation of islands. However, progress has been made towards prioritising BIOT islands for restoration using a scientifically credible methodology.

In 2014 the RSPB released a 'prioritised framework for island restoration' paper prioritising islands in the UK Overseas Territories for restoration activities. One of the senior authors was Dr. Steffan Oppel. Following a series of meetings with Dr. Oppel and other restoration experts in the RSPB, it was agreed that the R script used in the 2014 paper could be enhanced (to include more taxon, e.g. plants and invertebrates) and used free of charge to prioritise islands in BIOT. This script remains with the RSPB but can be called upon in the future to prioritise islands in BIOT if required. Any prioritisation resulting from the script would have to be ground-truthed prior to being adopted as policy.

Output 5: Produce an island by island TAP, including a scientific base-line of the biodiversity of each island, an idealised future state and, the specific details required to rehabilitate and/or manage an island

This output was unable to progress due to the expedition phase of project being cancelled.

3.2 Outcome

The outcome of this project was to produce a scientifically credible, peer reviewed, prioritised and costed Terrestrial Action Plan for the Chagos Archipelago.

Although significant work has been completed, the major element of the project was to undertake a 21 day expedition using the BIOT Patrol Vessel to the islands of the northern atolls with the purpose of surveying them to ground-truth the preceding data collection and analysis.

These 21 days were to be made available as an in-kind contribution by the BIOTA, the key stakeholder of the application. Unfortunately, BIOTA decommissioned BIOT Patrol Vessel one month after CCT received the Darwin Plus grant. The original August 2016 expedition date was then cancelled and it was suggested it could be rescheduled for November 2016. This did not eventuate because the new vessel was not secured for BIOTA until February 2017.

The new vessel proved significantly more expensive to operate, which led to BIOTA making clear that a maximum of 11 days of use was all that would be available for an expedition. At the time of the project's submission the non-availability of the patrol vessel was identified as an important assumption, though not one that at that time seemed to be a high risk.

Eleven days was not sufficient to complete the work required. This along with the uncertainty of when BIOTA could make the vessel available, due to its other duties, made scheduling impossible.

The islands of the BIOT are only accessible by boat and as such CCT had partnered with the BIOTA for this project with their main contribution being the BIOT Patrol Vessel.

As a result of this vessel being unavailable both for the time required to undertake the necessary work and on dates agreed sufficiently far in advance to allow project partners to schedule their availability, this element, which was a vital component of the project, had to be cancelled and the project terminated.

Throughout the negotiation process with BIOTA, CCT kept the Darwin Initiative informed through email and phone calls and submitted two change requests, both were approved, based on the alternations to the project timeline.

3.3 Long-term strategic outcome(s)

The development of a Terrestrial Action Plan would have provided the first comprehensive survey of the islands that could have been used as a benchmark for future rehabilitation and restoration projects. Whilst this output won't be delivered through this Darwin Plus grant, the associated research and data collection compiled through the life of the project provides a useful resource. There are:

- Biosecurity recommendations for the northern atolls (Attachment 1)
- Vegetation maps of 30 islands (Attachment 4)
- An updated BIOT plant species checklist (Attachment 2)
- An invertebrate database (Evidence: Annex 6, Doc 6)
- An agreement with the RSPB for the use of a script to prioritise islands for restoration
- A list of islands drawn up by RSPB as priorities for assessing

The first four resources will be available publicly through the Chagos Information Portal, a reference library of science, research and conservation work conducted in the Chagos Archipelago, and for BIOTA to integrate into a future conservation management framework. The use of RSPB's prioritisation and list of islands will be available from RSPB.

CCT will also be able to use these resources to develop a habitat restoration programme that it will look to fund in the future.

The amount of work conducted by the CAREX team was significant and has been delivered on a fraction of the original budget.

4 Sustainability and Legacy

Although the overall output was not achieved the associated research and data compiled by the CAREX team is the project's legacy and will be available through the Chagos Information Portal.

No project staff were hired specifically for this project.

5 Lessons learned

Overall the CAREX team, minus BIOTA, all had the same vision for this project and communication between team members worked well.

The principal lesson learnt from this project has been the difficulties in partnering with an overseas territory government (BIOTA) in which the workforce changes frequently and for which it sometimes appears that the calls of an environmental project are (perhaps understandably) a secondary consideration against other demands they face (such as political or financial demands).

This resulted in agreements made during the project application process being changed or challenged by successors to the detriment of the project, e.g. the amount of time the BIOT Patrol Vessel was allocated to the project, the interpretation of the words written in the application, *etcetera*.

CCT should have better documented the agreements reached with BIOTA staff over the contributions to be provided. The lack of such clear concise documentation was, with hindsight, undoubtedly an error on CCT's part.

CCT could have chosen not to have relied on the availability of BIOT Patrol Vessel. That however would have entailed budgeting for the hire of an independent vessel, which would have implied a budget increase of £100,000-£200,000 most of which (assuming the project had still been Darwin funded) would have to have been borne by Defra.

CCT has learnt a great deal through this experience and will be more precise along the lines suggested above in its approach to partnering with BIOTA in the future, but since it wants to undertake conservation work in BIOT and be collaborate with BIOTA and others, this is not always easy.

5.1 Monitoring and evaluation

CCT monitored progress and outputs against its project plan, but due to the cancellation of the expedition, there was no formal M&E undertaken.

5.2 Actions taken in response to annual report reviews

Review comments relating to the termination of the project in the light of difficulties in undertaking the expedition were noted and when these difficulties persisted, were acted on.

6 Darwin Identity

CCT and the project partners were very active during the first year of the project publicising the Darwin Initiative and the funded project online. (Evidence links below and Annex 6, Document 7)

Funding announcement

The initial announcement was covered on the CCT and CCT-US' websites and through a direct mail to supports and members:

[Direct mail to 150 supporters and members](#)

[CCT news announcement](#)

CCT-US news announcement

News stories

A number of news stories and blogs were published throughout the year:

Preparing for the Chagos Archipelago expedition

Pinning Down the Terrestrial Invertebrates of BIOT

The land crabs of the Chagos Archipelago

E-news

Three edition of CCT's e-newsletter featured the project:

April 2016

August 2016

November 2016

Social media:

Five posts on Facebook featuring the Darwin Initiative

Seven Tweets featuring the Darwin Initiative

CCT annual event

Darwin Initiative logo was displayed prominently at the event held at ZSL in January 2017. RBG Kew had a stand where participants could discuss the maps developed for the project.

7 Finance and administration

Project spend (indicative) since last annual report	2017/18 Grant (£)	2017/18 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs			-100%	Due to the termination of the project no salaries were paid in Year 2.
Consultancy costs			-100%	Due to the termination of the project no consultancy fees were paid in Year 2.
Overhead Costs			-75%	Due to the termination of the project overhead costs were only recovered for Q1 of Year 2. This was to cover project management through the termination process.
Travel and subsistence			0	Due to the termination of the project the expedition associated travel and subsistence costs were unused.
Operating Costs			0	
Capital items			0	
Others			-100%	Due to the termination of the project other associated were unused.
TOTAL	102,830	4006	-97%	

7.1 Project expenditure

Staff employed (Name and position)	Cost (£)
N/A: Due to the termination of the project no salaries were paid in Year 2.	0

TOTAL	0
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Consultancy – description of breakdown of costs	Other items – cost (£)
N/A: Due to the termination of the project no consultants were paid in Year 2.	0
TOTAL	0

Capital items – description	Capital items – cost (£)
N/A	0
TOTAL	0

Other items – description	Other items – cost (£)
N/A: Due to the termination of the project other associated were unused.	0
TOTAL	0

7.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
CCT Project Leader Salary	
Freelance salary	
IUCN salary	
CCT-US invasive plant salary	
Royal Society for the Protection of Birds salary	
Zoological Society London salary	
Chagos Conservation Trust administration	
British Indian Ocean Territory Administration	
MO personal contribution	
ZSL consultancy	
TOTAL	209,450

Source of funding for additional work after project lifetime	Total (£)
N/A	
TOTAL	

7.3 Value for Money

The Chagos Marine Reserve is one of the largest and most biologically diverse protected areas under the UK's jurisdiction. The islands have been negatively impacted by the direct and indirect consequences of the arrival of humans and by their subsequent exploitation over the past 250 years.

The restoration of these damaged islands through the removal of the former plantations and their replacement by native forest, and by the eradication of the rats, is perfectly feasible, and this project had as its objective the production of a prioritised and costed *Terrestrial Action Plan*

for the Chagos Archipelago with emphasis upon invasive species management.

Though the project did not achieve its overall objective due to the unavailability of the patrol vessel for sufficient time to undertake the requisite surveys, the project completed a number of outputs which improve our knowledge of the biodiversity of these islands and which will be invaluable building blocks for future expeditions and conservation work.

The biosecurity recommendations and archipelago-wide rat eradication plan have been submitted to BIOTA and are available for their use. The enhancement of the knowledge of BIOT flora and the creation of an extensive invertebrate database for the territory is near-priceless.

Thirty islands now have detailed vegetation maps for the first time that can be utilised by BIOTA and other institutions or organisations looking to conduct research and conservation projects in the future.

The expertise and time required to produce these outputs is significant and came with extreme value for money. The preparatory, behind the scenes work undertaken as part of the project has left a strong legacy that can be called upon at any time in the future, should funds and a vessel become available and the will to create a terrestrial management plan for BIOT rejuvenated.

All of this was achieved for only 33% of the original project's budget.

By close liaison between the project partners, BIOTA, Darwin Initiative, and Defra clear decisions were taken once it became clear that the availability of the vessel was a problem, and this avoided wasting money on an expedition that would have failed to achieve the objective.

Annex 1 Project's original (or most recently approved) logframe (if your project has a logframe), including indicators, means of verification and assumptions. N.B. Insert your full logframe. If your logframe has changed since your application and was approved by a Change Request the newest approved version should be inserted here, otherwise insert the Stage 2 logframe. 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: That the future terrestrial management of the Chagos Marine Reserve is undertaken in a prioritised manner and based upon scientifically credible information against known costs.			
<p>Outcome:</p> <p>To produce for the BIOTA a scientifically credible, peer reviewed, prioritised and costed Terrestrial Action Plan for the Chagos Marine Reserve.</p>	<p>The acceptance by BIOTA of the Terrestrial Action Plan within the allotted timeframe</p>	<p>Verification will be achieved through the implementation of the TAP in to future BIOTA environmental management plans</p>	<p>0.1 That BIOTA continues to function as is 0.2 That no major ecological / environmental changes occur in BIOT in the near-term future to render the TAP outdated 0.3 That the level of military activity on Diego Garcia does not prevent the expedition to the northern atolls mounting through there 0.4 That the BIOT Patrol Vessel remains on station, available and capable of assisting a 12 person terrestrial expedition 0.5 That key personnel or substitutes if required remain available for the project These assumptions are valid for all outputs</p>
<p>Output 1 Produce biosecurity recommendations for visitors to the northern atolls (including a list of pest species)</p>	<p>1.1 The minimisation or cessation of further deliberate or accidental introductions of terrestrial species to the northern atolls</p>	<p>1.1 Peer review of the TAP by BIOTA and independent scientists to verify the inclusion of biosecurity recommendations and their viability and credibility 1.2 Future monitoring and evaluation of the northern atolls to assess if further introductions have occurred after the implementation of the recommendations</p>	<p>1.1 That BIOTA will accept and enforce the biosecurity recommendations 1.2 That BIOTA will continue to conduct visits by the Chief Scientific Advisor and Environmental Officer to assess, where possible and practical, whether further invasions have occurred 1.3 That BIOTA will continue to allow interested parties (e.g. CCT, RBG Kew,</p>

			RSPB) to monitor the northern atolls
Output 2 Produce an IUCN sponsored Regional Red List for BIOTA	2.1 The prioritised protection and conservation of species identified in the Regional Red List	2.1 Peer review by IUCN, independent scientists and BIOTA to ensure the RRL has been produced and is credible 2.2 Future monitoring of the northern atolls to assess the ongoing status of the flora and fauna versus RRL status	2.1 That BIOTA will continue to conduct visits by the Chief Scientific Advisor and Environmental Officer to monitor, where practical and possible, the status of the flora and fauna present 2.2 That BIOTA will continue to allow interested parties (e.g. CCT, RBG Kew, RSPB) to monitor the flora and fauna of the northern atolls 2.3 That IUCN continue to support the concept of an RRL for the Chagos and ensure the availability of the nominated IUCN representative or substitute if required 2.4 That the identification and RRL status of the majority of the specimens collected can be ascertained
Output 3 Produce an overview of the sequence of events required for the terrestrial rehabilitation of the Chagos Archipelago for conservation	3.1 The sequential rehabilitation of the terrestrial environment of the Chagos Archipelago	3.1 Peer review of the TAP by BIOTA and independent scientists to verify the inclusion of the sequence of events for the terrestrial rehabilitation of the Chagos Archipelago, their viability and credibility 3.2 Monitoring of the northern atolls to assess the impacts of future sequential ecological interventions	3.1 That the terrestrial expedition to gather the data gaps required for the production of the sequence of events table is undertaken early enough within the project lifetime in order for the TAP to be written within the allocated timeframe 3.2 That monitoring of the flora and fauna of the Chagos Archipelago continues
Output 4 Produce a prioritised list of the terrestrial management requirements by island with costs	4.1 The prioritised intervention and management of the Chagos Archipelago undertaken to known costs	4.1 Peer review of the TAP by BIOTA and independent scientists to verify the inclusion of the prioritised list and cost of terrestrial management requirements and their viability and credibility 4.2 Monitoring of the northern atolls to assess the impacts of future ecological interventions and management	4.1 That BIOTA will continue to monitor the flora and fauna of the Chagos Archipelago 4.2 That the terrestrial expedition to gather the data gaps is undertaken early enough within the project lifetime in order for the TAP to be written within the allocated timeframe

			4.3 That key personnel or substitutes remain available for the duration of the programme
Output 5 Produce an island by island TAP, including a scientific base-line of the biodiversity of each island, an idealised future state and, the specific details required to rehabilitate and/or manage an island	5.1 Future prioritised and costed terrestrial management of the islands of the Chagos Archipelago	5.1 The production of a peer reviewed Terrestrial Action Plan	5.1 That BIOTA implement the TAP in to future environmental management plans 5.2 That outputs 1 – 4 are successful
<p>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)</p> <p>1.1 Recruit biosecurity specialist (Dr. Grant Harper)</p> <p>1.2 Undertake fieldwork</p> <p>1.3 Undertake analysis and consult local experts (British Representative, BIOT Environmental Officer, Master BPV etc.)</p> <p>1.4 Write biosecurity instructions for peer review</p> <p>1.5 Incorporate peer reviewed instructions in to the TAP</p> <p>2.1 Recruit IUCN Regional Red List specialist (Dr. Justin Gerlach)</p> <p>2.2 Train expedition members in the information gathering requirement to produce an IUCN-sponsored RRL</p> <p>2.3 Undertake fieldwork</p> <p>2.4 Undertake data analysis including of relevant scientific publications</p> <p>2.5 Construct RRL</p> <p>2.6 Submit RRL to UICN for endorsement</p> <p>2.7 Incorporate IUCN endorsed RRL in to TAP</p> <p>3.1 Recruit terrestrial management specialists</p> <p>3.2 Undertake literature reviews to identify knowledge gaps</p> <p>3.3 Undertake fieldwork</p> <p>3.4 Undertake data analysis</p> <p>3.5 Produce output for inclusion in the TAP for peer review</p> <p>4.1 Recruit terrestrial management specialists</p> <p>4.2 Undertake literature reviews to identify knowledge gaps</p> <p>4.3 Undertake fieldwork</p> <p>4.4 Undertake data analysis</p> <p>4.5 Produce output for inclusion in the TAP for peer review</p> <p>5.1 Agree TAP template</p> <p>5.2 Co-ordinate data from outputs 1 – 4</p> <p>5.3 Draft TAP and submit to BIOTA and independent scientists for peer review</p> <p>5.4 Produce final output for submission to BIOTA</p>			

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

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
<p>Impact</p> <p>That the future terrestrial management of the Chagos Marine Reserve is undertaken in a prioritised manner and based upon scientifically credible information against known costs.</p>		<p>Regardless of the difficulties in achieving the expedition component of the project there have been some significant achievements and progress has been made in regards to scientifically credible information being researched and compiled.</p>
<p>Outcome</p> <p>To produce for the BIOTA a scientifically credible, peer reviewed, prioritised and costed Terrestrial Action Plan for the Chagos Marine Reserve.</p>	<p>The acceptance by BIOTA of the Terrestrial Action Plan within the allotted timeframe.</p>	<p>Due to the expedition component of the project not occurring the overall outcome was not achieved but progress was significant especially with activities such as recruitment, literature reviews and data analysis.</p> <p>All the outputs will be handed over to BIOTA as resources for a future conservation management framework.</p> <p>This has placed the CCT and partner organisations in a good position for a successful Chagos Atoll Restoration Expedition in the future.</p>
<p>Output 1.</p> <p>Produce biosecurity recommendations for visitors to the northern atolls (including a list of pest species)</p>	<p>The minimisation or cessation of further deliberate or accidental introductions of terrestrial species to the northern atolls</p>	<p>During the first year of the project recommendations were developed using prior experience in BIOT and extensive knowledge and experience globally of biosecurity and submitted to CCT.</p>
<p>Activity 1.1 Recruit biosecurity specialist</p>		<p>Complete (Evidence provided in section 3.1 of report)</p>
<p>Activity 1.2 Undertake fieldwork</p>		<p>Due to problems with access to the BIOT Patrol Vessel and approval to enter the BIOT no fieldwork was undertaken prior to the termination of the project.</p>
<p>Activity 1.3 Undertake analysis and consult local experts</p>		<p>Due to problems with access to the BIOT Patrol Vessel and approval to enter the BIOT no analysis of fieldwork or local expert consultation was undertaken prior to the termination of the project.</p>
<p>Activity 1.4 Write biosecurity instructions for peer review</p>		<p>Biosecurity recommendations developed and peer reviewed but completion post expedition will not be possible within this project.</p>

Output 2. Produce an IUCN sponsored Regional Red List for BIOTA	The prioritised protection and conservation of species identified in the Regional Red List	An updated draft of the BIOT plant species checklist (Evidence Attachment X) was prepared and to assist planning for the delivery of the Regional Red List assessments of the different taxonomic groups being studied by the project a data recording form was developed.
Activity 2.1 Recruit IUCN Regional Red List specialist		Complete
Activity 2.2 Train expedition members in the information gathering requirement to produce an IUCN-sponsored RRL		Complete
Activity 2.3 Undertake fieldwork		Due to problems with access to the BIOT Patrol Vessel and approval to enter the BIOT no fieldwork was undertaken prior to the termination of the project.
Activity 2.4 Undertake data analysis including of relevant scientific publications		Complete
Activity 2.5 Construct RRL		Not completed due to no fieldwork being undertaken prior to the termination of the project.
Activity 2.6 Submit RRL to IUCN for endorsement		Not completed due to no fieldwork being undertaken prior to the termination of the project.
Activity 2.7 Incorporate IUCN endorsed RRL in to TAP		Not completed due to no fieldwork being undertaken prior to the termination of the project.
Output 3. Produce an overview of the sequence of events required for the terrestrial rehabilitation of the Chagos Archipelago for conservation.	The sequential rehabilitation of the terrestrial environment of the Chagos Archipelago	This output was not achieved because the expedition phase of the project did not materialise. The expedition was critical to the output as it provided the opportunity to ground-truth any proposed rehabilitation measures.
Activity 3.1 Recruit terrestrial management specialists		Complete
Activity 3.2 Undertake literature reviews to identify knowledge gaps		Incomplete
Activity 3.3 Undertake fieldwork		Due to problems with access to the BIOT Patrol Vessel and approval to enter the BIOT no fieldwork was undertaken prior to the termination of the project.

Activity 3.4 Undertake data analysis		Due to problems with access to the BIOT Patrol Vessel and approval to enter the BIOT no further analysis was undertaken prior to the termination of the project.
Activity 3.5 Produce output for inclusion in the TAP for peer review		Not completed due to no fieldwork being undertaken prior to the termination of the project.
Output 4. Produce a prioritised list of the terrestrial management requirements by island with costs	The prioritised intervention and management of the Chagos Archipelago undertaken to known costs	This output was not achieved because the expedition phase of the project did not materialise. The expedition was critical to the output as it provided the opportunity to ground-truth any proposed rehabilitation measures.
Activity 4.1 Recruit terrestrial management specialists		Complete
Activity 4.2 Undertake literature reviews to identify knowledge gaps		Incomplete
Activity 4.3 Undertake fieldwork		Due to problems with access to the BIOT Patrol Vessel and approval to enter the BIOT no fieldwork was undertaken prior to the termination of the project.
Activity 4.4 Undertake data analysis		Due to problems with access to the BIOT Patrol Vessel and approval to enter the BIOT no further analysis was undertaken prior to the termination of the project.
Activity 4.5 Produce output for inclusion in the TAP for peer review		Not completed due to no fieldwork being undertaken prior to the termination of the project.
Output 5. Produce an island by island TAP, including a scientific base-line of the biodiversity of each island, an idealised future state and, the specific details required to rehabilitate and/or manage an island	Future prioritised and costed terrestrial management of the islands of the Chagos Archipelago	Due to problems with access to the BIOT Patrol Vessel and approval to enter the BIOT Output 5 was unable to progress prior to the termination of the project.
Activity 5.1 Agree TAP template		This was under development in Year 1 but has not been completed due to the early termination of the project.
Activity 5.2 Co-ordinate data from outputs 1 – 4		Not completed due to no fieldwork being undertaken prior to the termination of the project.

Activity 5.3 Draft TAP and submit to BIOTA and independent scientists for peer review	Not completed due to no fieldwork being undertaken prior to the termination of the project.
Activity 5.4 Produce final output for submission to BIOTA	Not completed due to no fieldwork being undertaken prior to the termination of the project.

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)	
2	Number of (i) people in UKOTs; and (ii) other people receiving other forms of long-term (>1yr) training not leading to formal qualification	
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)	
3b	Number of training weeks (i) in UKOTs; (ii) outside UKOTs not leading to formal qualification	
4	Number of types of training materials produced. Were these materials made available for use by UKOTs?	
5	Number of UKOT citizens who have increased capacity to manage natural resources as a result of the project	
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	
10	Number of formal documents produced to assist work in UKOTs related to species identification, classification and recording.	
11a	Number of papers published or accepted for publication in peer reviewed journals written by (i) UKOT authors; and (ii) other authors	
11b	Number of papers published or accepted for publication elsewhere written by (i) UKOT authors; and (ii) other authors	
12b	Number of computer-based databases enhanced (containing species/genetic information). Were these databases made available for use by UKOTs?	1 – an invertebrate database has been developed and will be made available to the BIOTA and accessible to the public via the Chagos Information Portal.
13a	Number of species reference collections established. Were these collections handed over to UKOTs?	
13b	Number of species reference collections enhanced. Were these collections handed over	

Code	Description	Totals (plus additional detail as required)
	to UKOTs?	
Dissemination Measures		
14a	Number of conferences/seminars/workshops/stakeholder meetings organised to present/disseminate findings from UKOT's Darwin project work	
14b	Number of conferences/seminars/workshops/stakeholder meetings attended at which findings from the Darwin Plus project work will be presented/ disseminated	
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	
22	Number of permanent field plots established in UKOTs	
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)

Annex 5 Darwin Contacts

Ref No	DPLUS041
Project Title	Creating a Terrestrial Action Plan for the Chagos Archipelago
Project Leader Details	
Name	Pete Carr
Role within Darwin Project	Project Leader
Address	C/o 23 The Avenue, Sandy, Beds, SG19 1ER
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Fax/Skype	
Email	
Partner 1	
Name	Linsey Billing
Organisation	British Indian Ocean Territory Administration
Role within Darwin Project	Key stakeholder
Address	Overseas Territories Directorate, Foreign and Commonwealth Office, King Charles Street, SW1A 2AH
Fax/Skype	-
Email	
Partner 2	
Name	Heather Koldewey
Organisation	ZSL
Role within Darwin Project	Project partner
Address	Outer Circle, Regent's Park, London, NW1 4RY
Fax/Skype	-
Email	
Partner 3	
Name	Colin Clubbe
Organisation	RBG Kew
Role within Darwin Project	Project partner
Address	Royal Botanic Gardens, Kew, Richmond, TW9 3AE
Fax/Skype	-
Email	

Annex 6 – supplementary evidence

Document 1: Evidence of stakeholder and partner meeting

CAREX Meeting 3: NOTES 24/5/2016

Participants confirmed: Martin Hamilton (Kew), Justin Moat (Kew), Tim Wilkinson (Kew), Sara Barios (Kew), Jenny Williams (Kew), Matthew Robertson (ZSL), Paul Pearce Kelly (ZSL), Pete Carr (CCT), Helen Pittman (CCT). **Apologies:** Rachel Jones (ZSL/CCT), Ian Robertson, (RSPB), Colin Clubbe (Kew), Justin Gerlach (IUCN), Jon Slayer (CCT).

Notes:

<p>Project admin:</p> <ul style="list-style-type: none"> Contracts & Payments CAREX shared folder CAREX group email 	<p>1. Contracts & payments</p> <ul style="list-style-type: none"> CCT to develop contracts for salaried and non-salaried partners Institutional contracts for Kew Kew developing proposal for CCT/John Topp funds <p>2. Shared folder/group email</p> <ul style="list-style-type: none"> All working Change Kew emails addresses to gmail. 	<p>Actions:</p> <ol style="list-style-type: none"> HP to liaise with CC re institutional contract for Kew_DONE HP to liaise with PPK re ZSL contracts_DONE Kew team to send HP gmail email addresses_OUTSTANDING
<p>Life on a Chagos Expedition</p>	<p>1. Video links: Bringing back the birds https://www.youtube.com/watch?v=dl1-8Sg8N0uY Ile Vache Marine rat eradication https://www.youtube.com/watch?v=-1s17m453u</p> <p>2. Medical</p> <ul style="list-style-type: none"> 2 x first aid kits will be available Expedition doctor budgeted for (depends on no. of berths) Expect rats, mosquitoes, ticks, etc <p>3. Power source/Internet on board</p> <ul style="list-style-type: none"> Depends on new BIOTA vessel Solar panels available Possibility of internet on vessel but no guarantees Sat phone GPS works <p>4. Route</p> <ul style="list-style-type: none"> British Airways LHR - Bahrain - AMC flight - DG Baggage allowance on AMC flight = 82kg Need to increase baggage allowance on BA flights 	<p>Actions:</p> <ol style="list-style-type: none"> JS to provide essential Chagos expedition kit list prior to departure.
<p>The CAREX expedition:</p> <ul style="list-style-type: none"> The Terrestrial Action Plan How to prioritise 	<p>1. Individual TAP for each island with veg maps of current/future scenario</p> <p>Decided that if the FCC are content, CAREX will not to survey DG given the increased workload and limited time in Chagos.</p> <p>There has been extensive surveying done by US and they have a commitment to monitor the</p>	<p>Action:</p> <ol style="list-style-type: none"> PC to introduce PPK to US invert scientists IR to provide costs for DG coconut

<ul style="list-style-type: none"> an island? How to cost restoration? Vessel update 	<p>environment including inverts.</p> <p>2. Map of islands future:</p> <ul style="list-style-type: none"> could predict future but may not be achievable include management work needed to get there either map or description or activity map with codes of work needed <p>10 islands (all IBAs) are have fewer invasive plants and no invasive vertebrates so can be used as a template for what rehabilitation could achieve.</p> <p>3. Prioritise list of actions and costs to rehabilitate (where needed) i.e. 10ha rats = £XXX, 10ha coconut removal = £XXX. Use costings from Ile Vache Marine and DG projects.</p> <p>4. HP organised quotes for a charter vessel. Also in discussion with BIOTA re new BIOT patrol vessel. New BIOT administrator working on tender applications currently. She is aware of CAREX and supportive and has given a positive response to CCT about providing some sort of vessel support in Nov. We will be informed of the vessel in July most likely. Possibility of need to split the expedition into two trips if berths dictate that.</p>	<p>removal_DONE</p> <p>3. HP to get copy of "Eradication of invasive alien verts. In the UKOTs" RSPB report_DONE</p> <p>4. PC to circ draft island prioritisation methodology by 10th_OUTSTANDING</p>
<p>RBG Kew update</p>	<ol style="list-style-type: none"> Have all satellite data available but a few islands missing Imagery is good quality (but no high res band) Historical imagery isn't as good but give an idea of broad scale change Ordnance survey maps needed from 1960s expedition Plan to have veg maps ready for Sept workshop. 	<p>Actions:</p> <ol style="list-style-type: none"> HP to ask Charles Sheppard, Nigel Wenban-Smith of whereabouts of ordnance maps_DONE PPK suggest ZSL could help fund costs for veg maps preparation (approx £2k)
<p>ZSL update</p>	<ol style="list-style-type: none"> List of invert species completed for islands. Ideally spend more time on 'model' islands during expedition. Prioritise invasive invert species to help restoration, this will require time on ecologically traumatized islands. 	
<p>AOB</p>	<ol style="list-style-type: none"> Expedition workshop planned for beginning of Sept when Kew has veg maps ready. Decided to have monthly face to face meeting split between Kew/ZSL. 	<p>Actions:</p> <ol style="list-style-type: none"> HP to organise workshop dates with team via Doodle Poll_DONE Team to think of workshop session required and fill in Google doc (HP to send link once it is live)_TBC. HP to coordinate monthly meetings Doodle Poll_DONE EVERYONE TO FILL IN THE DOODLE POLLS_DONE

Document 2: RBG Kew, ZSL, CCT meeting to discuss vegetation maps



Document 3: RBG Kew showcasing vegetation maps developed for the project at CCT event, ZSL, January 2017



Document 4: DRAFT Biosecurity Plan

(Full plan Attachment 2)

Chagos Biosecurity Plan



Chagos Conservation Trust 2017

1. Introduction

This biosecurity plan has been drafted for the Chagos Conservation Trust to guide the establishment of biosecurity protocols and infrastructure as part of the management of Chagos Islands except Diego Garcia. This plan provides a background to the current situation on the northern Chagos Islands with regard to Invasive Alien Species (IAS) and suggests practical and sustainable tools required to mitigate biosecurity and should be implemented as soon as possible. Note that this document deals with terrestrial IAS only. Marine IAS are beyond the scope of this plan but need consideration and planning.

This plan is a dynamic document and should be updated and reviewed if new IAS are found on the Chagos Islands or Diego Garcia. New techniques and/or revised approaches to IAS quarantine or detection should also be incorporated as updated information becomes available.

This document provides information to:

1. Establish a biosecurity system for the Chagos Islands
2. Maintain surveillance for IAS that may circumvent the biosecurity system
3. Initiate emergency procedures for an IAS incursion on the Chagos Islands (Appendices 3-5)

This document should be referred to while planning and carrying out all biosecurity work.

2. What is Biosecurity?

Island biosecurity is the management of pathways used to transport people and supplies to islands in order to prevent pests establishing a breeding population. Island biosecurity includes quarantine (prevention), surveillance (detection) and incursion response (contingency) (Broome 2007). In virtually all cases it is substantially more cost, resource- and time-efficient to prevent pests from reaching islands than to attempt a response to a pest incursion or, in the worst case scenario, to eradicate an established pest population (Rust et al. 2011).

2.1. Pathways and risks

The chances of successfully intercepting an IAS are significantly higher *before* they arrive on islands like the Chagos archipelago (Figure 1) and any interception negates the need to respond to an incursion. Incursion responses are the last resort and in many cases will not detect the IAS as it is literally like looking for a needle in a haystack. For example, research shows that a single rat arriving on even a small island is extremely difficult to trap or kill and can evade capture for many weeks (Russell et al. 2005), and this scenario has occurred on Frigate Island in the Seychelles (Thomas et al. 2000). A pregnant female rat could conceivably have time to produce offspring during the period of an incursion response.

Figure 1.

Opportunities for stopping invasive species establishing while transporting people and supplies to the Chagos Islands: (after Broome 2007)



2.2. How does biosecurity relate to the Chagos Islands?

The Chagos Islands are a UK Overseas Territory. Nine IUCN IBAs (Important Bird Areas) exist in the Chagos outside of Diego Garcia (the settlement area) and 17 islands are still nature reserves. This level of protection is mainly due to the status of seabird breeding populations on the islands. The Chagos Islands have had human impacts in the past but in the past few decades has had no permanent human presence, except for Diego Garcia. Currently the black rat *Rattus norvegicus* is having the most impact on ecosystems functioning and it is proposed that this species will be eradicated in future. As part of the management of island alien species (IAS) the Chagos, the Chagos Conservation Trust have drafted this biosecurity plan to stop any further incursions of IAS and to prevent the re-introduction by any more their eradication is complete.






2.2.1 Site description

Located in the middle of the Indian Ocean the Chagos comprises the largest atoll in the world, the Great Chagos Bank, alongside three additional atolls (Carr 2011). On the atolls' rim 51 small islands comprise the terrestrial portion of the territory at some 21km² (Carr & Harper 2015). Diego Garcia, the largest island and only permanently settled island in the Chagos, is on the southern boundary of the entire Chagos archipelago (Fig. 1). Low-lying and geologically young these remote islands have had no land the speculation that has developed on similarly isolated archipelagos such as Hawaii and the Seychelles.

Table 2. Key Risk Species for the Chagos Islands

Note: The IAS Risk Index is a combination of the Likelihood of the IAS arriving on the Chagos Islands plus the impact severity if it became established.

Invasive species	Photo	Known distribution on nearby islands in Indian Ocean	Likelihood of arrival	Impact severity	Risk	Impact description
Black rat (<i>Rattus norvegicus</i>)		Widely distributed on nearby islands in Indian Ocean	High	Severe	Very High	Potential loss of seabirds, impact on marine invertebrates, impact on vegetation, potential impact on agriculture, potential impact on human health and welfare
Grey Squirrel (<i>Sciurus hibernicus</i>)		Widely distributed on nearby islands in Indian Ocean	High	Severe	High	Potential loss of seabirds, impact on vegetation, impact on human health and welfare

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19	<i>Ubatheisa pulchelloides</i>											
20	Description:											
21	Adult body length 20mm.											
22	Biology and Ecology:											
23	Adults day flying. Often found near habitation on disturbed land.											
24	The larvae feed on <i>Messerschmidia</i> sp., <i>Argusia argentea</i> , <i>Echium plantagineum</i> , <i>Heliotropium arborescens</i> and <i>Mossotis arvensis</i> .											
25	BIOT Distribution:											
26	Île de la Passe and Île Takamaka, Salomons. Danger Island, North, Middle and South Brother Islands, Nelson Island, Great Chagos Bank.											
27	Diego Garcia, Diego Garcia Atoll, Lubine Complex (Lubine and Sipaille), Egmont Atoll											
28	World Distribution:											
29	<i>U. pulchelloides</i> is found in the Indo-Australian region including Borneo, Hong Kong, New Zealand, Papua, Seychelles and most of Australia.											
30	BIOT Ref:											
31	Barnett, L.K., Emms, C.W. and Holloway, J.D., 1999. The moths of the Chagos Archipelago with notes on their biogeography. <i>Journal of natural history</i> , 33(7), pp.1021-1036.											
32	General Refs:											
33	Lowman, M.D., 1984. Grazing of <i>Ubatheisa pulchelloides</i> larvae on its host plant, <i>Argusia argentea</i> , on coral cays of the Great Barrier Reef. <i>Biotropica</i> , pp.14-18.											
34	DaCosta, M.A., 2010. Phylogeny of <i>Ubatheisa</i> s. str. (Lepidoptera: Noctuidae: Arctinae) with comments on the evolution of colour, hind wing scales and origin of New World species. <i>Invertebrate Systematics</i> , 24(2), pp.113-130.											
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Return to...

Species List

Salomon

Diego Garcia


Great Chagos Bank

Egmont

Peros Banhos


Chagos Archipelago

Salomon Islands



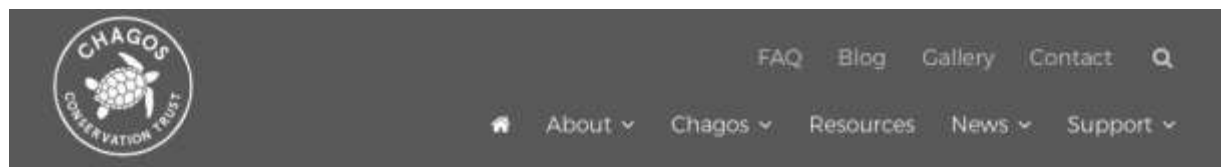
Chagos Archipelago

Egmont Islands



Document 7: Darwin Identity

News stories: CCT website



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CCT receives Darwin Initiative grant to increase natural biodiversity of Chagos Archipelago

📅 18 03 2016

The Chagos Conservation Trust is pleased to announce it has been successful in its application for a Darwin Initiative grant.

The "Creating a Terrestrial Action Plan for the Chagos Archipelago" project was masterminded by, and will be led by, CCT trustee Pete Carr and will produce a Chagos Archipelago Terrestrial Action Plan for the British Indian Ocean Territory Administration.

This is an essential step towards the goal of increasing the natural biodiversity on the islands of the archipelago by managing, reducing or eliminating threats such as invasive plants that have a negative effect on the island habitats and species.



The marine environment of Chagos is exceptionally healthy but there are concerns about the ecological health of the islands. Over half of the 55 islands are affected by invasive species, with rats being the greatest problem. In addition, 'coconut chaos' affects many islands, whereby unmanaged coconut plantations have become rampant and created a monoculture environment that discourages seabirds to use the islands for nesting.

The exciting project will provide the BIOT Administration with vital information that will help with decisions on island conservation management. It involves collaboration with numerous scientists and practical conservationists from several institutions, including the ZSL, Royal Botanic Gardens Kew, RSPB and the Species Survival Commission of IUCN.

Later this year a team of experts, in the fields of botany, ornithology, GIS mapping, entomology, as well as mammal eradication and invasive plant management specialists and island restoration ecologists, will travel to the outer islands to conduct a series of assessments.



The success of this application is in part due to the massive contribution made by the major stakeholder in the project, the BIOT Administration. We thank them and the Darwin Initiative for supporting this project.

🏷️ [cct](#), [chagos](#), [darwin](#), [rspb](#), [royal botanical garden kew](#)

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The Chagos Conservation Trust
Protecting a unique environment in the Indian Ocean

[View this email in your browser](#)

[Preparing for the Chagos Archipelago expedition!](#)

Preparation for CCT's [Chagos Atoll Restoration Expedition](#) is well underway with the project team meeting monthly at [Kew](#) or the [Zoological Society of London](#).



The expedition team working with CCT's Pete Carr on vegetation maps for the Chagos Archipelago.
L-R: Tim Wilkinson (Kew), Jennifer Williams (Kew), Rachel Jones (ZSL), Martin Hamilton (Kew) and Pete Carr (CCT)

The [CCT-US Expedition Scholar for 2016, Dr Martin Hamilton](#) from Royal Botanic Gardens, gives us an insight into the planning needed to ensure a successful expedition. Read his blog [here](#).

CCT was awarded a [Darwin Initiative](#) grant in April this year and is working with [ZSL](#), [Kew](#), [IUCN](#), [RSPB](#) and the [British Indian Ocean Territory Administration](#) to coordinate a [Chagos Atoll Restoration Expedition](#) that will result in a [Terrestrial Action Plan for the Chagos Archipelago](#).

[← Back](#)

The land crabs of the Chagos Archipelago

📅 01 11 2016

By Matt Robertson, Zoological Society of London

Among the most spectacular land living invertebrates found in the Chagos Archipelago are the land and shore crabs.

Without doubt, the most impressive of these is the coconut or robber crab, *Birgus latro*. With a leg span of up to a metre and weighing up to 4 kg this is a giant of the terrestrial invertebrate world.

These land crabs got their scientific name 'latro' from the habit of wandering into camps and stealing things, such as food, pots and pans and on occasion bottles of whisky.

The Chagos Archipelago is also home to several of the coconut crabs smaller, yet just as interesting, cousins.

For instance, the aptly named chirping hermit crab, *Coenobita rugosus*, which uses its claw like a violin bow, rubbing it against the edge of its seashell home to make an audible 'chirrup'. It is thought that this unexpected noise might be used to confuse predators.

Some of the land crabs, such as the strawberry hermit crab, *C. perlatius*, are even quite beautiful, with colours ranging from vibrant orange to deep red.

Other notable crustaceans are the fearsome looking red-clawed land crab, *Cardisoma carnifex*, the swift and elegant horned ghost crab, *Ocypode ceratophthalma*, and the competitive, pincer waving fiddler crab, *Uca tetragonon*.



As part of CCT's *Darwin Plus* funded "Creating a Terrestrial Action Plan for the Chagos Archipelago" project the Zoological Society of London's invertebrate team will be surveying invertebrates including crabs during the expedition in 2017.

[chagos](#), [expedition](#), [crab](#)

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Social media



Dr Martin A Hamilton
@DocMartinKew

Great to see colleagues from [@KewScience](#) presenting [#KewBIOT](#) work undertaken during 1st year of [@Darwin_Defra](#) CAREX project [twitter.com/KewUKOTs/statu...](https://twitter.com/KewUKOTs/status...)



@KewUKOTs · 2 MONTHS AGO



Chagos Conservation Trust

Published by Helen Pitman [?] · 46 mins · 🌐

NEWS: CCT receives Darwin Initiative grant to increase natural biodiversity of Chagos Archipelago!!!

We're very happy to announce that we have just been awarded a grant from the Darwin Initiative to help restore some of the islands of the Chagos Archipelago.

The marine environment of Chagos is exceptionally healthy but there are concerns about the ecological health of the islands. Over half of the 55 islands are affected by invasive species, with rats being the greatest probl
... [See More](#)



CCT receives Darwin Initiative grant to increase natural biodiversity of Chagos Archipelago |...

The Chagos Conservation Trust is pleased to announce it has been successful in its application for a Darwin Initiative grant. The "Creating a Terrestrial Action Plan for...

CHAGOS-TRUST.ORG

Chagos Conservation Trust US

Write a comment...

Chagos Conservation Trust US
March 17 at 2:09pm · 🌐

IMPORTANT ANNOUNCEMENT !!!
CCT receives Darwin Initiative grant to increase natural biodiversity of Chagos Archipelago

Dear friends and colleagues
I am very happy to announce that the Chagos Conservation Trust has been successful in its application for a Darwin Initiative grant. The "Creating a Terrestrial Action Plan for the Chagos Archipelago" project was masterminded by, and will also be led by, Pete Carr.


The project will produce a prioritized and costed Chagos Archipelago Terrestrial Action Plan for the BIOT Administration. This is an essential step towards the goal of increasing the natural biodiversity on the islands of the archipelago by managing, reducing or eliminating anthropogenic impacts and fits with CCT's objectives of working with the BIOT Administration on conservation management.

The project is a demonstration of the breadth of CCT and CCT-US knowledge, with major contributions from trustees Colin Clubbe and Alistair Gammell and Sam Purkis from CCT-US. CCT's director Helen Pitman is now working closely with Pete taking the project forward. We should not forget the massive contribution to the application made by the major stakeholder in the project, the BIOT Administration and Helen Stevens, BIOT environmental officer, is recognized and thanked for her outstanding work.

The project involves collaboration with numerous scientists and practical conservationists from several institutions, including ZSL, Royal Botanic Gardens Kew, the RSPB and the Species Survival Commission of IUCN. Experts in the fields of botany, ornithology, GIS mapping, entomology, as well as mammal eradication and invasive plant management specialists and island restoration ecologists are all involved.

This will be a challenging project to manage in amongst a busy science programme in BIOT but its ultimate delivery will be a major step forward for the conservation, practical management and ecological rehabilitation of the islands.

Many congratulations to those involved.
Charles Sheppard
Professor Emeritus
Chair, Chagos Conservation Trust
Wonderful News!



VISITOR POSTS

Annie Hartley
June 19, 2014 at 1:55am 🌐
Wonderful picture, wish we were there!
Like · Comment

Desmond Briggs
April 17, 2014 at 8:33am 🌐
The mission is to extend the goals of the Chagos Conservation Trust ... See More
Like · Comment

Oliver Alden Batcheller
April 12, 2014 at 11:00pm 🌐
I've been to Diego Garcia and the Chagos, 1983-1984. Isolated but o... See More
Like · Comment

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Outdoors Like

Foundation for KCH
Hospital Like

Hospice of Knox County
Medical & Health Like

