

Darwin Plus: Overseas Territories Environment and Climate Fund

Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders (<http://darwin.defra.gov.uk/resources/>) it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Darwin Plus project information

| | |
|----------------------------|---|
| Project Ref Number | DPLUS008 |
| Project Title | A rare plant census of St Helena |
| Territory (ies) | St Helena |
| Award holding Organisation | St Helena Nature Conservation Group |
| Partner Organisations | Environmental Management Division, St Helena Government |
| Grant Value | £8,650 |
| Start/end date of project | 1st April 2013 - 31st March 2014 (plus 6-month no-cost extension period for writing-up) |
| Author(s), date | Phil Lambdon & Shayla Ellick, 14 th October 2014 |

1 Project Rationale

St Helena is home to many of the most threatened species currently protected under the UK's international obligations. Basic population mapping is a fundamental early step in the conservation process, although a deficiency of necessary skills in field identification, survey techniques and data management has long been a barrier. Many populations are highly fragmented and could disappear without short-term action. Accessible knowledge of the locations will:

- help to prioritise conservation efforts
- facilitate monitoring programmes
- enable seed to be collected from a wide range of sources in order to preserve genetic diversity
- inform biodiversity action plans and the high-profile development of a National Protected Area network.
- raise international awareness of St Helena's conservation plight, (e.g. through publication of Red List accounts).

Over recent years, St Helena has benefited from the presence of a small number of enthusiastic amateur and professional conservationists. This group has accrued knowledge of a large number of endemic plant populations, to the extent that the flora is now better known than at any time in the past. However, most of the knowledge is restricted to a few individuals with only temporary residency status, and no structured means or motivation to record their knowledge. The aims of the project were as follows:-

- 1) To capture this information before it is lost, by visiting and recording all locations using GPS. This would be used to create a GIS layer which could be added to the St Helena Environmental Information System (managed by St Helena Government but publically available).
- 2) Whilst visiting the sites, we planned to gather information on the state of each population (counts of the number of plants) and ecological data concerning the species present.
- 3) To use the resulting data to publish updated red-list assessments for all of St Helena's endemic flowering plants and ferns.

2 Project Achievements

2.1 Purpose/Outcome

The major deliverable from the project was the capture of all endemic plant locations on a GIS layer made available to St Helena Government's GIS Department. This aim has now been achieved. The data set encompasses over 570 individual parcels of land containing endemic plants, and an additional 300 point locations where scattered endemic individuals were recorded. (It should be noted that some of these locations result from sub-division of larger expanses of land in order to provide finer resolution to the data collected). The parcels cover approximately 3.5% of the total land area. Since St Helena is a very small island there is little ground that has not been scanned and we believe that this represents close to 99% coverage of the likely endemic plant populations present. There remain some sections of inaccessible cliff face which could not be surveyed. Never the less, the data set provides very detailed and comprehensive levels of completion, considerably exceeding our original goals. To our knowledge, there are no other nations or 'county-sized' islands where the extent and number of plants present is known for approximately 70% of native species (in St Helena's case this equates to most endemics and the rarer natives).

There were three endemic species which could not be mapped at this level of precision because they were too widespread. However, in these cases, the population was sub-sampled by walking transects across random parts of their range. These data provide both a repeatable baseline against which change can be measured, and also enabled, through simple habitat occupancy modelling, an estimate of the true range and distribution to be made. In total, endemic species were considered to occur over approximately 13% of St Helena. However, when the three most widespread species are removed from the assessment, the total area covered by the remaining endemic taxa drops to just 1.3% of the island's land mass. That is, 42 endemic species are entirely reliant on fragments of habitat which total only 1.6 km². Hopefully the benefits of the data set can be appreciated from these few simple statistics. Not only does the work offer a vivid assessment of the state of St Helena's critically threatened flora, but also provides a powerful tool to permit monitoring and conservation to take place in a community with relatively few resources or trained staff to commit to broader surveys and management.

The newly collated information has highlighted some areas of concern which will hopefully shape future conservation priorities on the island. Whilst the full consequences of the analysis will take some time to emerge, major implications identified thus far include:-

- The reduction of the false gumwood population (*Commidendrum spurium*) to 6 individuals including the loss of a single genetically-isolated tree. Seed from this tree has now been repatriated from Edinburgh Botanic Gardens to compensate for impacts on the breeding gene pool.
- The loss of 84% of the world population of Barn fern (*Ceterach haughtonii*) to the St Helena airport development. This species now becomes a conservation priority.
- Decreases of the wild populations of dogwood (*Nesohedyotis arborea*) and the cabbage (*Pladaroxylon leucodendron*) to under 50 individuals. Both species have been planted along paths in Diana's Peak National Park, giving a misleading impression of their abundance, and neither has previously been considered an urgent conservation priority.
- On a positive note, the population of the very rare old father live forever (*Pelargonium cotyledonis*) proved to be somewhat larger than previously thought, with over 1,000 plants found on Man & Horse cliffs and 300 at Great Hollow. The latter site needs protection against rabbit grazing.

There will probably eventually be several mechanisms of disseminating the results of the work, but the first of these has been to review the IUCN Red List status of the endemic flora. This has the advantage that (a) it offers an internationally recognized standard method for assessing threat status and making comparisons with other taxa worldwide, and (b) it is a widely-

publicized and often quoted resource, freely accessible on the internet. Unfortunately it has not yet been possible to publish the data because the list is updated only 1-2 times per year, and written accounts are subject to international peer review. The data processing was only completed in early October 2014. The first batch of assessments has been disseminated for internal consultation on St Helena and the entire work will subsequently be submitted to IUCN for publication in the next revision. We think it is imprudent to release the findings until the review process has been completed. However, the provisional assessments suggest that 22 species should qualify as Critically Endangered (the highest category of threat). This is approximately 1% of the total number of plants which have been identified as Critically Endangered across the world to date. Huge numbers of taxa have yet to be assessed and so the figure is clearly heavily biased, but never the less, it does provide a stark indication of the conservation plight on an island forming a tiny fraction of the world's land mass.

Training was an additional major objective of the project, and Shayla Ellick, a key developing member of St Helena Government's Environmental Management Division, has played a very active role in the fieldwork throughout. This has enabled her to acquire further skills at plant identification and survey methodology, and she has also gained direct knowledge of the locations and the types of conservation challenges facing St Helena's plants. Such a high level of knowledge embedded within government is extremely valuable. In addition, Shayla has improved and developed skills with GIS, database management and red list assessment.

2.2 Outputs

Four outputs were listed in the original project proposal:

- 1) **Census of rare endemic vascular plant species.** As described above, this has now been completed and is available for use. The data set comprises (i) a shapefile layer detailing the locations of endemic plant sites. The layer is available in ESRI format, and can be viewed through most standard GIS packages; (ii) An Access database which contains the full survey data set. The database format is better suited for manipulating and cross-referencing, thus for conducting numerical interrogation, and has a system of forms for ease of viewing and navigating. The two elements (shapefile layer and database) are easily linked, facilitating the creation of maps and various spatial analyses.
- 2) **Training in census and red listing methods.** As described in 2.1, Shayla Ellick has been trained, and has developed skills to implement in other areas of work.
- 3) **All endemic vascular plants on St Helena red listed.** This process is well under way and most of the analysis has been completed, although the review will take several months. It may be noted that the original objective was to "submit" the data sheets as it was never practical that full publication would be possible by the project end.
- 4) **Assessment of species status for *Panicum joshuai*.** This species of grass is probably endemic to St Helena, but in order to confirm the identity, further comparisons with the closest African relative (*Panicum stapfianum*) are necessary. It was envisaged that a standard growth trial would be made using specimens grown from seed of various local and African provenances. Unfortunately, this objective was not achieved. Seed of *P. stapfianum* was collected from South Africa but St Helena Government refused to allow it entry. The import had been discussed with St Helena's Biosecurity Unit by Phil Lambdon and the quarantine measures proposed were much tighter than for most commercial imports, but on arrival of the consignment the staff had a change of mind, and confiscated it. The reasons have been cited as relating to new biosecurity concerns over the quarantine arrangements, but Phil has had no further explanation.

In addition to the outputs originally intended, two additional outputs are likely to emerge in the near future:

Firstly, we are currently in the process of adding St Helena's 26 endemic bryophytes to the Red List assessments. The data available on these species are much less detailed than that for the vascular plants, but still sufficient to make a basic assessment in most cases. This additional opportunity comes as a result of efficiency in the process: The information is available, analytical formulas have been created and experience at the assessment process gained. Completing the data sheets is relatively straight forward.

Secondly, A local Red Data Book for plants, covering all St Helena's native and endemic species, will be produced. This is intended to incorporate all of the red list data sheets but also to expand on them, with analysis of the state of St Helena's flora in a local and global context. The document will help to publicize plant conservation issues locally. It will be produced shortly after the red list assessments are accepted for publication. This document will be forwarded to Darwin on completion.

2.3 Sustainability and Legacy

One of the main benefits of the Endemic Plant Survey is that it creates a baseline estimate of population sizes. Until this point, any estimates of population increases or decreases have been based largely on circumstantial evidence. For many species we have been unable to make any assessment due to lack of evidence. The new data set will enable future census programmes to examine exactly which populations are in decline and thus require additional attention.

More generally, the data set will allow adjustment of conservation priorities and may make the difference between extinction and survival for some species. For example, the veined tongue-fern (*Elaphoglossum nervosum*) has declined from 99 individuals in 2010 (personal observation, P. Lambdon) to 65 individuals in 2013. The main reason for the decline seems to be that certain parts of its habitat are becoming overgrown by invasive weeds. Identification of this threat will enable management to proceed. The species is seldom recognized on-island and few people know of its existence, so neglect would otherwise have been the likely outcome for this very rare species.

The red listing and production of a local plant red data book are both designed to disseminate the findings and thus secure longer-term engagement with the findings of the survey. They will serve as a useful reference source for a number of years to come.

Resources: The data set will be managed as part of the St Helena Environmental Information System in the future. Other than this, the project has few assets. A climbing rope was purchased to replace existing equipment owned by St Helena Nature Conservation Group/St Helena Government, which has suffered wear during use in the survey.

Staff: Shayla Ellick will continue to work with other environmental and conservation research projects, including environmental policy implementation for St Helena Government. Phil Lambdon is currently employed part-time on another Darwin Plus project but is seeking additional work elsewhere.

3 Project Stakeholders

The major form of stakeholder engagement in the project involved working with, and dedicated training of, a member of government staff (Shayla Ellick). As there are very few trained ecologists working within St Helena Government, the increase in knowledge is a vital investment to enable informed conservation management in the future. Shayla has played an integral role in the project and was central to managing and achieving the goals.

During visits to some of the sites, seed collections were made for seed banking and cultivation programmes run by St Helena Government's Endemic Plant Nursery. These have helped to increase the genetic diversity of accessions currently held, often from sites which would not normally be easily accessed. Regular discussions with staff in the Environmental Conservation Section have been maintained throughout the project, thus communicating important findings and helping to inform ongoing management decisions, long before production of the final documentation.

IUCN will also benefit from the addition of a large number of new Red List assessments.

4 Lessons learned

The project experienced problems in three forms, all of which we feel that we have learned from:

1) The year of the survey proved to be far from ideal. St Helena experienced a very unusually prolonged winter drought in 2013. Winter-germinating annual species were delayed in appearance for up to 3 months, and were present for an unusually short season. This meant that the programme had a substantially delayed start, and that species counts were somewhat atypical – mostly at the extreme low end of natural variation. However, the resultant data at least give an impression on the resilience of populations to extreme conditions.

2) The fieldwork took substantially longer than planned. In general, we were very happy with the efficiency with which the programme was organized, sites located and methodology adapted to suit our purposes. The main difficulty was that most of the localities had previously been identified during casual non-working trips, and because there was no imperative for it, there had not been sufficient attention to detail to estimate the true extent of the population. On arriving at a particular locality we often found that low densities of plants extended much further than expected. Most of St Helena's endemic species are now confined to very remote areas, typically on hazardous and unstable slopes. Obtaining an accurate assessment of the entire site thus became much more time consuming because traversing the extended zones presented significant safety issues. It should be noted that project staff are experienced fieldworkers who have been trained in rope work, and no undue risks were taken.

3) The project was designed to be largely managed and run by Phil Lambdon, working as a semi-independent ecologist under contract to the St Helena Nature Conservation Group. He readily admits that this arrangement had some draw-backs. Phil is dependent on contract funding to make a living. With the unexpected burdens imposed by (1) and (2) above, and the necessity to juggle other work, the schedule was difficult to meet. Furthermore, he experienced two periods of illness/injury which halted progress. Working outside a well-developed organizational structure, it was not possible to call on assistance from elsewhere to compensate.

The combination of difficulties noted above has necessitated a no-cost extension in order to complete the analyses and red-list assessments. Although not ideal, the arrangement under which the project was devised must be viewed in the context of life in the Overseas Territories: There is often very little money to achieve important objectives, and in this case there was no real alternative management arrangement possible. In the end, a substantial amount was achieved for very little. Also, without this vital continuation of funding, Phil would have had to leave St Helena, necessitating the loss of an ecologist with relatively long-term local experience.

In response to the difficulties, some amendments have been made for the management of a subsequent Darwin Plus project (DPUS 025) managed by Phil. These changes include a different structure to the deliverables in the proposal, and forging closer links with the St Helena National Trust to provide organizational and operational support.

4.1 Monitoring and evaluation

The only major change in design was the application for a 6-month extension to deliver the written outputs, as approved by Darwin Plus. As all the costs of the project were associated with the fieldwork phase, which was completed within schedule, no additional funds were sought.

4.2 Actions taken in response to annual report reviews

As this was initially a 1 year project, no previous annual reports have been filed.

5 Publicity

It was never practical to incorporate much publicity during the funded lifespan of the project. As a piece of work primarily designed to achieve data collection, there is relatively little of interest to report until the data have been collated and adequately analysed.

The work being conducted is known to the St Helena public. Thus far, progress reports have been filed in the Environmental Management Division's newsletter and the aims of the project outlined in a local radio interview.

However, as we now enter the completion phase, and when the red list assessments have been refereed, there is considerable scope to deliver public awareness. Project staff are committed to these ongoing actions, including:

- 1) Compilation of red list accounts for all of the endemic flora.
- 2) Production of a plant red data book for St Helena
- 3) Local newspaper and radio articles.
- 4) Dependent on interest, an international news feature.

Due to the considerable importance of the findings which the results seem to be generating, there is a reasonable chance that these will attract significant interest.

6 Finance and administration

6.1 Project expenditure

| Project spend since last annual report | 2013/14 Grant (£) | 2013/14 Total actual Darwin Costs (£) | Variance % | Comments (please explain significant variances) |
|--|-------------------|---------------------------------------|------------|--|
| Staff costs | | | | Overspend on time worked by project leader due to unavailability of technical assistance. |
| Consultancy costs | | | | The technical assistance required was unavailable due to other commitments which meant that the project leader had to take on more work. |
| Overhead Costs | | | | |
| Travel and subsistence | | | | |
| Operating Costs | | | | |
| Capital items | | | | |
| Others | | | | |
| TOTAL | 8180 | 8177.5 | | |

| Staff employed (Name and position) | Cost (£) |
|------------------------------------|----------|
| Phil Lambdon (Project leader) | |
| TOTAL | |

| Consultancy – description of breakdown of costs | Other items – cost (£) |
|---|-------------------------------|
| Andrew Darlow, technical surveying assistance and abseil support | |
| Russell Thomsen, collection of <i>Panicum stapfianum</i> seed from South Africa | |
| TOTAL | |

| Capital items – description | Capital items – cost (£) |
|------------------------------------|---------------------------------|
| Climbing rope | |
| TOTAL | |

| Other items – description | Other items – cost (£) |
|----------------------------------|-------------------------------|
| 0 | |
| TOTAL | 0 |

6.2 Additional funds or in-kind contributions secured

| Source of funding for project lifetime | Total (£) |
|---|------------------|
| Working time committed from Shayla Ellick by St Helena Government | |
| Donation of transport facilities by St Helena Government | |
| Donation of transport and office facilities by St Helena National Trust | |
| | |
| | |
| TOTAL | |

| Source of funding for additional work after project lifetime | Total (£) |
|---|------------------|
| Working time committed by Phil Lambdon to completing Red Data Book | |
| Working time committed by Shayla Ellick to supporting red list review process | |
| | |
| | |
| TOTAL | |

6.3 Value for Money

For less than £10,000 this project has produced a very important data set which will form the basis of terrestrial conservation planning on St Helena for many years to come. The amount of fieldwork required to achieve this total was substantial, and the project staff have worked very hard to produce it for much lower costs than would generally be expected based on international consultancy rates.

Annex 1 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) | 0 |
| 2 | Number of (i) people in UKOTs; and (ii) other people receiving other forms of long-term (>1yr) training not leading to formal qualification | (i) 1; (ii) 0 |
| 3a | Number of (i) people in UKOTs; and (ii) other people receiving other forms of short-term education/training (i.e. not categories 1-5 above) | 0 |
| 3b | Number of training weeks (i) in UKOTs; (ii) outside UKOTs not leading to formal qualification | (i) 20; (ii) 0 |
| 4 | Number of types of training materials produced. Were these materials made available for use by UKOTs? | None – all practical learning. |
| 5 | Number of UKOT citizens who have increased capacity to manage natural resources as a result of the project | 1 directly through training. It is difficult to say how many people will have increased capacity from provision of the data set. |
| Research Measures | | |
| 6 | Number of species/habitat management plans/strategies (or action plans) produced for/by Governments, public authorities or other implementing agencies in the UKOTs | 0 (The work will create a platform for species/habitat management plans but it was without our remit to produce them directly) |
| 7 | Number of formal documents produced to assist work in UKOTs related to species identification, classification and recording. | 1 (The Red Data book will set-out methodological standards) |
| 8a | Number of papers published or accepted for publication in peer reviewed journals written by (i) UKOT authors; and (ii) other authors | None, but 50 red list assessments will be published (+ hopefully > 20 further red list assessments for bryophytes) |
| 8b | Number of papers published or accepted for publication elsewhere written by (i) UKOT authors; and (ii) other authors | 0 (Papers may be produced based on the work but there has been insufficient time to focus on this yet). |
| 9a | Number of computer-based databases established (containing species/generic information). Were these databases handed over to UKOTs? | 1, which was handed over to UKOTs. |
| 9b | Number of computer-based databases enhanced (containing species/genetic information). Were these databases made available for use by UKOTs? | 0 |

| Code | Description | Totals (plus additional detail as required) |
|---|--|--|
| 10a | Number of species reference collections established. Were these collections handed over to UKOTs? | 0 |
| 10b | Number of species reference collections enhanced. Were these collections handed over to UKOTs? | 0 |
| Dissemination Measures | | |
| 11a | Number of conferences/seminars/workshops/stakeholder meetings organised to present/disseminate findings from UKOT's Darwin project work | 0 |
| 11b | Number of conferences/seminars/workshops/stakeholder meetings attended at which findings from the Darwin Plus project work will be presented/ disseminated | 0 |
| 12 | Number of national/local press releases or publicity articles (i) in UKOT; (ii) elsewhere | (i) 3, although further substantial efforts are envisaged to coincide with the red list publication. |
| 13 | Number of issues of newsletters produced | 1 |
| 14 | Estimated circulation of each newsletter. Were the newsletters made available in the UKOTs? | 50 people for newsletters, and internet |
| 15a | Number of dissemination networks established | 0 |
| 15b | Number of dissemination networks enhanced or extended | 0 |
| 16a | Number of TV programmes/features (i) in UKOTs; (ii) elsewhere | 0 |
| 17a | Number of radio interviews/features (i) in UKOTs; (ii) elsewhere | (i) 1, although further efforts are envisaged to coincide with the red list publication. |
| 18 | Number of news articles (including radio, media, newsletters, TV, etc) (i) in the UK; (ii) in the UKOTs; (iii) elsewhere | (i,ii) None yet, although efforts are envisaged to coincide with the red list publication. |
| Physical Measures | | |
| 19 | Estimated value (£s) of physical assets handed over to UKOT(s) | 0 |
| 20 | Number of permanent educational/training/research facilities or organisation established in UKOTs | 0 |
| 21 | Number of permanent field plots established in UKOTs | 571 |
| 22 | Value of additional resources raised for project (See Section 8.2 above) | £1,300 |
| Other Measures used by the project and not currently including in DI standard measures | | |
| | | |
| | | |

Annex 2 Darwin Contacts

To assist us with future evaluation work and feedback on your report, please provide details for the main project contacts below. Please add new sections to the table if you are able to provide contact information for more people than there are sections below.

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| Ref No | DPLUS008 |
| Project Title | A rare plant census of St Helena |
| | |
| Project Leader Details | |
| Name | Phil Lambdon |
| Role within Darwin Project | Project leader/manager |
| Address | 3 Fuller's Square, Jamestown, St Helena STHL 1ZZ |
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| Fax/Skype | |
| Email | |
| Partner 1 | |
| Name | Shayla Ellick |
| Organisation | Environmental Management Division, St Helena Government |
| Role within Darwin Project | Ecologist & training participant |
| Address | Environmental Management Division, Scotland, St Helena, STHL 1ZZ |
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| Email | |
| Partner 2 etc. | |
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| Organisation | |
| Role within Darwin Project | |
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