

# 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 Ref Number	DPLUS024
Project Title	Darwin Fellowship - MRes Carbon sequestration in community forests, St Helena
Territory(ies)	St Helena
Contract Holder Institution	St Helena Government- Environmental Management Division
Partner Institutions	St Helena National Trust
Grant Value	£21,617
Start/end date of project	1 <sup>st</sup> April 2014 – 31 <sup>st</sup> October 2015
Project Leader	Shayla Ellick
Project website	-
Report author and date	Shayla Ellick, January 2016

## 1 Project Overview

The Fellowship provided the data for a major deliverable of the Darwin funded ‘Creating Community Forests to Enhance Biodiversity and Provide Educational Activities’ project (Ref: 20-005; output 1; referred to throughout this report as Community Forests project) run by the St Helena National Trust (SHNT).

With the imminent opening of the island’s new airport, and increasing concerns on island regarding the potential impacts of climate change, consideration has been given to offsetting the increased carbon emissions that will result from a significantly larger volume of travellers and traffic to the island. The SHNT is keen to develop a local carbon offsetting scheme using endemic and native species found within their Community Forest sites (a required output of their Darwin project).

This project aimed to provide the data for the establishment of an evidence-based offsetting scheme, and ultimately investigated the carbon sequestration potential of the island’s national tree, the St Helena Gumwood (*Commidendrum robustum*) in a well-established restoration site: the Millennium Forest. The Millennium Forest is the island’s most well-known Community Forest and has excellent engagement with the island community; virtually every islander has planted a tree in the Millennium Forest since restoration efforts began in the early 2000’s. Several endemic species are being planted within the site in an attempt to restore endemic forest to an area which has become severely degraded in the time since the island was inhabited.

An offsetting scheme will allow travellers to the island the option to offset carbon emissions generated by their travel, and also provide the SHNT, and possibly other conservation organisations on the island, with a sustainable stream of funding for their valuable work in restoring St Helena’s fragmented and degraded endemic habitats.

### *UK institutions:*

The University of York through Dr Rob Marchant (Environment Department, <https://www.york.ac.uk/environment/our-staff/rob-marchant/#research>) provided supervisory support, laboratory facilities, IT support and networking opportunities. The University of York was also the examining and degree awarding body. The programme of study was an MSc by Research in Environment and was examined through a Master's thesis (maximum of 20,000 words) and an oral examination.

The Centre for Ecology and Hydrology (Edinburgh) through Dr Alan Gray ([https://www.researchgate.net/profile/Alan\\_Gray5](https://www.researchgate.net/profile/Alan_Gray5)) provided supervisory support and field equipment.

### *Fellow's institution:*

The St Helena Government's (SHG) Environmental Management Division (EMD) provided staff time in granting the Fellow an allocated number of days per week to work on the project (initially 2 days per week, and then additional as and when needed) in addition to significant time granted for two study periods in the UK. EMD also provided supervisory support through Dr David Higgins, work in kind through fieldwork assistance, office space and facilities i.e. internet access, stationary, access to a vehicle for fieldwork, fieldwork equipment and laboratory facilities.

## **2 Project Achievements**

### **2.1 Outcome**

The carbon sequestration potential of the Gumwood was successfully investigated and estimated within the Millennium Forest restoration site. Whilst this estimation does not reflect the carbon sequestration potential of the species as a whole, it does provide justification for the establishment of the island's first ever carbon offsetting scheme, with the Millennium Forest as the flagship site. The Fellowship was also to have researched the potential of the St Helena Ebony (*Trochetiopsis ebenus*) through destructively sampling; however, due to a combination of time constraints and other work commitments, the unanticipated amount of time expended on data collection for the Gumwood, and the desire to ensure that the collected data was scientifically robust, the sampling of the Ebony could not be completed. Nonetheless, the Fellowship research can be seen as a valuable tool for future research into the carbon sequestration potential of the island's endemic species and habitats. The research has been outlined and discussed in the completed Master's thesis (which is discussed in section 2.2) and will be used to set up a local offsetting scheme. This will, in turn, develop a new 'green' revenue stream for the continued restoration of an important habitat, encouraging green economic growth on-island and complementing the Tourism vision of the island as a 'green' destination.

The project directly addressed several objectives within the island's National Environmental Management Plan. The results of the project provide an option for mitigating the effects of climate change on the island, by offsetting carbon emissions through the large-scale planting of endemic species. This in turn provides an additional safeguard for St Helena's unique biodiversity, which is complimented by the provision of a sustainable funding stream for conservation efforts. The output of this research also offers a vehicle of engagement for both the local community and visitors to the island, through either engaging in practical conservation within the site, or contributing financially to the continued operation of the site by offsetting their carbon emissions.

The Fellowship also provided outstanding professional development opportunities for the Fellow, through the chance to pursue a research Master's qualification with an excellent university and through the enhancement of the Fellow's fieldwork, research, analytical, writing and presentation skills. The innovative research has also boosted the island's environmental knowledge and skill base.

## 2.2 Outputs

### *Output 1: Carbon sequestration of selected endemic plants investigated and reported.*

The original application aimed to study five endemic and five non-native species to determine the suitability of the endemic species as candidates for an offsetting scheme. This was changed to include just endemic species after discussions with the Community Forest project steering group and supervisors. After an intensive literature review on methods of carbon research, a pilot study was conducted in July- August 2014 considering five endemic species over ten different sites. From the results of the pilot study and further discussions with the thesis supervisors in October 2014, the total number of species was eventually reduced to just two endemic species to be studied at just one site; this was in order to conduct a more detailed and scientifically robust investigation. As discussed in section 2.1, only one species was able to be thoroughly surveyed. The pilot study, however, demonstrated that the methods used within the Millennium Forest can be repeated at different sites around the island and for different species. The thesis literature review also offers alternative assessment methods for species that are not able to be surveyed using the methods employed within the Millennium Forest.

The Fellowship researched the quantity of carbon stored in five major terrestrial pools within the Millennium Forest: aboveground living biomass, belowground biomass, soil, leaf litter and deadwood. Six sampling plots were established within the Millennium Forest older compartments, and two control sites were established just outside of the Millennium Forest boundary where the landscape represents the condition of the restoration site before endemic plantings began. The total quantity of carbon within the Millennium Forest was estimated to be 349.7 tonnes distributed over the five carbon pools. This was an impressive amount considering the poor soils within the site and the relatively short time period that plantings have occurred over.

The Millennium Forest site and the Gumwood in particular were successfully investigated and the resultant data analysis and discussion can be found in the Master's thesis (see supporting documentation), which is also available online at <http://etheses.whiterose.ac.uk/9337/>. The thesis has also been circulated to a wide variety of stakeholders and interested parties, including the project partner, island conservationists, local politicians, and external organisations such as JNCC, RSPB, SAERI, RBG, Kew etc.

### *Output 2: Student successfully completed postgraduate study*

This output was successfully completed in August 2015 upon confirmation of award of the MSc by Research degree from the University of York (see supporting documentation). The thesis was submitted and the oral examination completed in June 2015.

### *Output 3: Carbon offsetting scheme feasibility explored*

The research indicated that, while the Gumwood and Millennium Forest site provided the basis for establishing a carbon offsetting scheme, the scheme would be more beneficial to the SHNT and the island in general if it were to be a local scheme as opposed to joining an international scheme. This is due to the quantity of carbon estimated to be stored within the Millennium Forest, and the time and resources needed to effectively monitor/ measure, report and verify carbon stocks for the requirements of international schemes. This was communicated to the Community Forest Project Manager and a subsequent informal meeting was held between the SHNT, Tourism and EMD (the Fellow) in August to discuss the best way forward in creating and managing the local offsetting scheme. This next step is still to be completed, due to staff turnover in the Community Forests project, staff absence from the island on overseas business, and other work commitments during the latter part of 2015; however, the discussions continue and progress on establishing a scheme will be recorded in the Community Forests project future reports.

One of the proposed airlines hoping to provide flights to and from the island was also contacted regarding offsetting emissions within the Millennium Forest, and they provided a favourable reply; although a commitment is unlikely to be made until the airport is operational. The SHNT have also had enquiries from an off-island business regarding potential offsetting opportunities on the island.

## **2.3 Sustainability and Legacy**

A local carbon offsetting scheme for the St Helena National Trust will be established within the remaining lifetime of the Community Forests project, which will have been made possible through the research of this Fellowship. The scheme will provide an alternative funding stream for important restoration work within the Millennium Forest; and ideally for conservation works around the island.

This project has provided relevant methods and equipment for future carbon research on the island, which will allow significant expansion of the offsetting scheme in the coming years in terms of the species researched and offered for offsetting options, and the different types of habitats researched on island.

The methodology will also be adapted into simple protocols to allow the SHNT to effectively monitor the major carbon pools within the Millennium Forest site; these protocols, in conjunction with the Master's thesis, will provide a baseline for wider carbon research on the island in future.

Equipment purchased under the project will be stored within EMD's main office location, but will be made available to project partners post-project for carbon research primarily, and other research opportunities where valuable.

It is also anticipated that the results of this research will be written up into a research paper for publication in a peer-reviewed journal, which will be disseminated to a wider audience.

## **3 Project Stakeholders**

The support and involvement of EMD and the UK institutions have been discussed in section 1. The SHNT also provided work in kind through fieldwork support, and the provision of fieldwork equipment. The Community Forest project steering group, the university supervisors, and colleagues at EMD were also heavily involved in key project planning and decision-making, and provided a wealth of valuable guidance and support throughout the project lifetime.

The SHG's Education Directorate also provided support through access to improved internet facilities, lending of laboratory equipment, and laboratory support.

## **4 Lessons learned**

The project was overly ambitious in the original number of species allotted for study. This was simply too much to undertake within the year allotted for the Master's programme, while the Fellow was also engaged in full-time employment. Nevertheless, the Master's thesis, particularly the literature review and methodology provide a valuable stepping stone from which future carbon research can be carried out.

### **4.1 Monitoring and evaluation**

The major change to the project output (i.e. the reduction in the number of species studied) has been discussed in section 2. The M&E system has been outlined briefly in the first paragraph of section 3 and was found to be extremely valuable in terms of the constructive feedback, project guidance and fieldwork support given.

The research itself has been externally assessed through the thesis moderation and oral examination process at the University of York

### **4.2 Actions taken in response to annual report reviews**

N/A

## 5 Darwin Identity

The Fellowship has published various progress reports in several of EMD's monthly newsletters, which are circulated widely to both on- and off- island stakeholders. The newsletters are also published in both island newspapers and on the SHG website. Links were also made available to these on EMD's Facebook page. The Fellowship was also promoted through radio interviews with a local radio station which resulted in short articles within the Sentinel newspaper. In all instances the Darwin Initiative was identified as the project funder and the Darwin logo was used.

The SHNT will also continue to promote the project using the Darwin Identity throughout the eventual establishment of the offsetting scheme.

The Darwin Initiative is a key provider of funding for environmental projects on St Helena, which are all publicised through various media. Thus, there is a high recognition of the Darwin Initiative within the St Helena public.

## 6 Finance and administration

### 6.1 Project expenditure

These details have been provided in the final claim form.

Project spend (indicative) since last annual report	2015/16 Grant (£)	2015/16 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items				
Others				
<b>TOTAL</b>				

Staff employed (Name and position)	Cost (£)
<b>TOTAL</b>	

Consultancy – description of breakdown of costs	Other items – cost (£)
<b>TOTAL</b>	

Capital items – description	Capital items – cost (£)
<b>TOTAL</b>	

Other items – description	Other items – cost (£)
<b>TOTAL</b>	

## 6.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
<b>TOTAL</b>	

Source of funding for additional work after project lifetime	Total (£)
<b>TOTAL</b>	

## 6.3 Value for Money

This project provided excellent value for money; no staff costs were required due to the consent of EMD to allow the Fellow dedicated days each week to carry out the project, this was also supplemented through the work in kind provided by EMD and the SHNT for fieldwork support. Much of the required equipment was able to be borrowed by the project from on-island stakeholders, which reduced capital equipment costs. In addition, the research project provides a tested methodology for future carbon research on the island.

## Annex 1 Standard Measures

Code	Description	Totals (plus additional detail as required)
<b>Training Measures</b>		
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)	1 UKOT student
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	1
<b>Research Measures</b>		
6	Number of species/habitat management plans/ strategies (or action plans) produced for/by Governments, public authorities or other implementing agencies in the UKOTs	
7	Number of formal documents produced to assist work in UKOTs related to species identification, classification and recording.	
8a	Number of papers published or accepted for publication in peer reviewed journals written by (i) UKOT authors; and (ii) other authors	(i) None as yet, however, there are plans to write at least one research paper in the coming months for publication.
8b	Number of papers published or accepted for publication elsewhere written by (i) UKOT authors; and (ii) other authors	
9b	Number of computer-based databases enhanced (containing species/genetic information). Were these databases made available for use by UKOTs?	
9a	Number of species reference collections established. Were these collections handed over to UKOTs?	
9b	Number of species reference collections enhanced. Were these collections handed over	

<b>Code</b>	<b>Description</b>	<b>Totals (plus additional detail as required)</b>
	to UKOTs?	
<b>Dissemination Measures</b>		
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	
<b>Physical Measures</b>		
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 2 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. contact address, website)
Master's thesis, unpublished literature	The carbon sequestration potential of <i>Commidendrum robustum</i> Roxb. (DC.)  within the Millennium Forest restoration site, St Helena Island. Shayla J M Ellick, 2015	British (St Helena)	British	Female	University of York	<a href="http://etheses.whiterose.ac.uk/9337/">http://etheses.whiterose.ac.uk/9337/</a>

## Annex 3 Darwin Contacts

<b>Ref No</b>	DPLUS024
<b>Project Title</b>	
<b>Project Leader Details</b>	
Name	Shayla Ellick
Role within Darwin Project	Darwin Plus Fellow- EMD
Address	
Phone	
Fax/Skype	
Email	
<b>Partner 1</b>	
Name	Rebecca Cairns-Wicks
Organisation	St Helena National Trust
Role within Darwin Project	Current Project Manager, Community Forests project
Address	
Fax/Skype	
Email	
<b>Partner 2 etc.</b>	
Name	
Organisation	
Role within Darwin Project	
Address	
Fax/Skype	
Email	