



Department  
for Environment  
Food & Rural Affairs



Foreign &  
Commonwealth  
Office



Department  
for International  
Development



## Darwin Plus: Overseas Territories Environment and Climate Fund

### Final Report

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

#### Darwin Project Information

Project Reference	DPLUS015
Project Title	Strategic management of invasive alien plants on South Georgia
Host country(ies)	South Georgia
Contract Holder Institution	Government of South Georgia and the South Sandwich Islands (GSGSSI)
Partner Institution(s)	Royal Botanic Gardens Kew
Darwin Grant Value	£92,200
Start/End dates of Project	September 2014 – September 2016
Project Leader's Name	Jennifer Lee
Project Website/blog/twitter	@GovSGSSI
Report Author(s) and date	Jennifer Lee, March 2017

### 1 Project Overview

South Georgia is part of the Territory of South Georgia & the South Sandwich Islands which is an uninhabited Territory in the South Atlantic. It is south of the polar front meaning it has low annual temperatures and more than half of its 3,755 km<sup>2</sup> area is permanently covered in ice. Nevertheless, South Georgia is home to an abundance of wildlife and recognised as a globally important wilderness area. Despite its harsh climate and isolation the island is affected by invasive species with the majority being focused around the former whaling stations on the central northern coast (Fig 1).



Figure 1. Map of South Georgia

In recent years, great progress has been made in eradication of invasive mammals with major projects to remove rodents and reindeer. There are currently 41 non-native plant species on South Georgia all of which have the potential to change ecosystems and impact on the character of the landscape. Prior to the Darwin project, some surveys of the distribution of nonnative plant species had been completed and local control undertaken but this was not comprehensive or systematic and so left South Georgia biodiversity vulnerable. Without urgent, wide-scale management, under climate change, increasing visitor pressures, and absence of grazing from rats and reindeer, many non-native plant species would spread to the point where control was not viable.

This project provided the basis to control and eradicate some of the species of non-native plants that are currently on the island, enhance biosecurity and build capacity to react rapidly if a new species is detected. In combination, these measures protect South Georgia's fragile terrestrial ecosystems. By sharing lessons learned and skills with colleagues in other over-seas territories, it is hoped some of these benefits will have wider reach.

## 2 Project Stakeholders/Partners

Although there is no native population on South Georgia, engagement with stake-holders was key to the planning and implementation of the project. The stake-holders for this project can be divided into two groups 1) those who are directly involved or affected by on-the ground operations 2) those who have a more general interest in South Georgia and its conservation.

The first group were engaged by regular communication and updates on project progress. Outside of the field season the project management group mainly kept in touch by e-mail and conference call and evidence of the success of this engagement was the delivery of the nonnative plant management strategy. The South Georgia Government Environment Officer, Jennifer Lee, was directly involved in the project management and was therefore able to ensure

that the progress and achievements of the project were reported back to the rest of the GSGSSI team. This also ensured that the GSGSSI as a whole, including the Chief Executive and Commissioner were engaged in the high level decision making process.

The Project Officer, Bradley Myer, was able to visit the UK and work at Kew Gardens in the development of the non-native plant guide between 4<sup>th</sup> and 21<sup>st</sup> January 2016 which was an excellent opportunity for more focused engagement and capacity building. During the field season, residents who live and work on South Georgia were engaged through regular updates at the weekly base meeting as well as an evening lecture and plant identification workshop. One of the station members was able to accompany the field team during survey trips to Cape Saunders and Koppen Point and so further build capacity. On a lighter note awareness about invasive species in general, but with a particular focus on the interactions between introduced mammals and invasive plants was highlighted at an invasive species pizza night. The highlight of the evening was the reindeer and bittercress pizza (Fig 2). In such a small community, this type of event was very successful in maintaining goodwill of local stake-holders and highlighting the work that the weed management team had been involved in.



*Figure 2. Reindeer and bittercress pizza*

The second group were engaged through presentations and feedback sessions on the project. A complete list of presentations can be found in Supplement 1. These public talks engaged a wide range of audiences and had a high impact. For example a talk on the projects was given at the UK Overseas Territory Conservation Forum conference in Gibraltar to 100 delegates from UKOT's and NGO's. An overview of the talk was published in the conference proceedings (Supplement 2). Social media was used to showcase the project using the central @GovGSGSSI handle which has 1.5K followers..

We also undertook some focused engagement with stake-holders in the Falklands as we felt this was particularly important given the close links between the Territories. Some project workers are based in the Falklands and others spend time their at the start and end of each season and all use the opportunity to meet with local government officials and visit local land owners who have problems with non-native plants. This provides a forum to talk about the project on South Georgia and how a similar approach and methodology could be adapted and used for conservation in the Falklands. The training on safe use of herbicides Falkland Island based project workers received as a result of this Darwin project has been of direct benefit allowing them to undertake similar conservation work in the Falklands.

Stake-holders were also engaged in the decision making process through formal consultation on the overarching GSGSSI 2016-2020 strategy and the National Biodiversity Action Plan where ideas for non-native plant management work were outlined. Although the concepts of non-native species management were endorsed, as plant management is a relatively technical field, little detailed feedback was received but to ensure appropriate expert engagement, reviews on the draft strategy were solicited from Kerry Brown, Peter Williams and Collin Clubbe. General updates on the project and other environmental work were provided in the GSGSSI annual reports and stake-holder meeting held at the Foreign and Commonwealth Office in London.

### 3 Project Achievements

#### 3.1 Outputs

Output	Baseline	Change by 2017	Source of evidence
Output: 1	Weed survey completed		
1.1 Visit and survey sites inaccessible during the 2009 Kew survey and sites recommended in their report	Some surveys undertaken by Kew in 2009 and GSGSSI in 2013 but information on weed distribution patchy and did not cover key areas such as whaling stations	In total more than 6,000 ha were surveyed in advance of preparation of the weed management strategy, including comprehensive searches of the old whaling stations at Prince Olav, Husvik, Leith and Stromness	See Supplement 3 for survey report
1.2 Compile special data and produce a weed survey report		This spatial data has been collated into the weed database and a survey report compiled. This was used as basis for drafting strategy	
Output: 2	Weed management strategy published		
2.1 Analyse survey data and produce species list to fill information gaps	Patchy survey data and incomplete species list	Survey data analysed and used as basis for subsequent weed classifications	See Supplement 3 for survey report and Supplement 4 for weed strategy
2.2. Prioritise and classify weed species and finalise strategy	Information gaps in the numbers of species present and distribution meant it was impossible to develop an overarching management strategy	All known non-native plant species classified and incorporated in to a peer reviewed strategy  Key performance indicators have been developed that can be used to monitor progress and assess success	See Supplement 4 for a copy of the strategy
2.3 Make strategy available online to enable information sharing	No formalised management strategy. Limited information available to public	Strategy published on GSGSSI website in March 2016	See <a href="http://www.gov.gs">www.gov.gs</a>

Output: 3	On going reduction in size and number of priority species identified in strategy		
3.1 Control undertaken as per strategy	Control of selected species being undertaken around King Edward Point and Grytviken	<p>Systematic and control programme in place for 37 out of 41 non-native plant species on South Georgia</p> <p>In 2016 4.39 ha was treated with herbicide</p> <p>33 species are now being managed to zero population density</p>	See Supplement 5 for season report including trends of species
3.2 All data recorded into the weed database to provide measures of success	Basic database in place which was used by plant specialists only.	<p>All data is now recorded in a non-native plant database and field workers are trained in its use.</p> <p>Database has been developed to include site led information and visits. The ability to import and export GPS waypoints of surveys has also been included in the on-island database.</p>	<a href="http://apex.nercbas.ac.uk/f?p=153:1">http://apex.nercbas.ac.uk/f?p=153:1</a>
3.3. Data analysed regularly and reported annually with strategy adapted based on results	<i>Ad hoc</i> review of data but no formal process of performance indicators	<p>Annual review enshrined in management strategy.</p> <p>NOTE: although target areas for site led control will be identified on an annual basis, the strategy will reviewed every 5-years rather than annually to allow a better assessment of trends and account for inter annual variation</p>	See Supplement 5 for season reports and Supplement 4 page 32 for details of on going review process
Output: 4	Early detection, rapid response strategy produced		
4.1 Partnership process agreed with Kew	No formal partnership process in place	Formal agreement outlining roles and responsibilities in place. Includes arrangements for transfer of specimens and data	See Supplement 6 for copy of agreement

4.1 Weed guide produced	Good biosecurity but poor local knowledge on plant ID.	A non-native plant guide has been produced	See Supplement 7
4.3 Incursion exercise undertaken and workshop held	No clear process on what to do in the event a new species was detected.	Procedure for establishing ID and management strategy for new species established in weed plan. Decision making framework developed.	See Supplement 8 for framework

		A plant ID workshop was held with KEP residents. Workshop covered what to do in event of incursion.	
Output: 5	Weed Database made available online		
5.1 Develop process for export from SG weed database to online database	Process not formalised	Process formalised with database hosting partner and export/import functioning.	Data from SG weed database hosted online
5.2 Online database available for information sharing	Database available offline and not to the public	Database now available online through the GSGSSI environmental data portal. Data visualisation to help measure progress with control work. Contact in place to integrate this into online GIS portal	<a href="http://apex.nercbas.ac.uk/f?p=153:1">http://apex.nercbas.ac.uk/f?p=153:1</a>
5.3 regular updates from island to online database	Updates made but procedure not formalised	Existing bandwidth not sufficient for live updates. Annual update procedure initiated.	<a href="http://apex.nercbas.ac.uk/f?p=153:1">http://apex.nercbas.ac.uk/f?p=153:1</a>

No significant problems were encountered in the project but the extent of some existing populations of non-native plants was larger than expected. For example, a high priority 'class one' species *Sagina procumbens* was thought to be restricted to within the former whaling station complexes but surveys reviewed a few outlying populations in the wider Stromness Bay area. Although sometimes demoralising, this was easily managed as any populations which were discovered in the project, and are discovered in the future are mapped and treated as per the non-native plant management plan. Long-term this is unlikely to affect the overall success of the project although for some species, it may mean that the downward population trend is not as rapid as initially hoped.

### 3.2 Outcome

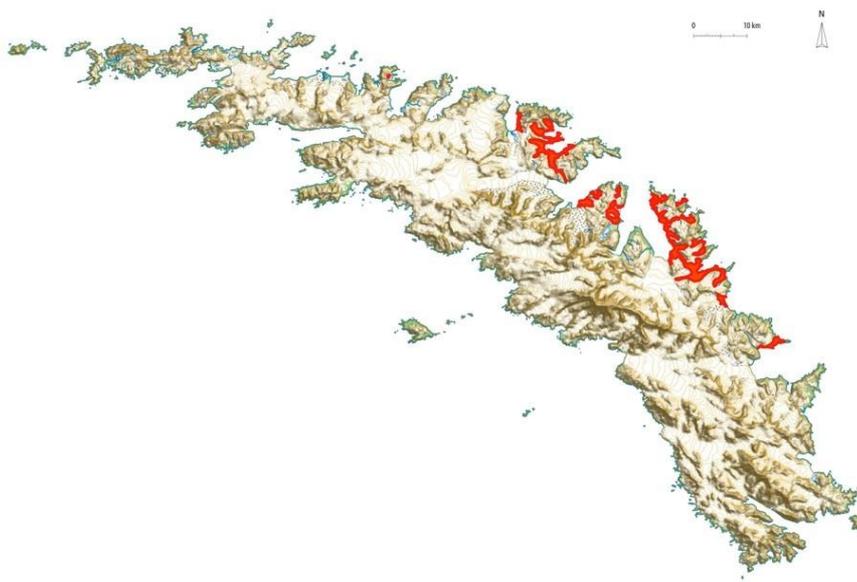
Our agreed project outcome was:

*“ Surveys will be undertaken and a weed management strategy finalised. Weed control will be undertaken and native biodiversity protected. Biosecurity responses will be improved and procedures to deal with new incursions developed. Strategy and data records will be available online for other Overseas Territories use.”*

Overall we feel the project has been successful in achieving its intended outcome and there are a number of indicators which substantiate this:

- **Survey reports and GIS data.** In the first year of the project a weed survey was undertaken. Sites with a history of human habitation and areas that were inaccessible during the 2009 RBG Kew survey were the main focus. In total more than 6,000 ha were surveyed, including comprehensive searches of the old whaling stations at Prince Olav, Husvik,

Leith and Stromness were made (Fig 3). This spatial data was collated into the weed database and a survey report compiled (see Supplement 3)



*Figure 3. Areas in red were surveyed in the 2014/15 season*

- **Published non-native plant management strategy.** Following analysis of the survey data, weed species were classified based on population size, number of sites and feasibility of control. This information was collated into a 5-year weed management strategy which clearly identified control priorities, resources needed to achieve them and identified a review framework to monitor success including a range of Key performance indicators. This document along with its associated EIA were peer reviewed by experts and then published on the GSGSSI website (see Supplement 4). Critically, the Darwin project also successfully raised the profile of weed management within the Government to the point a £250,000 funding commitment was secured in order to implement the weed management strategy.
- **Annual reports including quantitative data.** Each year an annual report is produced that gives an overview of the work undertaken and an update on the status and trend of each species (see Supplement 5). This is based on quantitative data from the South Georgia weed database and for those interested in longer-term trends, we have integrated a graphing and analysis feature into the 'Progress' section database so population trends can be visualised easily. (Fig 4) . Data for other species can be found at: <http://apex.nerc-bas.ac.uk/f?p=153:1>

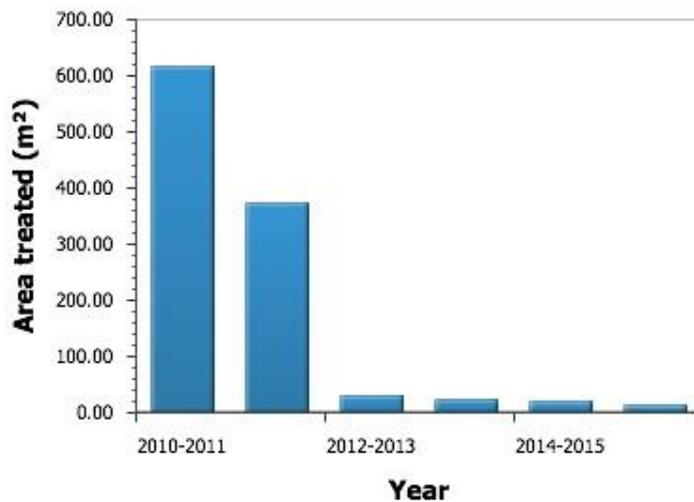


Figure 4. On-going control of bittercress has led to significant decline in populations

- Biosecurity handbook.** To ensure that work to eradicate non-native species is not undermined, it is imperative that good biosecurity provision is in place. This is important to prevent new species being brought into the Territory but also, in the case of nonnative plants in particular, to stop movements of seeds from highly invaded areas of South Georgia to relatively pristine ones. To ensure that all visitors to South Georgia understand their biosecurity obligations and the correct procedures they should undertake to ensure they fulfil them, we produced a 'Biosecurity Handbook' that has brought together all GSGSSI's policies into a single place so it can be easily accessed and provide a basis for discussion and regular review (Supplement 9)
- Weed guide and workshop.** A key element of biosecurity and incursion response is ensuring there is capacity to recognise non-native species and distinguish them from similar looking native species. As South Georgia has no permanent residents and staff at King Edward Point turn over relatively quickly (6 months to 5 years), we used a two prong approach. The first was to hold a workshop with staff present at the time to share information about the Darwin project and do some basic plant ID. Once awareness about the importance of non-native plants is raised in one cohort of staff, the institutional attitude shifts and it is passed on to further cohorts. This is re-enforced by members of the weed team year-on-year. The second element was to produce a high quality weed guide that could be easily used by people with no previous botanical experience. This will be given free to each visiting vessel and copies will be available on South Georgia for its residents. The guide shows clearly what species of plant are non-native and what their current distribution is so if plants are seen outside of this range, they can be reported to Government staff. These citizen surveys are an invaluable way to get information about plant distributions in otherwise rarely visited parts of the island.
- Weed database made available online (See <http://apex.nerc-bas.ac.uk/f?p=153:1>).** Storing information about weed distribution and control on an online database had several advantages. First it allowed members of the project team, who were often working in different countries, to share data and ensure they were working with the most up-to-date figures. It also provided a technical resource for environmental managers elsewhere to see what work had been undertaken on South Georgia, what herbicides had been used successfully on specific species and how overall the landscape was managed. Whilst every area and species is a little different, sharing lessons on what works and what has not is an important tool for capacity building and we hope also inspired people to take a systematic approach to weed management.

- **Information about the project disseminated to other OT'S.** To ensure the benefit of this project is as wide as possible, we have tried hard to engage with a variety of audiences in other OT's so they are aware of the challenges in relation to weeds on South Georgia and how these are being overcome. A full list of the outreach activities is available in Supplement 1. Much of this information dissemination was done out with the funding provided by Darwin and staff members used their own time and resources to travel to sites and engage with local communities.

### 3.3 Long-term strategic outcome(s)

During the project time frame GSGSSI developed a National Biodiversity Action Plan (NBAP) which outlined its environmental commitments and how these would be met over the period 2016-2020. The importance of weed management was captured under the following objective: (6.1) *Develop a non-native plant management strategy, identifying which, if any, species could be eradicated and which should be controlled.* Following on from this, a key output of the project was publication of the 'non-native plant management strategy 2016-2020' which detailed the rationale, goals and methods which will be used in weed management work on South Georgia. Both the NBAP and non-native plant management strategy have been formally adopted by GSGSSI with the latter also securing a £250,000 funding commitment over 5-years.

Ensuring that feedback from field workers and project staff based on South Georgia is integrated into the wider decision making process has been a key theme throughout this project. As well as raising awareness of the importance of invasive plant management for native biodiversity, the importance of the data legacy from the project for South Georgia and other OT's has also been successfully conveyed to policy makers. This is demonstrated in the fact that update and maintenance of the weed management database and integrating it with an online GIS platform has been included in a new contract with the British Antarctic survey which has a value of £64,000 (Note: this contract covers a wide range of data management and GIS tasks not just work relating to weed management).

The project team has also worked hard to transfer knowledge to practitioners and policy makers outside of South Georgia and have undertaken a range of outreach activities (see Supplement 1). By engaging at a range of levels from presentations at schools and community centres, site visits with landowners to presentations at international meetings, we hope that the global environmental reach of this project has been far reaching.

## 4 Sustainability and Legacy

The principal achievement of this project is to set in motion a process that will see 25 out of South Georgia's 41 non-native plant species eradicated by 2020 with others either being managed to zero population density, or reduced in their extent and being prevented from further spread (see Supplement 4 for full text). Eradication and control of non-native plants at a national scale like this is unprecedented and it will have significant benefits for South Georgia's native species. The non-native plant management strategy, which was a key output from this project, included resource estimation for how many staff days would be required in order to meet the strategy goal. This served to highlight how important and achievable non-native plant control work is in South Georgia and raised its profile within GSGSSI and amongst its stakeholders to the extent a £250,000 funding commitment was secured to ensure continuation of the project over the next 5-years.

Trained and appropriately skilled field workers are integral to delivering the long-term goals of the project. Building a pool of field workers who can engage in non-native plant control work is identified as an activity in the national biodiversity action plan. To achieve this a capacity building element has been built into the contract to deliver the weed management strategy and includes obligations to:

- Ensure that clear operations manuals and work guides are produced and maintained and plans developed
- Expanded the pool of workers with experience in South Georgia non-native plant management, engaging local staff and those who have a demonstrable commitment to on going work in the region where possible.
- Undertake public engagement and outreach activities which promote the project

In addition to a practical biodiversity and capacity legacy, the project has left an important policy legacy. Through workshops, talks and reports, the profile of non-native plant management has been raised in the region. A number of cross-territory initiatives to improve weed management and biosecurity at transport hubs have been instigated and GSGSSI has allocated up to £15,000 funding for this purpose in 2017.

Enhanced data management systems in the form of the online 'weed management database' mean that the information legacy of the project will persist which is an invaluable tool for field workers on South Georgia and helps inform daily and seasonal planning. As this tool is also now freely available online it can be used as a reference guide for other people interested in weed control work.

The majority of the materials bought with the Darwin funding were consumables (herbicide, PPE) and were used up during the project. As a result of the training and experience gained through the project, staff were able to put together a strong, and ultimately successful, bid during a recent tendering exercise for provision of labour to deliver weed control services on South Georgia. To ensure that this legacy continues, a key element of the weed management contract is to build capacity and increase the pool of suitably skilled and experienced field staff.

## 5 Lessons learned

A great strength of the project was the expertise and enthusiasm of project workers. A blend of field staff that had in depth knowledge of South Georgia and experts in non-native plant control and herbicide use proved to be an extremely effective combination and ensured that operations reflected current best global practice but were sensitive to the local environment. The project management structure appeared to work well and the project planning was largely successful identifying potential problems and mitigating them. Nevertheless, there were a few challenges and learning points which are highlighted below:

- **Uncertain logistics.** Logistics were a constant challenge and when working in such a remote environment and the availability of berths to get staff to South Georgia was one of the largest constraints through out the project. Although bids for berths are put in at an early stage, sometimes operational priorities mean that they are not always available at the required time. For projects which have complicated logistics, it is important to retain enough flexibility in the budget and staff availability to allow for early entry or late exit as needed and depending on when the field season is, this may mean carry over of funds from one financial year to another.
- **Staff orientation and expectations.** During fieldwork project staff were accommodated at the research station at King Edward Point. Summer is a busy time on station and so project workers stay in shared accommodation and contributed to domestic tasks on base. This community living is for some a highlight of their time on South Georgia but the lack of personal space can be a challenge. Project workers are

briefed on what to expect during the season but the focus was mainly on practical details rather than social setting. On reflection, this element should be emphasised more to ensure that personnel are prepared for the experience. If other projects are in a similar position and require staff to move to an overseas territory, especially if they have not worked in a small community before, a thorough orientation about what to expect would be beneficial.

- **Injury and family emergencies.** Two situations highlighted the potential impact of unforeseen staff absences on the project. Due to the injury of a team member in year two, it was necessary for field workers to rotate between sites to ensure that operational goals were met. This provided the opportunity for additional training and site orientation, and resulted in all field workers becoming familiar with all sites with more flexibility to rotate field teams. Also in the second year of the project, a family emergency leading to one of the project partners taking compassionate leave, led to a delay in the production of the weed guide. Staff emergencies as outlined above are impossible to predict and hard to manage but where the project team is small, it is important to be able to react quickly to the situation, re-distribute work as appropriate and, if necessary, be prepared to adjust outputs. If there is a mission critical element of the project, it is worth giving consideration to having some redundancy/overlap in duties. This may slightly increase overall cost but it would give more assurance of a successful completion of the project.
- **Communication infrastructure.** Although it was not a major issue in the project, it is useful to note that project members were often working with extremely limited, and sometimes non-existent internet and phone facilities. On South Georgia, bandwidth is 126 kbps shared between up to 30 people and this connection may be down for days at a time. When at remote field sites teams were limited to VHF radio or iridium communication. Because team members knew about the limitations and potential coms outages in advance, we were able to ensure that we had clear season plans and all messages between project partners were clear, concise, well structured and avoided any ambiguity. This led to really efficient communication and decision making under what could be considered difficult circumstances. For future projects, even if there should be good internet and phone facilities available, it is important to consider what would happen in the event of communication technology failure, and ensure the project could continue and still succeed.

## 5.1 Monitoring and evaluation

The only major change in the project was a delay in the publication of the weed identification guide as a result of a staff member taking compassionate leave (see above). In our original application, it was identified that a paper would be published in an internationally recognised peer-reviewed journal. On reflection, the applied nature of the project and the relatively long time frames required to see landscape level change meant we felt this element of evaluation was not appropriate at this stage. However, outreach and peer-review have been achieved through other means i.e. expert review of the weed strategy, and so we feel this element of evaluation has been achieved through other means.

The M&E system was useful in that it provided opportunity for structured reflection and in particular to assess whether the risk management element of the project was fully explored and mitigated. Most of the risks were correctly identified at the start of the project but two new ones (extent of existing populations being larger than expected and injury and illness of a staff member) were identified in year two. As the Darwin funded element of the project was almost completed by then, this did not influence the course of the project but it has been helpful in planning the implementation of subsequent work.

The project as a whole was reviewed internally by GSGSSI at the end of each field season through discussions with the project team, both as a group and individually through staff evaluations, and reporting to stake-holders (see annex Supplement 1). The key output of the project, the non-native plant management strategy 2016-2020 was externally reviewed by independent three independent experts Kerry Brown, Peter Williams and Collin Clubbe, to ensure that best practice standards were upheld. Looking ahead, a review process has been built into the delivery of the 2016-2020 strategy. This includes an annual internal review including Key Performance Indicator reporting and a formal external review and evaluation in 2020.

## 5.2 Actions taken in response to annual report reviews

The following comments were made on annual reports and actioned as outlined below:

Annual report year	Comment	Action taken
Y1	Include a consideration of the continued validity of original assumptions	<p>The main assumptions made when initiating the project were:</p> <p>1) <i>An appropriate control method could be found to manage the majority of non-native plant species found on South Georgia.</i></p> <p>This has proven to be a valid assumption as use of selective herbicides seems to be effective and has minimal environmental impact</p> <p>2) <i>Species could be controlled faster than their rate of spread</i></p> <p>For the majority of species, this appears to remain valid and control targets are being met (see annex 3 for season report).</p> <p>3) <i>Non-native plant species will be re-introduced or new species introduced to the island</i></p> <p>Although two new species have been identified these are likely to be historic introductions associated with livestock brought from the Falklands. Good biosecurity is in place and there is no evidence of new introductions inciting this assumption remains valid</p>
Y1	Include a summary of project worker's feedback as an annex to the next report	Included in section 4 of Y2 annual report
Y1	Greater consideration of the sustainability of the project in next report	Included in section 8 of Y2 annual report
Y2	In the future please provide more information about awareness raising activities in annexes	Target audiences and estimates of number of people attending awareness raising activities are now included in Supplement 1.

## 6 Darwin Identity

Although there is no resident population on South Georgia, there are more than 7,000 tourists and their support staff and a wide network of interested parties around the globe. The project team were always careful to acknowledge the UK Government and Darwin contribution to the project. For example, Government Officers give a mandatory briefing to all visitors to South Georgia. As part of this briefing they provide information about biosecurity and weed control (including what measures visitors can take to prevent spreading non-native plants). As part of this presentation, the role of the Darwin initiative in funding the current weed management project team is highlighted and the Darwin logo has now been included on slides.

Social media was used to promote the Darwin identity through Twitter posts that related to the work of the team carried out throughout the season and to the launch of the strategy. The @Darwin\_Defra handle was included in tweets about the project for ease of propagation (Fig 5).

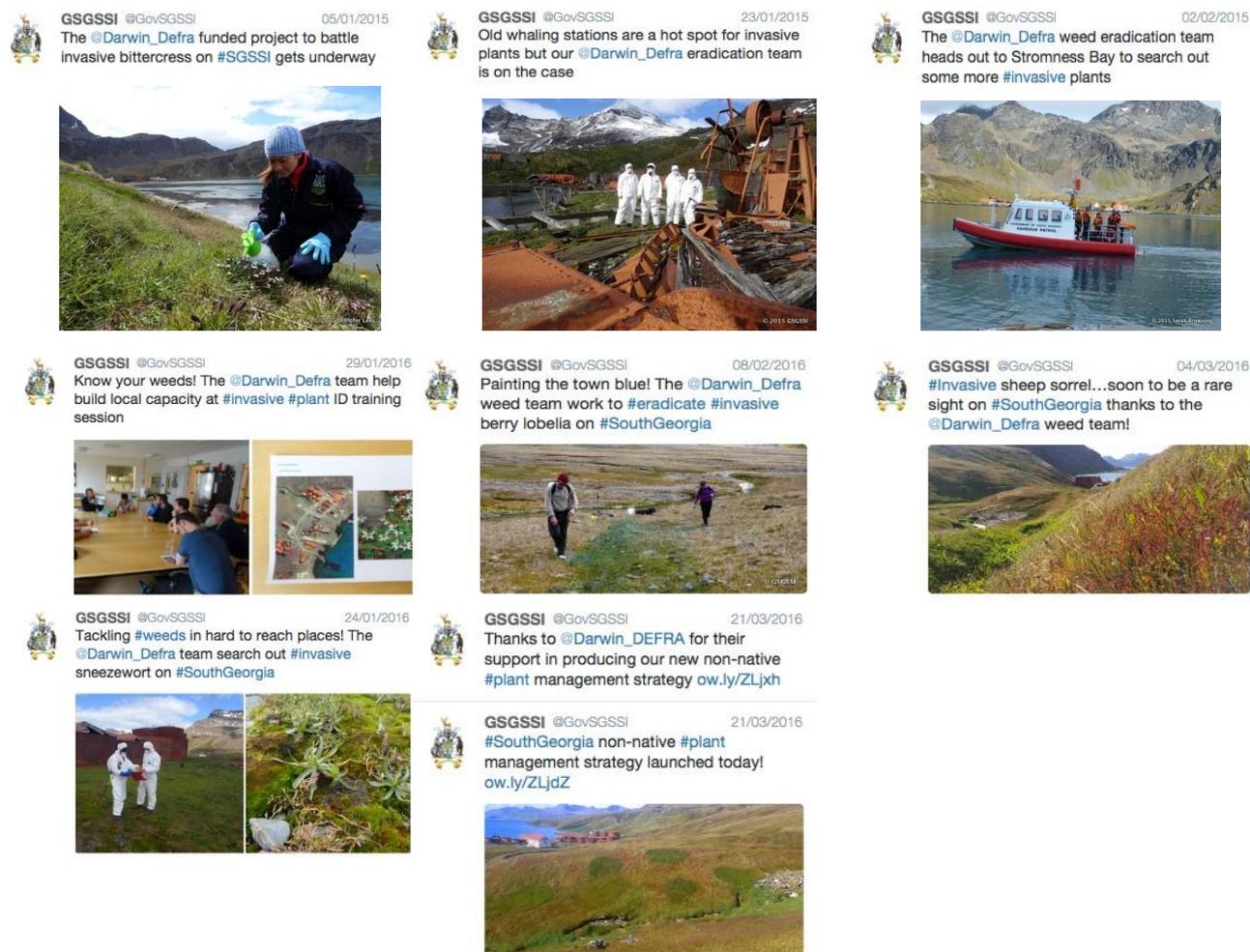


Figure 5 . Examples of tweets from the project

In Government newsletters, reports and presentations the project was referred to as the ‘Darwin funded weed management project’ or ‘UK Government funded Darwin project’ depending on the audience.

Within South Georgia and the Falkland Islands, the relatively small populations and the number of significant projects that have been funded by Darwin, mean that people are relatively familiar with the Darwin Initiative and this project served to re-enforce that understanding. The small local population belies the potential for outreach and the local population at KEP i.e. science and technical staff, were kept up to date with the project through workshops and weekly meetings, they were able to talk about it confidently and accurately when interacting with tourists from across the globe and received lots of positive feedback about the project and the UK/Darwin support of it.

## 7 Finance and administration

There has been no expenditure since the last annual report. As the core fieldwork and management strategy had been completed, the only outstanding output was publication of the weed guide. This had been largely completed using the allocated funds but finalisation of the publication was delayed because of a family emergency (see change request form).

### 7.1 Project expenditure

There was no grant in 2016/17. Spend of funds allocated from Darwin was fully accounted for in previous annual reports

### 7.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
<b>GSGSSI</b>	
In-kind staff time (estimated at 2 months)	
Use of fisheries patrol vessel in support of remote site access	
Accommodation at KEP (estimated)	
Use of RHIB and jet boat in support (approximately 40 hours)	
<b>Kew</b>	
Staff time and overheads	
<b>TOTAL</b>	<b>£106,680</b>

Source of funding for additional work after project lifetime	Total (£)
GSGSSI – provision of labour for weed management 2016-2020	
GSGSSI – cross Territory biosecurity and weed management	
FCO – Update and maintenance of SG online GIS platform (includes a range of tasks including incorporation of weed management data)	
<b>TOTAL</b>	<b>£329,000</b>

### **7.3 Value for Money**

This project provided value for money in two key ways. First, because of the effects of climate change, increasing visitor numbers and the removal of rats and reindeer that were keeping some species at reduced levels meant, without the intervention that was provided by this project, control would have either not been possible or would have been massively expensive. Second, this project has helped enhance biosecurity and raise awareness about the threat of invasive species meaning new aliens are less likely to get introduced and so save not only cost to remove them, but also potential future damage to biodiversity. This increase in awareness about the importance of non-native plant management and the systems needed to support it has meant that as a result of the £92,200 investment by Darwin, the project team have successfully managed to leverage more than three times that in continuing support for the work.

At an operational level, the logistic challenges of getting staff to South Georgia and the cost of supporting them whilst they were there meant that the best value for money solution was to use experienced staff who had the necessary skills to arrive on the island and commence work immediately. Although costs could have been reduced by utilizing volunteers, the need for intense training and supervision would mean it would have been less likely that the project goals would have been met in the relatively short summer season. To ensure sustainability, and long-term value for money, in addition to the core survey and control work, the project staff worked hard to build capacity amongst people based at KEP and in the Falkland Islands so that in the future there is a larger pool of experienced staff to work with.

**Annex 1** Project's original (or most recently approved) logframe (if your project has a logframe), including indicators, means of verification and assumptions. N.B. Insert your full logframe. If your logframe has changed since your application and was approved by a Change Request the newest approved version should be inserted here, otherwise insert the Stage 2 logframe. If your application's logframe is presented in a different format in your application, please transpose into the below template. Please feel free to contact [Darwin-Projects@ltsi.co.uk](mailto:Darwin-Projects@ltsi.co.uk) if you have any questions regarding this.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p><b>Impact:</b></p> <p>At the conclusion of this project South Georgia should have fewer non-native plants, any remaining populations will be reduced (outputs 1 to 3) and measures will be in place to prevent further invasion (output 4). Removal of non-native plant species assures survival of native habitats and the wealth of biodiversity they support.</p> <p>Successful implementation of targeted weed management on South Georgia will serve as an inspiration and will be transferable to OT's facing similar problems (output 5), in particular the Falkland Islands, Gough Island and Tristan da Cunha will benefit from shared knowledge and access to the weed management database.</p>			
<p><b>Outcome:</b></p> <p>Surveys will be undertaken and a weed management strategy finalized. Weed control will be undertaken and native biodiversity protected. Biosecurity responses will be improved and procedures to deal with new incursions developed. Strategy and data records will be available online for other Overseas Territories use.</p>			
<p><b>Outputs:</b></p> <p>1. Weed survey completed</p>	<p>1a. Survey report</p> <p>1b. GIS maps</p>	<p>South Georgia weed database, GIS data</p>	<p>Assume that key areas e.g. whaling stations, can be accessed safely in order for surveys to be completed</p>
<p>2. Weed management strategy published</p>	<p>2a. Strategy published on GSGSSI website</p>	<p>Published strategy</p>	<p>Support within GSGSSI to continue implementing weed control for next 5years</p>
<p>3. On going reduction in size and number of priority species identified in strategy</p>	<p>3a. Quantitative data is reported annually from the SG weed database</p>	<p>South Georgia weed database</p>	<p>Effective herbicides can be identified and populations do not expand at a rate greater then they can be controlled</p>

4. Early detection, rapid response strategy produced	4a. Residents of KEP and South Georgia will be briefed on what to do if they find an unknown species at workshop hosted by GSGSSI. 4b. A guide to known invasive and easily confused others will be produced. 4c. The strategy will also be available on the GSGSSI website	An exercise/workshop held on South Georgia, published weed guide	Interest in biosecurity and weed control within KEP residents
5. Weed Database made available online	5a. Online database with data visualisation	South Georgia weed database	N/A

#### Activities

- 1.1 Visit and survey sites inaccessible during the 2009 Kew survey and sites recommended in their report
- 1.2 Compile special data and produce a weed survey report
- 2.1 Analyse survey data and produce species list to fill information gaps
- 2.2 Prioritise and classify weed species and finalise strategy
- 2.3 Make strategy available online to enable information sharing
- 3.1 Control undertaken as per strategy
- 3.2 All data recorded into the weed database to provide measures of success
- 3.3 Data analysed regularly and reported annually with strategy adapted based on results
- 4.1 Partnership process agreed with Kew
- 4.2 Weed guide produced
- 4.3 Incursion exercise undertaken and workshop held
- 5.1 Develop process for export from SG weed database to online database
- 5.2 Online database available for information sharing
- 5.3 Regular updates from island to online database

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

Project summary	Measurable Indicators	Progress and Achievements for the life of the project
<p><b>Goal/Impact:</b></p> <p>At the conclusion of this project South Georgia should have fewer non-native plants, any remaining populations will be reduced (outputs 1 to 3) continue this work into the future. and measures will be in place to prevent further invasion (output 4). As a result of the reduction in non-native species, native biodiversity is able to flourish in the absence of competition for light and space</p> <p>Successful implementation of targeted weed management on South Georgia will serve as an inspiration and will be transferable to OT's facing similar problems (output 5), in particular the Falkland Islands, Gough Island and Tristan da Cunha will benefit from shared knowledge and access to the weed management database</p>		<p>All project goals have been achieved. The range and extent of non-native species on South Georgia has been reduced and plans are in place to native biodiversity is able to flourish in the absence of competition for light and space the wealth of biodiversity they support.</p> <p>Removal of non-native plant species assures survival</p>
<p><b>Outcome</b> Surveys will be undertaken and a weed management strategy finalized. Weed control will be undertaken and native biodiversity protected. procedures to deal with new incursions developed. Strategy and data records</p> <p><b>Output 1.</b> Weed survey completed</p>	<p>Survey report and GIS maps</p>	<p>Overall we feel the project achieved its outcome. See section 3.2 for full details and indicators Biosecurity responses will be improved and will be available online for other Overseas Territories use</p> <p>Output achieved. See Supplement 3 for survey report</p>
<p>Activity 1.1 Visit and survey sites inaccessible during the 2009 Kew survey and sites recommended in their report</p>		<p>In total more than 6,000 ha were surveyed in advance of preparation of the weed management strategy, including comprehensive searches of the old</p>
<p>Activity 1.2. Compile special data and produce a weed survey report</p>		<p>whaling stations at Prince Olav, Husvik, Leith and Stromness have been made</p> <p>This spatial data has been collated into the weed database and a survey</p>

		report compiled. This was used as basis for drafting strategy
<b>Output 2.</b> Weed management strategy published	Strategy published on GSGSSI website	Output achieved. See Supplement 4 for copy of strategy
Activity 2.1. Analyse survey data and produce species list to fill information gaps		Survey data analysed and used as basis for subsequent weed classifications
Activity 2.2. Prioritise and classify weed species and finalise strategy		All known non-native plant species classified and incorporated in to a peer reviewed strategy  Key performance indicators have been developed that can be used to monitor progress and assess success
Activity 2.3 Make strategy available online to enable information sharing		Strategy published on GSGSSI website in March 2016.
<b>Output 3.</b> On going reduction in size and number of priority species identified in strategy	Quantitative data is reported annually from the SG weed database	Output achieved and progress on-going. See Supplement 5 for season reports
Activity 3.1 Control undertaken as per strategy		Systematic and control programme in place for 37 out of 41 non-native plant species on South Georgia  In 2016 4.39 ha was treated with herbicide  33 species are now being managed to zero population density
Activity 3.2. All data recorded into the weed database to provide measures of success		All data is now recorded in a non-native plant database and field workers are trained in its use.  Database has been developed to include site led information and visits. The ability to import and export GPS waypoints of surveys has also been included in the on-island database.

Activity 3.3 Data analysed regularly and reported annually with strategy adapted based on results	Annual review enshrined in management strategy.  NOTE: although target areas for site led control will be identified on an annual basis, the strategy will reviewed every 5-years rather than annually
	to allow a better assessment of trends and account for inter annual variation
<b>Output 4.</b> Early detection, rapid response strategy produced	Residents of KEP and South Georgia will be briefed on what to do if they find an unknown species at workshop hosted by GSGSSI. A guide to known invasives and easily confused others will be produced. The strategy will also be available on the GSGSSI website  Output achieved although will require on-going input from weed team due to staff turn over at KEP. This will be greatly aided by non-native plant identification guide – see annex 7
Activity 4.1 Partnership process agreed with Kew	Formal agreement outlining roles and responsibilities in place from October 2014. Includes arrangements for transfer of specimens and data
Activity 4.2. Weed guide produced	A non-native plant identification guide has been produced. See Supplement 7
Activity 4.3 Incursion exercise undertaken and workshop held	Procedure for establishing ID and management strategy for new species established in weed plan. Decision making framework developed.  A plant ID workshop was held with KEP residents. Workshop covered what to do in event of incursion.
<b>Output 5.</b> Weed Database made available online	Online database with data visualisation  Output achieved but will be regularly updated and further refined according to the on-going needs of the project. See <a href="http://apex.nercbas.ac.uk/f?p=153:1">http://apex.nercbas.ac.uk/f?p=153:1</a>
Activity 5.1 Develop process for export from SG weed database to online database	Process formalised with database hosting partner and export/import functioning.

Activity 5.2. Online database available for information sharing	Database now available online through the GSGSSI environmental data portal. Data visualisation to help measure progress with control work. Contact in place to integrate this into online GIS portal
Activity 5.3 Regular updates from island to online database	Existing bandwidth not sufficient for live updates. Annual update procedure initiated.

## Annex 3 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)	
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)	4 people received training on safe use of herbicides to manage invasive species
3b	Number of training weeks (i) in UKOTs; (ii) outside UKOTs not leading to formal qualification	i) Approx. 8 weeks
4	Number of types of training materials produced. Were these materials made available for use by UKOTs?	Chemical information sheets and mixing guides (including H&S info). Available on SG
5	Number of UKOT citizens who have increased capacity to manage natural resources as a result of the project	Approximately 180 (estimated based on totals of UKOT citizens who attended outreach activities identified in Supplement 1)
<b>Research Measures</b>		
9	Number of species/habitat management plans/ strategies (or action plans) produced for/by Governments, public authorities or other implementing agencies in the UKOTs	South Georgia non-native plant management strategy 2016-2020
10	Number of formal documents produced to assist work in UKOTs related to species identification, classification and recording.	South Georgia weed guide
11a	Number of papers published or accepted for publication in peer reviewed journals written by (i) UKOT authors; and (ii) other authors	
11b	Number of papers published or accepted for publication elsewhere written by (i) UKOT authors; and (ii) other authors	

12b	Number of computer-based databases enhanced (containing species/genetic information). Were these databases made available for use by UKOTs?	South Georgia weed database <a href="http://apex.nercbas.ac.uk/f?p=153:1">http://apex.nercbas.ac.uk/f?p=153:1</a>
<b>Code</b>	<b>Description</b>	<b>Totals (plus additional detail as required)</b>
13a	Number of species reference collections established. Were these collections handed over to UKOTs?	
13b	Number of species reference collections enhanced. Were these collections handed over to UKOTs?	South Georgia herbarium reference collection
<b>Dissemination Measures</b>		
14a	Number of conferences/seminars/workshops/stakeholder meetings organised to present/disseminate findings from UKOT's Darwin project work	12 (number taken from Supplement 1 less UKOTCF meeting)
14b	Number of conferences/seminars/workshops/stakeholder meetings attended at which findings from the Darwin Plus project work will be presented/ disseminated	1 (UKOTCF meeting)
<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 4 Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. weblink, contact address, annex etc)
Strategy document*	GSGSSI (2016) Non-native plant management strategy 2016- 2020. Government House, Stanley, Falkland Islands	N/A Government publication	Government of South Georgia & the South Sandwich Islands	N/A	N/A	<a href="http://www.gov.gs/">http://www.gov.gs/</a>  and Supplement 4
Book*	Field guide to the introduced flora of South Georgia (2017) R Upson, B Myer, K Floyd, J Lee, C Clubbe	UK	UK	Female	Royal Botanic Gardens Kew, Richmond, Surry, TW9 9AB	Supplement 7

## Annex 5 Darwin Contacts

<b>Ref No</b>	DPLUS015
<b>Project Title</b>	Strategic management of invasive alien plants on South Georgia
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