

Darwin Plus: Overseas Territories Environment and Climate Fund Annual Report

Important note *To be completed with reference to the Reporting Guidance Notes for Project Leaders:
it is expected that this report will be about 10 pages in length, excluding annexes*

Submission Deadline: 30 April

Darwin Plus Project Information

Project Ref Number	DPLUS018
Project Title	Taxonomic and conservation status of Oceanodroma storm petrels in the South Atlantic
Territory(ies)	St Helena and Ascension Island, South Atlantic
Contract Holder Institution	St Helena Government
Partner Institutions	Royal Society for the Protection of Birds (RSPB), Ascension Island Government, Queens University, St Helena National Trust
Grant Value	£43,430
Start/end date of project	April 2014 - September 2015
Reporting period (e.g., Apr 2015-Mar 2016) and number (e.g., AR 1,2)	April 2014 - March 2015 Annual Report 1
Project Leader	Miss Annalea Beard
Project website	http://www.rspb.org.uk/forprofessionals/science/research/details.aspx?id=363023
Report author and date	Miss Annalea Beard

1. Project Overview



Two of the most remote islands in the world, Saint Helena and Ascension Island are situated in the South Atlantic Ocean. St Helena is 1200 miles from southern Africa and 1800 miles from South America. Ascension Island is 810 miles northwest of St Helena. The storm-petrels are the least well-known species of the seabird assemblage of St Helena and Ascension, and have traditionally been viewed as conspecific with *Oceanodroma castro* which is widespread throughout the North Atlantic and Pacific. However, recent work by two of the project partners on the *Oceanodroma castro* complex of the North Atlantic has revealed the presence of several “cryptic” species, new to science, that breed on the same islands as *O. castro* but at different times of year. Published work by St Helena Government and RSPB has revealed similar seasonal breeding populations on St Helena: the South Atlantic populations differ in morphology and vocalisations from those breeding in the North Atlantic. It is therefore probable that endemic, but as yet un-described, storm petrel species exist on St Helena and Ascension. The conservation status of the storm petrels of St Helena and Ascension crucially hinges on a correct understanding of their taxonomic affinities with other Atlantic and Pacific populations of *Oceanodroma* storm petrels. If these populations are considered sufficiently distinct to warrant classification as one or more new species, their small population size and highly restricted global distribution, would confer high conservation importance on these populations. In order to rigorously assess their taxonomic, and hence conservation status this project will make genetic comparisons with existing data from North Atlantic and Pacific populations, and employ new techniques to survey the seasonal populations on both St Helena and Ascension thus establishing a baseline for longer-term monitoring and informing the development of conservation and management plans.

2. Project Progress

2.1 Progress in carrying out project activities

A revised timetable of the project activities are given in Annex 1. Due to the delay in collecting all DNA samples from all four seasonal populations on both territories, the logistical constraints in getting samples to Queens University in Canada and the decision to conduct additional analysis to that originally outlined in the project

proposal completion of all activities in output 1 will take an additional 6 months. This extension to the project has been agreed with Darwin.

Access to Boatswain Bird Island was not possible in June 2014. When accessed in November 2014 to conduct the daytime playback surveys (output 2.3) the response rate of breeding birds to the playback were found to be extremely low. Given the apparent low number of breeding birds found and the low response rate of those birds it was concluded that the census methods would not be suitable at that time for an accurate assessment of the breeding density. However breeding birds were confirmed in November 2014 and it is hoped that the expedition to the island in June 2015 will also confirm another breeding population on the island as well as allowing opportunities to gather other important ecological data.

The cost of the automated sound recorders were underestimated so only eight were able to be purchased therefore the number of sites they could be deployed at were less than originally outlined in the proposal (output 3.1). However the deployment and trial of the devices in this activity has been met within the timeframe. The complexity of analysing the sound recordings using the SoundID software (output 3.2) will take longer than anticipated but will be completed within the agreed project extension.

2.2 Project support to environmental and/or climate outcomes in the UKOT's

Within the last year the project has completed vital actions to provide a rigorous assessment of the conservation status of the storm petrel populations on St Helena and Ascension. Estimation of the number of individuals on Egg Island during both seasons has provided a baseline of colony size to help St Helena meet their obligations under Articles 7 and 8 of the Convention on Biological Diversity, and under Aichi Targets 11, 12 and 19. This baseline information will also contribute towards the delivery of Commitments 2, 6, and 7 of St Helena's Environment Charter (2001) and Objective D of its National Environmental Management Plan (2012). This basic yet vital information will be used for long term monitoring and informing the development of conservation management plans once completion of the genetic analysis has provided the final evidence to clarify the taxonomic and therefore conservation status of the populations.

2.3 Progress towards project outputs

1. Clarify taxonomic status of seasonal populations of storm-petrels on St Helena and Ascension

Queens University have now received over 30 feather samples and 12 blood samples from each breeding season on St Helena and Ascension collected from between 2012 and 2014. Cardiff University in the UK played a significant role in preparing the blood samples so that they could be sent to Queens University in Canada. Currently Dr Friesen and her staff at Queens University are working hard to analyse the DNA to allow us to say whether the storm petrels as a whole on STH and ASI are different to all other studied population in the Atlantic and Pacific.

However, the work on morphology and vocalisations strongly suggests that there are some differences between seasonal populations on St Helena. It therefore seems likely that there is some gene flow within the four South Atlantic populations. Traditionally, differences at the subspecies level have been disregarded as unimportant, but increasingly subspecies are considered as distinct "management units" for conservation purposes. To get as fine a resolution as possible of differences within the four South Atlantic populations and to resolve whether there are any subspecies differences, it was agreed to commission Queens University to carry out additional DNA analyses to that outlined in the original project outputs. Queen's University will use the RADseq technique to screen thousands of loci that will allow us to determine the genetic relationships among the four STH/ASI populations. It is anticipated that this work will be completed within the project timeframe and aid the clarification of the species taxonomic status.

2. Estimate made of storm petrel breeding population size on Egg Island (St Helena) and Boatswain Bird Island (Ascension)

Ten nights (50 hours) of nocturnal mist netting on Egg Island at St Helena were completed in both the cold and hot seasons in 2014. In the cool season a total of 836 birds were processed, this included 47 brown noddies and 789 Madeiran storm petrels. In the hot season a total of 1686 birds were processed over 50 hours, this included 1329 Madeiran Storm petrels, 339 brown noddies, 12 red-billed tropicbirds, five sooty terns, and one white-faced storm petrel. Preliminary analysis of the mark recapture data indicates that the 2014 cool season population of storm petrels on Egg Island is estimated at 6894 birds (95% credible interval 5144 – 9174) and the hot season at 7326 individuals (95% credible interval 6634-7964). No storm petrels caught in the cool season were re-caught in the hot season.

Two St Helena Government Staff visited Ascension in June 2014 to conduct the diurnal playback trials on Boatswain Bird Island. Unfortunately the main boat and gantry used to access the island was out of commission at the time and it was not possible to land on the island as planned. Verification of breeding activity and estimation of breeding density through the use of playback in June could therefore not be obtained. One member of St Helena Government staff visited Ascension again in November 2014 and successfully spent two nights on Boatswain Bird Island. 32 storm petrels were processed and breeding was confirmed visually. Recordings were made of their flight and breeding burrow calls for comparison with other populations. Playback trials were started whilst on the island however due to the apparent low number of breeding birds found and the low response rate of those birds identified as breeding the technique was deemed not suitable at that time as it would not give an accurate assessment of the population.

In addition eight nights of mist netting were conducted in June and two nights in November 2014 on Ascensions mainland opposite Boatswain Bird Island. In total 59 storm petrels were captured using a playback lure, this enabled DNA samples and biometrics to be collected from that season's population.

3. Other areas where storm-petrels breed identified using sound recordings

Two different types of automated sound recorders were deployed onto St Helena and Ascension. 522 hours of recording were collected in the cool season; 40 two hour recordings from four locations on Ascension's mainland and 221 two hour recordings from three offshore islands off St Helena's coastline. During the hot season 611 hours of recordings were collected; 25 two hours of recordings from three locations on Ascensions mainland and 293 two hour recordings from five locations at St Helena. 60 template vocalisations from St Helena's cool season population have been sourced from recordings using the Sound ID software and used by the manufacturers to develop an acoustic recogniser. Analysis of the digital sound recordings has yet to commence however preliminary screening of recordings did suggest that Thompson Valley Island off St Helena's coastline may hold a small sub population of breeding storm petrels during the hot season. Visual confirmation was made in December 2014 of breeding birds present on the offshore island.

The project has also been engaging with voluntary and private sectors specialists to source additional alternative sound data analysis techniques. Mr Lucas Tracewski has previously built cloud-based expert systems for detection of bird calls and Mr Matthew McKnown of Conservation Metrics (www.conservationmetrics.com) has used deep neural network models for detection and classification of bird song. It is therefore hopeful that one of these experimental innovative techniques will be able to be used not only to detect storm petrel calls from recordings but also as a long term monitoring tool for the populations.

2.4 Progress towards the project outcome

The project is working well towards its listed purpose and outcomes and to date there have been no major issues raised with achieving these. All the data will feed into appropriate management strategies and a revision of the IUCN conservation status for the species once the taxonomic status of each population is verified. This will ensure the protection and future management of *Oceanodroma* petrels in the South Atlantic.

2.5 Monitoring of risks

The majority of identified risks still hold true. One of the two types of autonomous acoustic sound recorders that were trialled proved more failsafe than the other as a consequence the project did suffer some data loss due to device malfunction and operation error. The additional genomic analysis that was not planned in the original project outline meant blood samples had to also be collected from each population and sent to Queens University, this took extra time. The unavailability of essential equipment was one risk that wasn't identified in the project proposal and has caused some delays in data collection on Ascension. The lack of a usable boat and gantry in June 2014 made access to Boatswain Bird Island impossible. This risk is of medium concern but given enough preplanning can be mitigated.

3. Project Stakeholders

The major stakeholders are the five project partners St Helena Government (SHG), Ascension Island Government (AIG), the St Helena National Trust (SHNT), the Royal Society for the Protection of Birds (RSPB) and Queens University in Canada.

There were extensive discussions by email and telephone in the development of this project proposal and all parties have been engaged regularly through the stakeholder group as the project has been progressing.

During the SHG staffs visit to Ascension in June 2014 both SHG and AIG staff received training in the use of a playback lures at a mist net during a (potential) breeding season from Dr Will Miles from the RSPB as well as training in DNA collection techniques from visiting PhD researcher Miss Rebecca Taylor from Queens University. In November 2014 SHG and AIG staff received further training in the use of playback census techniques from Dr Mark Bolton from the RSPB. In December 2014 AIG staff received extensive training from SHG staff in ringing and mist netting on an active breeding seabird colony. All Egg Island fieldwork at St Helena would not have been possible without the support of local volunteers in the SHNT and the St Helena Nature Conservation Group (SNCG). Other collaborators include the British Trust for Ornithology (BTO) who supplied the rings and ringing technical advice without which the project would not be able to individually identify storm petrels and therefore establish a population estimate for Egg Island.

4. Monitoring and evaluation

A wider stakeholder group was established at the start of the project to raise awareness of the project between the two UKOT's and other partner organisations. The project leader has been instrumental in insuring that the project remains on track to meet all the activities and outputs within the timeframe. Regular reviews of the projects progress towards the outcomes have been made and any changes have been discussed and agreed with key stakeholders prior to approaching Darwin. For example when it was identified that given the current data on the storm petrel populations there may be within species differences. In order to quantify these differences and therefore the conservation and taxonomic importance additional DNA analysis would be required. Various options were discussed within the stakeholder group including financial, logistical and timeframe constraints to come up with a solution that would enable the project to meet its objectives to the highest standard.

5. Lessons learnt

The main lesson learnt from this project is the importance of developing close working relationships and exchanging skills between the UKOT's. Given the remoteness of both STH and ASC yet their proximity to each other the similarities in the issues each territory have to deal with shouldn't be underestimated and there is allot still to be learnt from each other. Continuous reviewing of the progress a project is making in meeting its objective is extremely important. If this project wasn't reviewed periodically it would not have been identified that additional DNA analysis was necessary to fulfil the project outputs and within the timeframe.

6. Actions taken in response to previous reviews (if applicable)

n/a

7. Other comments on progress not covered elsewhere

n/a

8. Sustainability

Members of the SHG and AIG staff who have gained training under this project are permanent employees and they will continue to use those skills established under this Darwin project. The resources provided by this project both in terms of capital items and datasets will remain with the St Helena Government marine section and Ascension Island Conservation Department. As mentioned there have been strong partnerships established during this project which will continue allowing further assessment of the storm petrel populations in the future. There will be a continuation of contacts with individuals from other Overseas Territories, sharing relevant knowledge and resources.

9. Darwin Identity

The Darwin logo has been used on all published material to date; fieldwork reports, press releases and in newspaper articles. When radio interviews were given reference was always given to the work being funded by the Darwin Initiative.

10. Project Expenditure

Table 1 Project expenditure during the reporting period (1 April 2014 – 31 March 2015)

Project spend (indicative) in this financial year	2014/15 Grant (£)	2014/15 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				This variance was discussed and agreed with Darwin as the project is still within overall agreed budget. The majority of the extra costs went towards additional DNA analysis at Queens

				University.
Capital items				
Others (Please specify)				
TOTAL	£43,430	£43,218.86	-0.5%	

11. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

I agree for the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

This Darwin Plus project has helped raise the profile of a species that is easily overlooked due to their cryptic nocturnal burrow nesting nature. There is now a greater understanding throughout both territories of the potential importance of their smallest seabird species in a global context. Baseline population estimates and ecological data have been gathered to form a starting point for future research, conservation and management. One new breeding colony has been identified at St Helena on an offshore island that was not previously known proving that there is allot we still have to learn about the populations.

Please contact the project leader for any pictures relating to this statement.

Annex 1. Revised timetable for meeting project outcomes.

Activity	No of Months	Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1 Clarify taxonomic status													
1.1 Analysis of mitochondrial and microsatellite DNA	3			■	■								
1.2 Comparison of DNA sequences with existing database	3						■						
1.3 Determination of phylogenetic relationships	3						■						
1.4 Conclusions regarding the taxonomy	3					■							
1.5 Write-up and publication of findings	6					■	■						
Output 2 Assess population size at known colonies													
2.1 Nocturnal mist-netting at Egg Island (St Helena).	2	■		■									
2.2 Analysis of mist-netting capture-recapture data	2		■		■								
2.3 Daytime playback survey on Boatswain Bird Island	2			■		■							
2.4 Write-up of survey results					■		■						
Output 3 Search for new breeding colonies													
3.1 Deploy automated sound recorders	2	■		■									
3.2 Definition of storm-petrel song templates.	3		■										
3.3 Analysis of digital sound recordings.	6					■	■						
3.4 Mapping of locations of any new colonies	1						■						
3.5 Recommendations for future monitoring and conservation	3						■						

Checklist for submission

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