

# 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	DPLUS025
Project Title	Conservation of the spiky yellow woodlouse and black cabbage tree woodland on St Helena
Territory(ies)	St Helena
Contract Holder Institution	St Helena National Trust
Partner Institutions	Environmental Management Division - St Helena Government (EMD), St Helena Nature Conservation Group (SNCG), Zoological Society of London (ZSL)
Grant Value	£37,090
Start/end date of project	Start: 01/04/14 End: 31/03/17
Reporting period (e.g., Apr 2015-Mar 2016) and number (e.g., AR 1,2)	AR1
Project Leader	Phil Lambdon
Project website	<a href="http://www.nationaltrust.org.sh/shnt-conservation-programmes/natural-heritage/spiky-yellow-woodlouse/">http://www.nationaltrust.org.sh/shnt-conservation-programmes/natural-heritage/spiky-yellow-woodlouse/</a>
Report author and date	Phil Lambdon & Rebecca Cairns-Wicks, 7/4/15

## 1. Project Overview

Black cabbage tree woodland is a unique cloud forest habitat now almost extinct on St Helena. It's dark, humid conditions support a unique community of highly threatened species. Habitat fragmentation has reduced the stronghold at High Peak to scattered vestiges, the largest remaining of which, known as 'The Dell', is now no more than 250 m<sup>2</sup> and is further threatened by strong winds. The threat is particularly critical because The Dell is home to almost the last remaining 50 individuals of St Helena's flagship invertebrate, the spiky yellow woodlouse (*Pseudolaureola atlantica*). Urgent measures are needed to secure the future of this ecosystem.

The aim of the project is to initiate a long-term recovery programme for black cabbage tree woodland, focusing first on saving the fragments at High Peak. Following the construction of carefully-prepared wind shelters, 1 Ha of pasture will be reafforested, acting as a habitat corridor to link The Dell with other isolated black cabbage trees (*Melanodrendron integrifolium*) and areas of tree fern thicket. Building on recent research into the ecology of the spiky yellow woodlouse, the project will also establish a captive breeding programme for the species with the intention of multiplying numbers for future reintroduction. Further survey work will be conducted to assess the status of other threatened cloud forest species in black cabbage tree habitat, and, in consultation with key local stakeholders, a management plan will be developed as a basis for long-term continuation of the efforts.

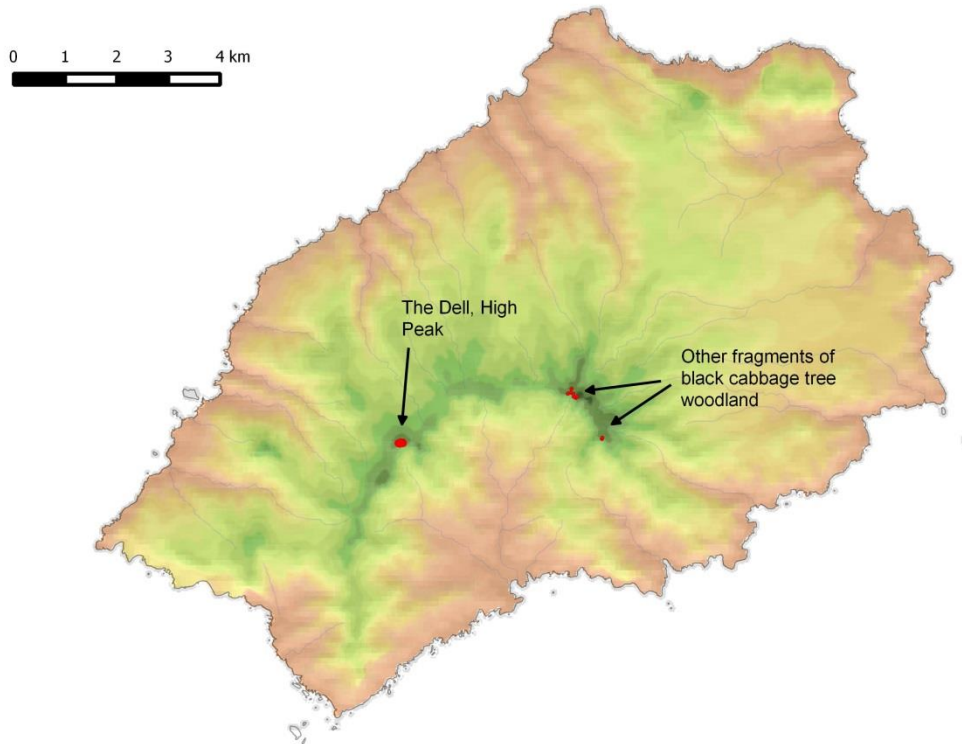


Figure 1. Location of study site on St Helena and remaining distribution of black cabbage tree woodland

## 2. Project Progress

### 2.1 Progress in carrying out project activities

Despite a change request described below, we report in the progress made in the first year as follows:-

#### 1. Habitat restoration at The Dell

Progress has been reasonably good.

(i) *Clearance of 0.5 Ha of pasture grasses outside the Dell.* 0.5 Ha of pasture grass have now been cleared from the site by hand. Fragments of rhizome remain in the soil and these will re-root for up to two years – necessitating regular weeding. Trials of reapplying well-rotted grass clippings as a mulch to suppress further growth have recently been commenced.

(ii) *Creation of windbreaks to protect plantings.* Progress on these was initially slower than expected due to delays over shipping materials. Once the winter set-in, it became logistically impossible to carry heavy equipment to the site and to lay anchors in the waterlogged soils. For these reasons, the wind-break construction was delayed until the spring. However, sturdy windbreaks have now been constructed across the front of the Dell, providing ample protection for the area due to be restored over the coming year. It is hoped that the windbreaks will be extended next year in parallel with the expansion of the habitat.

(iii) *Seed collection and rearing of ground cover plants and trees.* Seed collections have been made from two key endemic species: black cabbage tree (*Melanodendrum integrifolium*) and the cabbage tree (*Pladyroxylon leucodendron*), and further ground cover species (e.g. lobelia *Trimeris scaevolifolia*, Diana's Peak grass *Carex dianae* and dwarf jellico *Berula burchellii*). Young plants of all species are currently being raised by EMD, although due to the long 'lead-in' period, production will be slower in the first year. Once regular batches are sown, this will maintain a more regular production.

(v) *Planting and performance monitoring of established cloud forest species.* In the first year, over 300 dwarf jellico and 200 Diana's Peak grass were added to the site. 120 black cabbage trees have already been planted, but survival has been modest as a result of the strong winds and vulnerability to stem rot. The improved wind protection and refined knowledge of planting locations will hopefully permit better success in the future. However, even if only 50 trees

survive to adulthood it will make a big difference to the habitat area available. In two parts of the site already the combination of shelter by plantations of rebony (*Trochetiopsis x benjaminii*, a man-made hybrid of two species not native to the area), partial shrub clearance and planting has seen excellent development of dense ground cover and good tree establishment.

## **2. Assessment of effectiveness of shade canopy at enhancing re-establishment of cloud forest on open ground**

A large shade canopy was erected over the restoration area prior to the start of the project to improve the chances of successful plant establishment. However, following a fierce winter at High Peak in 2014, relentlessly strong winds caused repeated damage to the frame which has necessitated the abandonment of the structure in its original form. The vital protection it provided has been lost but, in its place, improved and modified wind breaks have been erected which will hopefully compensate. An additional water capture and storage system is also being installed. Climate monitoring of the site is still considered as a valuable element of the project, but a slightly different role is now envisaged. We intend to profile the natural habitat and examine how wind protection and mist deposition vary with vegetation structure. This element has now been postponed to the final year of the project.

## **3. Colony of spiky yellow woodlice established in captivity**

At the time of writing the project proposal, the world population of spiky yellow woodlouse was estimated to be approximately 50 individuals in one habitat patch measuring less than 400 m<sup>2</sup>. Since then, a second tiny fragment has been located (following advice from Mike Thorsen, 2014) in a further fragment of black cabbage woodland. This fragment is perched on a narrow cliff ledge approximately 200 m from The Dell and is inaccessible without ropes. There are assumed to be approximately another 50 individuals here, but the site is so difficult to reach that it will be impossible to work there on a regular basis. However, the new population provides a further reserve of individuals and decreases the risk of removing some for captive breeding.

In the original project proposal, we had intended to build a facility and start the captive breeding programme early in the project. Progress on this has been delayed due to the changes in the project delivery schedule. Since the spiky yellow woodlouse is extremely rare and there is little room for error, it is important to get the approaches right from the start. Initially, project staff on St Helena developed a consultation with ZSL and with Marwell Zoo, who are both world leaders in invertebrate conservation. We have jointly consulted with other experts on the best solution and hope to assemble a final working group. In fact, it has proved very difficult to learn from experience because the biology of the species is so different from that of a 'conventional' woodlouse that existing knowledge base is of limited use. However the experience has taught some valuable lessons.

## **5. Biodiversity inventory and Habitat Action Plan produced for the Dell**

Work was due to start on this activity in the second quarter. The plant survey was conducted before the official start of the project, and the data were also used to inform the Endemic Plant Survey of St Helena under another Darwin Plus project (DPLUS008). No further survey work has been conducted yet.

### **Additional note: Change to project implementation**

One particular problem was encountered during the first year, which will be described at the onset of this report since it has necessitated a major change in the project delivery. The problem involved the status of the project leader, Phil Lambdon. Phil was largely employed as an independent ecologist on St Helena when the proposal was submitted, and he had verbally pledged part-time support to another project (the St Helena Airport Landscape and Habitat Mitigation Project, LEMP). Since DPLUS025 was well-suited to a half-time post, a split-time arrangement working on two projects seemed to fit well. However, the agreement with the consortium who had intended to take on the LEMP later fell-through and this left Phil with only DPLUS025. The reduced income was insufficient to maintain a living wage. He was eventually forced to leave the island following an offer of well-paid employment overseas.

In order to protect DPLUS025, we discussed the issue with Darwin Plus and agreed a Change Request. Management of the project was passed from the St Helena Nature Conservation Group to the St Helena National Trust (SHNT). SHNT are a larger organisation, better

equipped to cope with changing circumstances and to provide logistical support where necessary. Also, Darwin Plus kindly agreed to extend the project duration to three years, spreading the same deliverables over a longer time frame. According to the revised project plan, Phil will spend a one-year 'sabbatical' off St Helena before returning to complete the project. The break started after the first six months, so effectively, the project then entered a hiatus, to be resumed in late 2015. However, Rebecca Cairns-Wicks has kindly agreed to step-in as interim project leader for the intervening period on a part-time basis. This will enable routine maintenance to be conducted to the site at the Dell, and, with the support of EMD, continued cultivation and planting of nursery-reared plants over the extended period. This will hopefully enable a greater area of habitat to be restored throughout the duration of the project. No additional funds have been requested to cover this period as the re-organization can be achieved within budget. However, it has been necessary to postpone some activities. A revised implementation timetable is attached to this report to clarify the consequences.

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

Despite the break in progress, the project has already initiated a conservation programme for St Helena's most threatened habitat. Work to buffer the last remaining 'extensive' fragment of black cabbage tree woodland is now under way, and the trees established thus far will already prove to be vital to ensure the continuity of the habitat, provided they survive to maturity. Moreover, by engaging with local stakeholders, we have raised the profile of black cabbage tree woodland so that it has now become a wider consideration in the island's conservation planning. This awareness is particularly timely, because a management strategy for St Helena's new Protected Areas Network is currently in development. Data acquired during the work have also fed in to revised red-list assessments of the island's vascular plants and bryophytes, which will contribute to the longer term basis for action.

By strengthening partnerships with RSPB, ZSL and Marwell, the island will also hopefully benefit from improved logistical support and knowledge sharing.

## **2.3 Progress towards project outputs**

There are no immediate concerns over delivery of any of the project outputs, despite revisions to the delivery schedule:

### **1. Habitat restoration at The Dell**

This objective has started positively and is currently ahead of the intended schedule. As a result of the extended duration of the project, it is likely that substantially more plants will be grown than originally envisaged. This is particularly valuable for black cabbage tree because it is very slow-growing (at least one year is required in the nursery). The two year project span originally posed a substantial constraint on the number of saplings which could be produced.

### **2. Assessment of effectiveness of shade canopy at enhancing re-establishment of cloud forest on open ground**

The loss of the shade canopy has been disappointing, but we judged that it was probably better to press-on with a reasonably safe alternative than risk continued setbacks. Originally we envisaged a scientific paper on the use of the new methodology. The focus of this will now shift slightly, but the new aim, to quantify the role of vegetation structure in wind reduction and mist capture, will be equally valuable to St Helena.

### **3. Colony of spiky yellow woodlice established in captivity**

Due to the disruption after the first 6 months, it was not possible to commence the captive breeding work in the first year of the project. When Phil Lambdon returns, there will be a little under 18 months of the project remaining, which is still adequate time to develop the facilities, commence the breeding programme and secure a longer term future for the initiative within St Helena's conservation network.

### **4. Completion of studies into the biology of the spiky yellow woodlouse**

Since this activity was based on research conducted in the captive breeding facility, it has been delayed along with Activity (3). There is still ample time for completion.

## **5. Biodiversity inventory and Habitat Action Plan produced for the Dell**

Survey work was intended to be an on-going activity during suitable windows between other activities on the project. The work is currently on-schedule and there is no reason to suspect that it will not be completed. The Habitat Action Plan will be one of the final activities completed.

## **2.4 Progress towards the project outcome**

There is no reason to suspect that any of the project outcomes will not be fulfilled:

***Habitat restoration work will (in subsequent years) increase the area and connectivity of the surviving black cabbage tree woodland, stabilizing the existing fragment and creating conditions for rare specialist inhabitants to expand.***

The habitat restoration work is currently progressing well. Based on the current stage of the project, targets for planting have been equalled or exceeded for all species. The area cleared of invasive weeds is also on schedule.

***A Habitat Management Plan will provide guidance for efforts to be continued into the future.***

The Habitat Management Plan will not be released for some time.

***Spiky yellow woodlouse numbers will be increased ex situ, saving them from extinction and providing potential for reintroduction at a future date.***

As explained above, work on the captive breeding facility has not yet commenced but this is considered to be a top priority for when the project manager returns.

***Lessons learned (e.g. the value of a new shade canopy technique) will be well documented so that others can benefit from our experiences.***

Data collection is proceeding in parallel with the habitat restoration work. Some of the knowledge gained regarding conservation of black cabbage tree woodland will shortly be disseminated in red list accounts, for the spiky yellow woodlouse and St Helena's endemic and threatened native plant species.

## **2.5 Monitoring of risks**

Risks identified in the original project proposal were as follows:

### **1. Core personnel leaving**

The project has faced a considerable challenge in the first year due to unavoidable staffing problems. By acting reasonably swiftly to secure a change request, and the valuable help and cooperation of the Darwin Plus management, it is hoped that this will not have an impact on the ultimate delivery and may actually provide some significant benefits to the overall project (i.e. through more time for vegetation establishment).

### **2. Failure of breeding in captive woodlice**

The risks currently remain the same. It is not yet possible to provide further assessment since the breeding colony has not yet been established.

### **3. Infection of plants or woodlice in the captive facility by fungal or other pathogens**

As for Risk 2, the breeding colony has yet to be established.

#### **Additional risks:**

### **4. Decline or extinction of wild population during project hiatus period**

Throughout the year, monitoring of the wild colony of woodlice at The Dell has been maintained and numbers do not appear to have declined further. There is thus no reason to suspect that

the delay will increase the risk to the wild population. Rat baiting of the area has been continued as a precautionary measure.

### **5. Lapse in habitat restoration work during hiatus period**

It is hoped that this will not be an issue, thanks to the temporary transfer of management to Rebeca Cairns-Wicks, one of the most experienced ecologists on St Helena and someone who already has an excellent understanding of High Peak and its threatened plant species.

### **3. Project Stakeholders**

There have been no particular challenges with any stakeholders, who have all contributed importantly to the project:

**EMD** have provided logistical help from the start. They have played a major role in almost exclusively growing plants for the project, and assisted with conveying these to the site. They have also provided extra man power to help with planting during times when capacity was stretched.

**RSPB** have been available for advice and were particularly valuable in mediating the change requests. They have also helped with forging links with other institutes to share information on woodlouse ecology. However, their main role was originally intended to develop more strongly in the later stages of the project (e.g., with dissemination of information), and due to the unforeseen hiatus, this has been delayed.

**SHNT** cooperated with grace in transferring the project management role to SHNT, and have remained available to assist where necessary. It is envisaged that they may later play a role in local dissemination of the project findings and may perhaps establish some interaction with the captive spiky yellow woodlouse colony, though nothing has yet been discussed in detail.

**ZSL** have participated extensively in discussions over logistics of managing a captive breeding effort for the spiky yellow woodlouse, and have helped establish further contacts with a network of experts. They have been instrumental with developing preliminary ideas and will undoubtedly be important when efforts gather momentum over the next two years.

### **4. Monitoring and evaluation**

As the project is relatively small, the monitoring was always envisaged to be fairly low-key and informal. Since progress was largely curtailed after the first six months, there has been less to report than would otherwise have been the case. Rebecca Cairns-Wicks currently circulates a brief monthly report on project progress to stakeholders and other interested parties on St Helena. Various members of the local conservation network (St Helena Government and SHNT staff) have also visited The Dell to view progress. From the activities to date, the number of plants introduced to the restoration area and the success of their establishment are the main quantifiable indicators of success. Both have been satisfactory.

### **5. Lessons learnt**

The major practical failure was the lack of success with the shade canopy, which had originally been seen as pivotal in protecting plants from the wind and maintaining high levels of moisture on the degraded soils of the restoration site. The failure was partly due to the extreme conditions which are experienced at The Dell during the winter; few similar projects face such severe weather on a regular basis. The initial wind damage was relatively minor and it would have probably been possible to make running amendments to the shade canopy design to preserve its use, but the project has little inbuilt staffing capacity and the task was quite a large one. It was not possible to assemble heavy labour at the short-notice needed to prevent ongoing high gusts from exacerbating the problem. Both SHNT and EMD staff offered assistance, but could not prioritise it immediately. By the time emergency help arrived, the frame had collapsed and the netting was badly torn.

The decision to redesign the protective cover in favour of enhanced windbreaks was taken after extensive consultation. We accepted that there remained a risk of further damage, and the same logistical problems over responding to it quickly could reoccur. The compromise option loses something in efficiency, but carries a much lower risk of damage.

The major logistical problem, which resulted in the temporary loss of the project leader, Phil Lambdon, was to some extent a result of misfortune. There was little that project staff could do to prevent the loss of Phil's second part-time job which made continuation impractical. However, efforts will be made in future grant applications to minimize staff dependence on multiple funding sources. Given that the failure occurred, we feel that the 'safety net' acted effectively. All stakeholders came to a swift decision on the best course of action and Darwin Plus were extremely helpful. As a result, the project has survived.

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

We have not yet received comments from previous reviews.

## **7. Other comments on progress not covered elsewhere**

## **8. Sustainability**

Internationally, RSPB have promoted articles on their on-line blog and given at least one interview to a national UK newspaper. Buglife have also contributed an on-line blog on the spiky yellow woodlouse. It is hoped that the publication of red list accounts covering both the spiky yellow woodlouse and St Helena's threatened plant species, will also highlight the problems.

The current project has raised awareness of the spiky yellow woodlouse and the importance of black cabbage tree woodland locally, although this has mainly been achieved via discrete discussions within the conservation network. Collaboration with St Helena's 'Community Forest' Darwin Project, which is also working in the High Peak area, together with increasing realisation of the urgent plight of the island's cloud forest habitats, may have strengthened the likelihood of securing long-term 'investment' in High Peak beyond the project's end. However, there is admittedly little tangible outcome to support this contention and further efforts are still needed. Project staff have engaged in a radio interview (Saint FM), but as the work programme has still only effectively been running for 6 months with a number of ongoing disruptions, the major efforts at raising public awareness have yet to develop.

## **9. Darwin Identity**

As noted above, there have still been relatively few project outputs and therefore little opportunity to acknowledge Darwin Plus's contribution. The funding has been credited in our Saint FM radio interview, in on-line blogs and Darwin Plus features in several Red List accounts which are currently awaiting publication. The Darwin Plus logo is present on the Spiky Yellow Woodlouse page of the SHNT website.

A very high proportion of all conservation funding on St Helena now comes from Darwin and Darwin Plus projects. Within conservation circles, the importance of this is already well-embedded. Amongst the general public there is, unsurprisingly, less awareness. Although the name "Darwin" is regularly mentioned, communicating a more detailed message can only come in reasonably extensive pieces, and these are more easily delivered towards the end of projects when there are substantial achievements to discuss.

## 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				
Capital items				
Others (Please specify)				
<b>TOTAL</b>	<b>9085</b>	<b>8201.81</b>	<b>294.19</b>	

Due to the change request, which has resulted in the funding for 2014-15 being extended over 2 years, the spending “target” has been set to cover total expenditure only. No specification was set on for each individual budget line, and we assume that it is only necessary to ensure that these balance after the second year of the project. Therefore, the % variance merely indicates how much we have left to spend in 2015-16. We have attempted to ensure that the total expenditure meets the agreed amount. There is in fact a slight underspend, because overseas shipping charges were not billed within the financial year, but this is less than 5% of total.

## 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)



## Checklist for submission

	Check
<b>Is the report less than 10MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> putting the project number in the Subject line.	
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<b>Have you included means of verification?</b> You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	
<b>Do you have hard copies of material you want to submit with the report?</b> 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.	