



# **ALIEN PLANTS ON SOUTH GEORGIA**

## **Season Report 2014-2015**

Government of South Georgia and the South Sandwich Islands

Date:  
June 2015



## INTRODUCTION

---

Alien plant management work during the 2014/15 season focused on completing project outcomes for the Defra funded Darwin project “Strategic management of invasive alien plants on South Georgia” project. Comprehensive plants surveys to fill gaps in distribution data were undertaken to enable a strategy to be drafted. More than 6,000 ha was surveyed this season over reindeer and human disturbed areas (Figure 1). Along with these surveys, continuing control was undertaken on low incidence weed sites.

The draft weed management strategy along with an environmental impact assessment is now being prepared from information gathered this season.

There are 75 alien plant species recorded from South Georgia. Of these, 35 species are historic and presumed extinct, three are widespread and naturalised, three are common locally and five have a limited distribution and further information is being sought from the Darwin project partner Royal Botanical Gardens at Kew. There are 29 other species that are managed on a zero population density basis. All known sites in this last group were checked, and all known sites were treated.

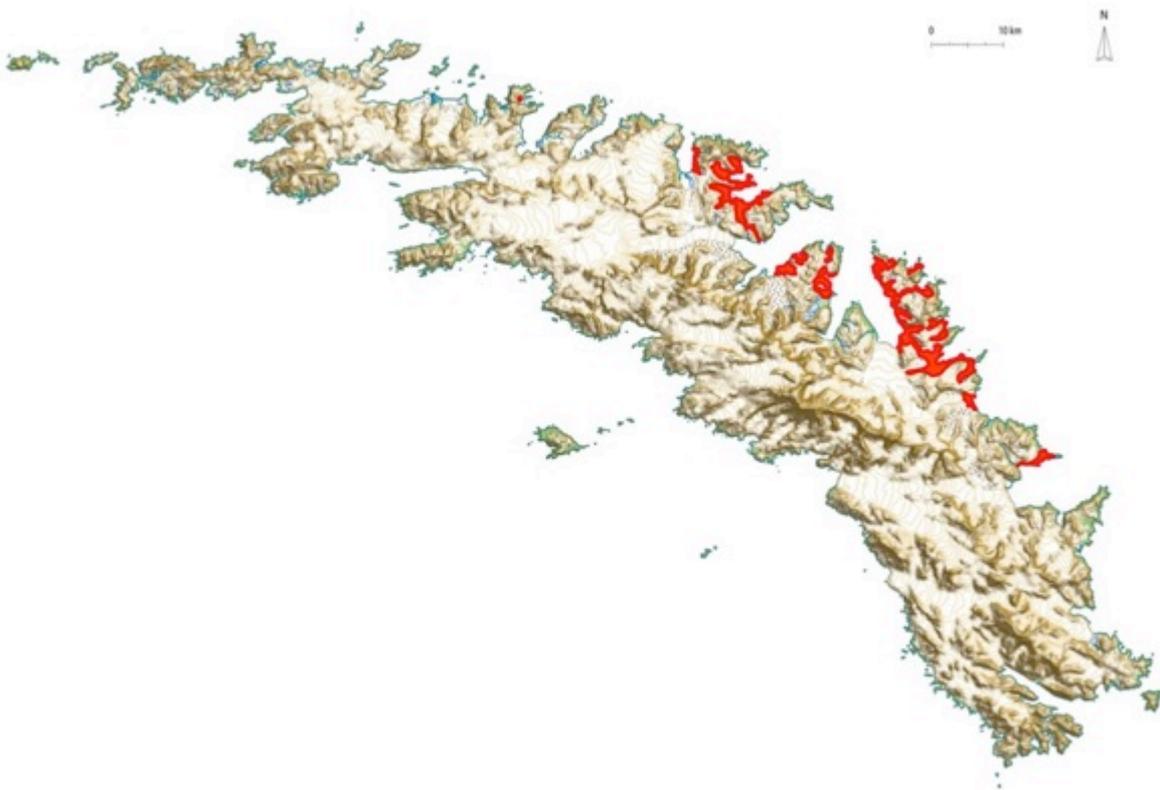


Figure 1: Areas surveyed this season shown in red

## WORK UNDERTAKEN THIS SEASON

---

This season the Weed Team was led by Jennifer Lee and Kelvin Floyd. The field team consisted of Bradley Myer, Sally Poncet, Ken Passfield and Sarah Browning. Brad and Kelvin arrived at King Edward Point on the 8<sup>th</sup> of January and conducted a herbicide training exercise with Jen and Sarah. Jen, Sarah, Brad and Kelvin visited Prince Olav Harbour to survey and control weed populations. Brad and Kelvin joined Sally and Ken in Husvik for a week in late January. The training exercise was repeated and survey and data management techniques were established. In March Kelvin was seconded to undertake monitoring of non-target mortality following the rat eradication project. Brad, Sally and Ken departed South Georgia on the 14<sup>th</sup> of March.

Four sweeps of the *Cardamine glacialis* sites were completed this season. Seed pods were collected and disposed of. Targets were sprayed with contact and pre-emergent herbicides. This combination is providing effective and sustained control. The total volume of herbicide used was down on previous years. This may be used as a proxy for demonstrating decline in the target population. The spatial data collected during operational delivery should confirm that the target population has collapsed and overall the population appears to be on the path to eradication. However, questions regarding the viability of the seed in the soil remain. The mechanism of seed dispersal, knowledge of the site and target all provide confidence that the entire population is being managed.

Two sweeps of the *Sagina procumbens* sites in Grytviken, Leith and Husvik were completed this season. Overall numbers of plants appear to be in decline but known sites continue to produce plants. For the first time, *Sagina* was found outside the whaling stations near Husvik and two new sites were discovered. Both sites were treated and will be monitored into the future.

Some of the grass species such as *Agrostis capillaris*, *Tristenum spicatum*, *Deschampsia cf. parvula* and *Poa pratensis* are locally common. The focus this season has been to map these species and trial a haloxyfop based herbicide on the outlying populations. Haloxyfop based herbicides are expected to provide effective control of grasses leaving indigenous forbs to suppress weed seedbanks.

The cessation of grazing in Stromness Bay in the past two years and the more recent removal of reindeer from the Barff Peninsula has meant that many previously unnoticed plants are showing themselves as they grow above surrounding vegetation. Because of this, and later survey dates than previous seasons, it was possible to see plants in flower for the first time which made their detection easier. These new plants and sites have received control, and the species summary control graphs need to be interpreted in the context of the effect of the removal of grazing as most of the coverage recorded in the reindeer areas are new plants found rather than regrowth.

Leith, Stromness, Husvik, Fortuna Bay (east side to Small Bay), the Shackleton Walk route (Fortuna to Shackleton Valley), Pintail Peninsula, Karrakatta Valley, Husdal and Olsen Valley were surveyed extensively by Sally and Ken. Kelvin mapped the invasive plants on Barff Peninsula. These surveys provided valuable information that will inform the weed management strategy. The extensive survey work produced a few plants which could not

be positively identified. Samples were taken and delivered to the project partners from Kew Gardens. Similarly there are issues regarding whether certain species are indigenous or introduced. This is the case for five species. Discussions regarding a process for making such decisions are currently underway with staff from Kew Gardens and will be an integral part of the early detection rapid response strategy which will be developed next year. One of the locally common species from the Husvik area remains unidentified however initial thoughts from the botanists at Kew suggest that it is *Deschampsia cf. parvula*.

Further trials were established to determine the efficacy of herbicides at low rates of concentration on common targets and non-targets in an attempt to find a tool for the management of high traffic sites, such as the jetty at King Edward Point. It is likely that the Strategy will recommend the management of these sites on a site led basis, targeting all exotic species to prevent their spread by people to other parts of the island.

During the season Brad wrote a draft Environmental Impact Assessment for the project. Preparations were made for the writing of the weed management strategy. Some work was done in the development of Standard Operating Procedures. Kelvin amended the South Georgia Weed Management Database to allow for a page of species specific management information that includes control methodologies to be included.

Herbicide usage and species details were recorded daily with all information entered into database.

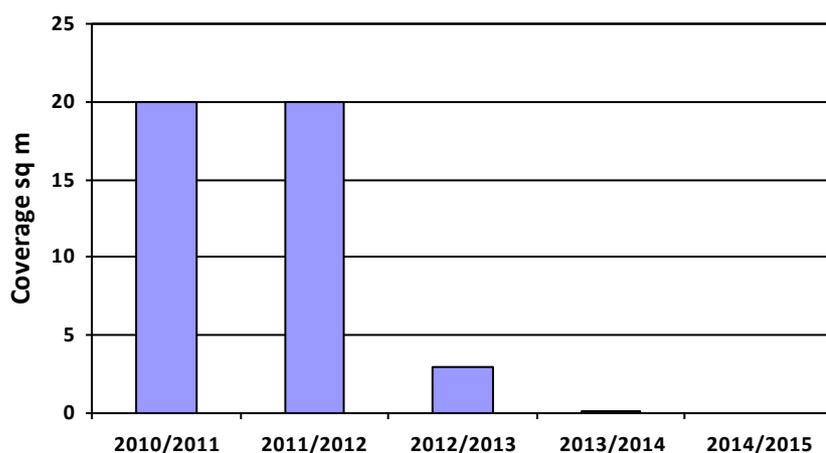
## SOUTH GEORGIA ALIEN PLANT STATUS 2014/2015

---

Graphs below species summary show total plant coverage treated in square metres for each control season.

### *Achillea millefolium* Yarrow

A very small patch of non-flowering plants (0.01 m<sup>2</sup>) were found at the known site of this plant (to the east of the Grytviken church) and treated.



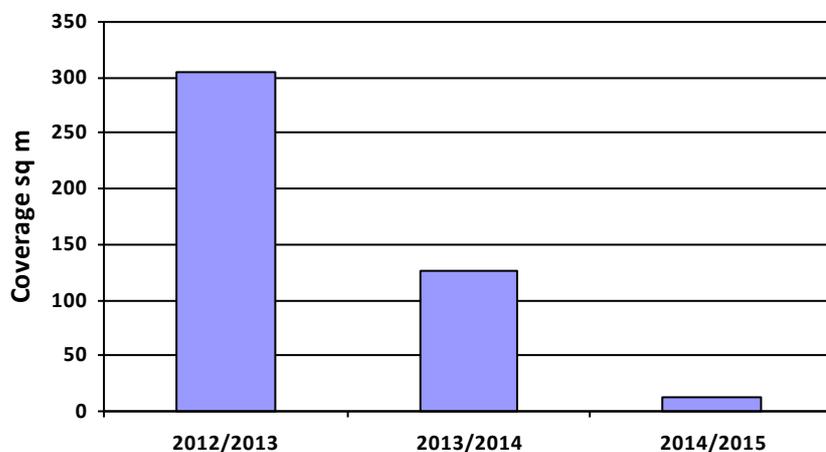
### *Achillea ptarmica* Sneezewort

Previous control seems to be very effective with few plants found this season.

At Husvik some plants are appearing that have been suppressed by reindeer or have been spread by floods along the stream but overall the Husvik population appears under control.

At Stromness no plants reappeared at previous site.

In Leith only a few outliers around the previous site were found and treated.



### ***Agrostis capillaris* Common bent**

Some follow up was undertaken on small sites around Grytviken but the main focus this season was to quantify the populations spread by reindeer on the Lewin and Barff peninsulas.

The survey data will be used to inform the strategy.

### ***Agrostis vinealis* Brown bent**

The known site near Grytviken cemetery, sprayed in 2011/12, was searched but brown bent was not found.

Some new sites were found in the Husvik area and were treated.

### ***Alchemilla monticola* Velvet lady's mantle**

Several records of velvet lady's mantle are held on the BAS's plant database. All sites were visited in 2014 but no plants were found, suggesting that the species has died out naturally.

### ***Allium schoenoprasum* – Chives**

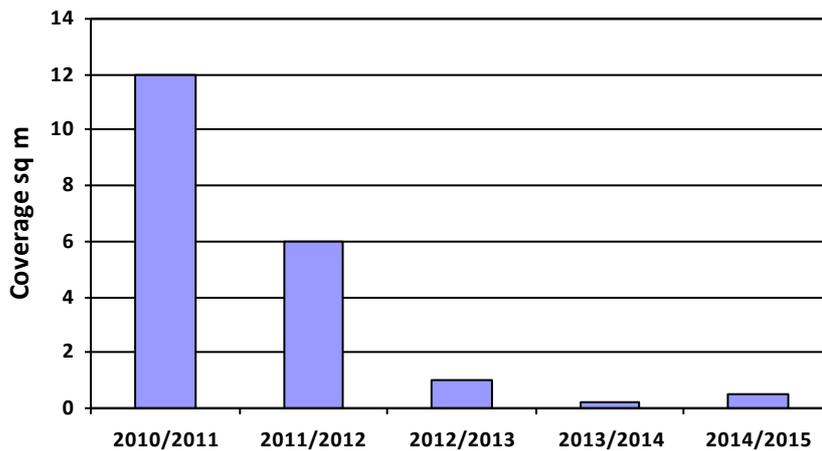
A very small patch of chives was located at Leith Harbour whaling station; the site matched historical records and was treated.

### ***Anthoxanthum odoratum* Sweet vernal grass**

Sweet vernal grass occurs at one site on the lower slopes of the Husdal valley, Husvik. This site was treated this year.

### ***Anthriscus sylvestris* Cow parsley**

Several flowering plants were found and sprayed on the northern side of Nybrakke at Grytviken this season. These were controlled before they produced seed, however this site continues to produce seedlings from the original plants seedbank.

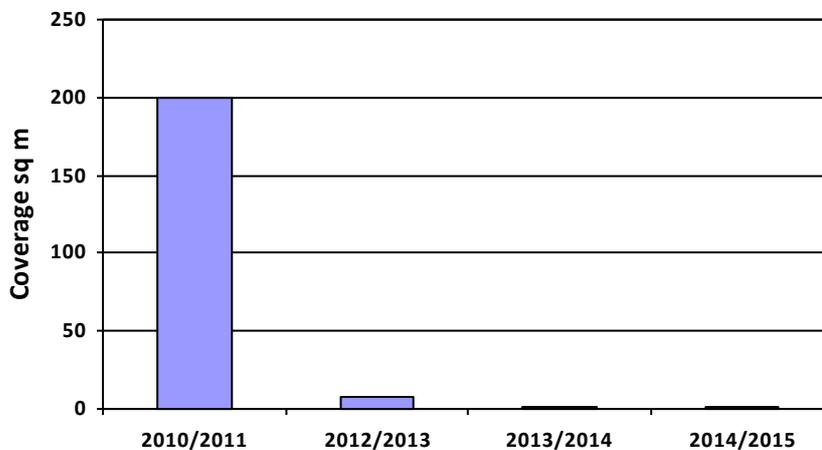


### ***Capsella bursa-patoris* Shepherd's purse**

There are records of this species at KEP and Grytviken but not seen since 2006. Not-recorded this season.

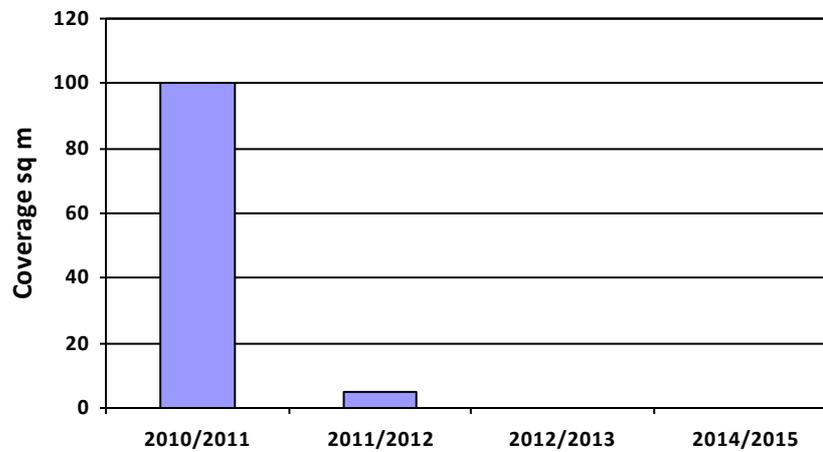
### ***Carex aquatilis* Water sedge**

Follow-up visits to the site at Husvik found approximately 1 m<sup>2</sup> remaining of small plants behind the radio shack; these were sprayed.



### ***Carex nigra* Common sedge**

No plants were found this season at the Ocean Harbour site.



### ***Carex* sp. Sedge species**

The small patch of *Carex* species sprayed in 2012/13 at Karrakatta Gorge and the small patch sprayed on the west shore of Block Lake in 2013 were not found this year. Identification is being undertaken at Kew.

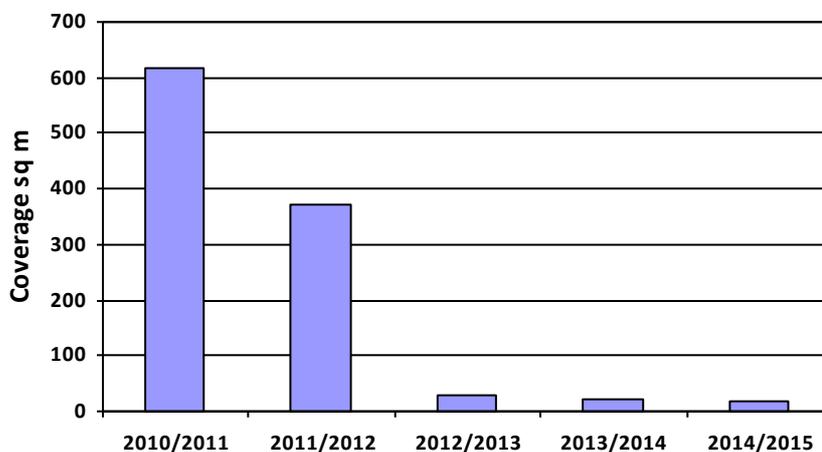
## ***Cardamine flexuosa* Bittercress**

Bittercress surveys commenced in early December and continued through to the end of March. Throughout January and February, new plants were found on a regular basis throughout this period so fieldworkers endeavoured to search the entire vegetated area around KEP on a two week rotation. This enabled the vast majority of plants to be found and sprayed before they were able to set seed. However, in early March a handful of plants were found that had managed to set seed before they were detected appearing out of the native vegetation.

All vegetated areas were walked in transects approximately 1 m apart. All bittercress plants found were marked with a GPS waypoint, and notes were taken to record the coverage at each marked location. Spraying commenced in late December and continued until early March. The majority of herbicide was delivered through hand sprayers, directly onto the target plant. This is a conscious effort to limit damage to the surrounding non-target species, particularly greater burnet (*Acaena magellanica*). Where dense concentrations of plants were found within grassland, blanket spraying was occasionally employed.

In total, 17.68 m<sup>2</sup> of bittercress were sprayed this season, compared with 20.84 m<sup>2</sup> last season, 373 m<sup>2</sup> in the 2011/12 season and 617 m<sup>2</sup> in 2010/11.

The vast majority of bittercress plants detected in surveys were seedlings or first year plants, which were sprayed before they had the opportunity to set seed.

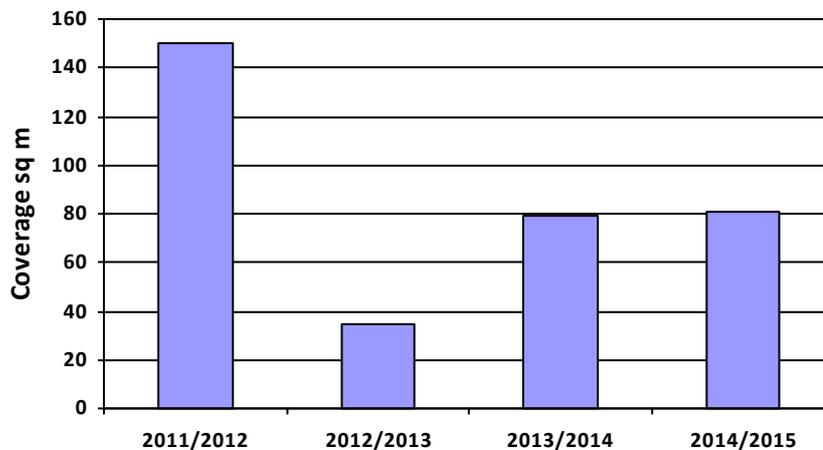


### ***Dactylis glomerata* Cocksfoot**

No sign of the single plant controlled in 2010 at Grytviken was found this season.

### ***Deschampsia cespitosa* Tufted hair-grass**

Previous control has been effective at Grytviken, Husvik, Stromness and Leith. However, new clumps and seedlings at both old and several new locations were found; these were all treated.



### ***Deschampsia flexuosa* Wavy hair-grass**

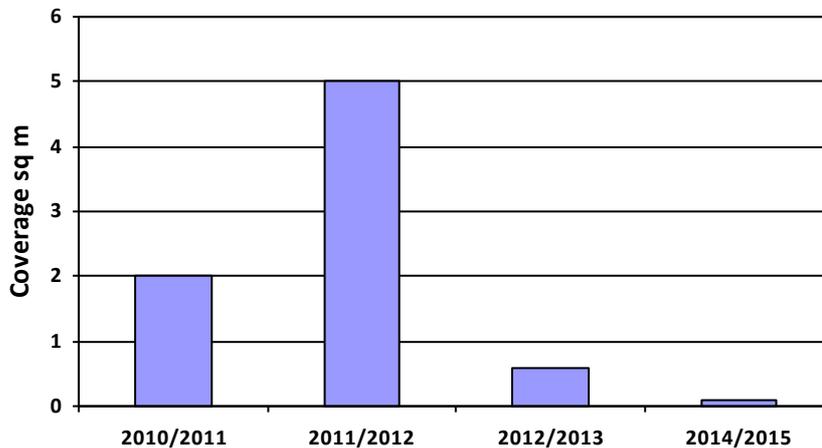
A single plant was located at Husvik and controlled. No plants were found at the Maiviken site.

### ***Deschampsia sp. Parvula* (to be confirmed)**

An unidentified grass was documented and collected in 2012 from the Husvik area. It has not yet been identified, though is suspected to be *D. parvula*. Its extent was surveyed this season, when it was found in several large areas around Husvik and a few smaller areas on Pintail Peninsula and Kelp Point. With cessation of grazing by reindeer, this species has the potential to spread rapidly within Stromness Bay and environs.

### ***Elytrigia repens* Couch Grass**

No couch grass was recorded from Husvik and Leith this season. A very small amount of regrowth was found at Grytviken and treated.



### ***Empetrum rubrum* Diddle-dee**

The site of the diddle-dee plant at Hestesletten was visited and herbarium samples taken.

### ***Festuca rubra* Red fescue**

Red fescue was not found this season at the Stromness Bay whaling stations. Some follow up was done at Grytviken sites; a new site was identified at Godthul and control undertaken.

### ***Juncus filiformis* Thread rush**

The thread rush site at Husvik appears to be under control. A new site was located and controlled at Kelp Point in Stromness Bay.

### ***Leontodon autumnalis* Autumn hawkbit**

The plant at this site was confirmed to be autumn hawkbit; none were found in the area sprayed last year; however a few plants overlooked last year were found close by and were sprayed.

### ***Leptinella scariosa* Feathery buttonweed**

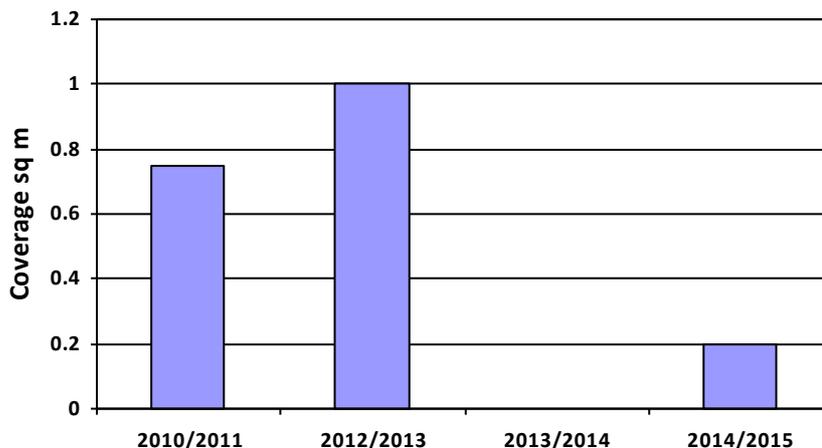
The buttonweed at Leith was not treated this season. It is likely that this species was introduced with livestock fodder during the whaling era, although there is a small possibility that the presence of this species on South Georgia is the result of a natural introduction. As part of a broader review of the weed management strategy, a decision as to whether to treat this species needs to be made and implemented next season.

### ***Luzula multiflora var congesta* Heath Wood-rush**

Heath wood-rush at King Edward Point was not found this season.

### ***Nardus stricta* Mat grass**

A follow-up visit to the mat grass site near the Leith kino confirmed that previous control measures were successful although several seedlings were found nearby, and treated. The Maiviken and Grytviken sites remain clear of any seedlings.



### ***Poa pratensis* Smooth meadow grass**

The focus this season was to determine the extents of this species to enable the feasibility of control to be understood. Surveys were undertaken across the Barff Peninsula and for outliers outside all the whaling stations. This information will be used when developing the weed strategy. Some small scale control was undertaken at King Edward Cove to reduce the risk of further spread from around the jetties and museum. Some trial spraying with different herbicides was done to test control methods in the South Georgia environment.

### ***Pratia repens* Berry-lobelia**

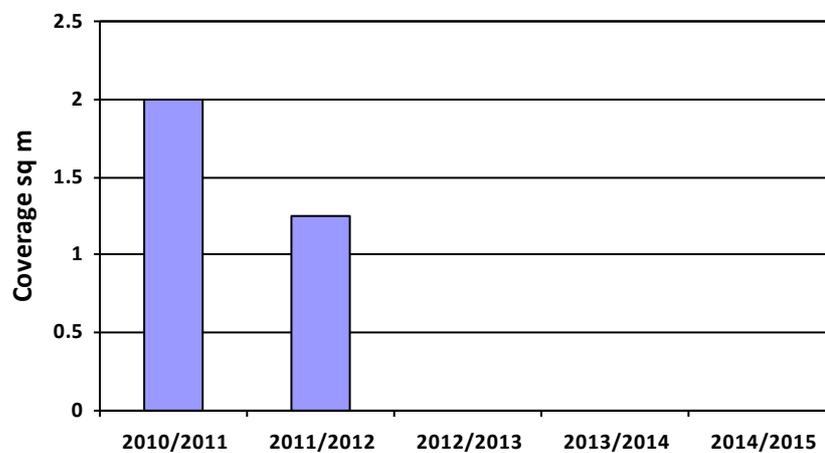
No treatment was undertaken this season. Like buttonweed, a decision regarding the status of this species (introduced or native) and whether control measures should be pursued is needed prior to next season.

### ***Rumex acetosella* Sheep's sorrel**

All sites (including several new sites) at Stromness Bay and on the Barff Peninsula received control this season. A large area at Grytviken remains untreated although some small plants were controlled within the station.

### ***Rumex crispus* Curled dock**

No plants were found at any of the sites where the species had previously been recorded.



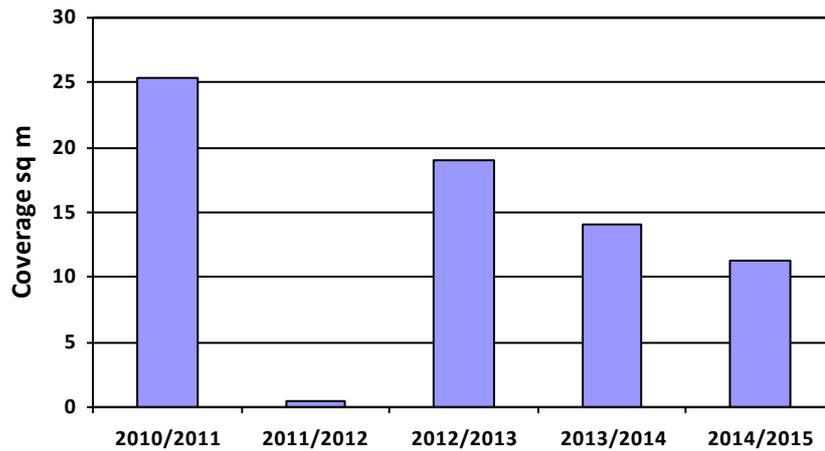
### ***Ranunculus acris* Meadow buttercup**

Several plants were located at a site in the Karakatta Valley at Husvik; they were treated and herbarium samples taken. This is a new location record for South Georgia; the other historic meadow buttercup site was at Grytviken and has not been seen there for many years.

### ***Ranunculus repens* Creeping buttercup**

At Grytviken, sites where creeping buttercup had previously been treated were revisited; only one small patch was found and treated.

At Husvik, the control appears to have been effective as no plants were found. Follow-up was required at one of the two Leith sites.

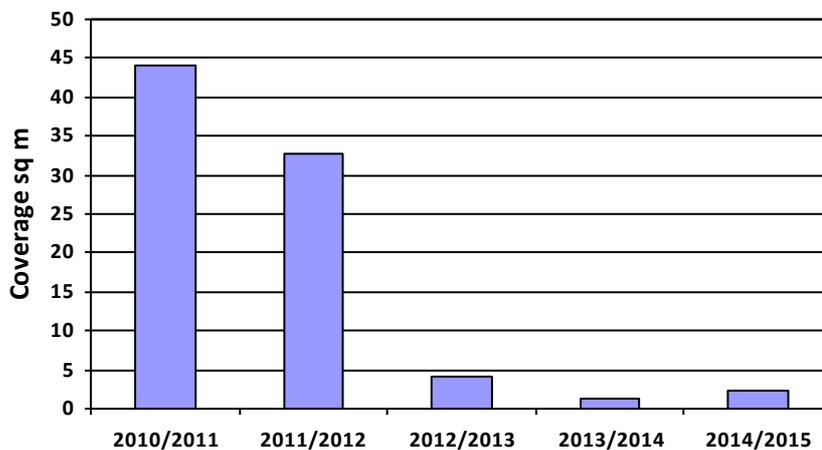


### ***Sagina procumbens* Pearlwort (Procumbent)**

Procumbent pearlwort was found in the Grytviken whaling station near previous locations but plants were very sparsely distributed, being often isolated or in small clusters. Most plants were spot sprayed; however the edges of tracks and footpaths which have high numbers of visitors were blanket sprayed to try to prevent the further spread of the species.

Control measures undertaken in Husvik and Leith whaling stations appear have been successful, although some new small plants were found and treated.

Two new sites were found this season in Stromness Bay, one on Pintail Peninsula and another in the Husdal valley. It is likely that reindeer were responsible for its spread and other sites may still be found, however control appears effective and reindeer are no longer present to spread any weeds.

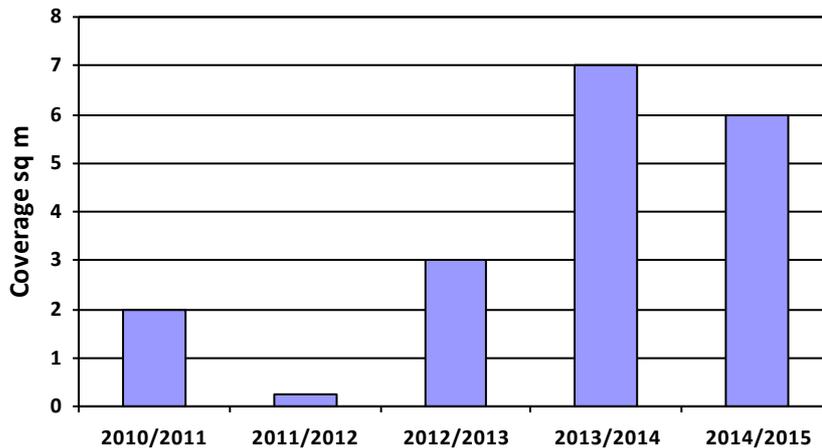


### ***Stellaria media* Common chickweed**

Common chickweed was not recorded this season.

### ***Trifolium repens* White clover**

All known sites were checked and controlled this season with good results shown from previous control although some new plants in flower were found around the edges of the Leith site and treated.



### ***Tripleurospermum indorum* Scentless Mayweed**

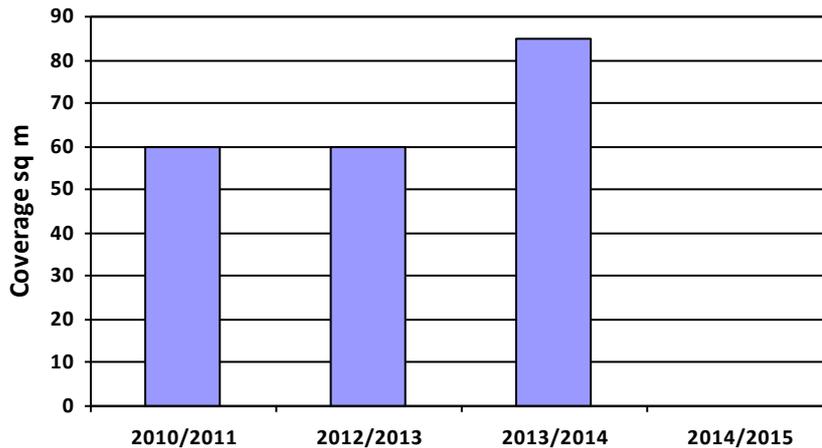
Scentless mayweed was not recorded this season.

### ***Trisetum spicatum* Spike trisetum**

This species' extent was surveyed this season. It was found to occupy large areas within Stromness Bay with outlying populations on Grass Island, Olsen Valley, Kelp Point and Grytviken. Because of cessation of grazing by reindeer, this species has the potential to spread rapidly within Stromness Bay.

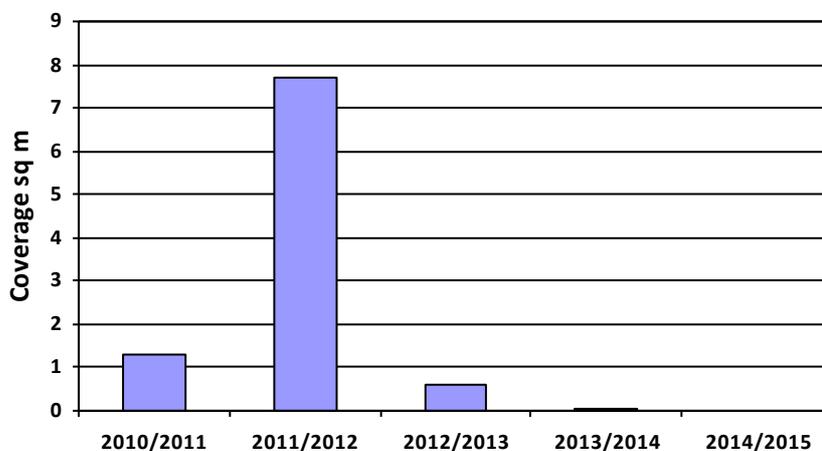
### ***Vaccinium vitis-idaea* Cowberry**

Spraying at the Husdal site in 2010/11 and 2012/13 was affected by herbicide choices available at the time and poor weather after spraying. However, last season's control on the Husdal site and the new one on Pintail Peninsula proved to be very effective with little regrowth found this season.



### ***Veronica serpyllifolia* Thyme-leaved speedwell**

Several small plants just starting to flower were found around Grytviken. However, due to the disturbance from building activities it may continue to appear around the whaling station. As it occupies similar locations to the pearlwort at Grytviken it is likely to be noticed during intensive searches for that plant, and the site codes were adjusted this season to match the pearlwort sites.



## HERBICIDE USAGE THIS SEASON

---

Herbicide	Total used
Blue Dye	5,345 ml
Flexidor 125	352 ml
Gallant super	3,848 ml
Glyphosate 360g/L ai	714 ml
Grazon 90	2,047 ml
Meturon	199 g
Organosilicone	1,312 ml
Ronstar Liquid	1,000 ml

## CONCLUSION

---

The 2014/15 season has been a productive one for alien plant control on South Georgia. Thanks to the Darwin funding, many knowledge gaps in species abundance and location have been filled and this information will contribute to the island's alien plants strategy. Some new low incidence species sites were found during the surveys but overall the control efforts on low incidence species are showing good results with declining populations.

The removal of reindeer has made the grass species more noticeable and more sites may appear, however the main vector of their spread has been eradicated. These grass species will prove to be a challenge due to their abundance at some sites and their distribution; however the implementation of a systematic approach and a long term plan will enable these populations to be reduced at many sites and contained in others.

A continued strategic approach to island wide weed control will reduce the impact of non native species and contribute to the overall objective of habitat restoration on South Georgia.