

WEEDS ON SOUTH GEORGIA

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SUMMARY

Visits to the Stromness Bay whaling stations this season enabled some gaps in weed distribution data to be filled and the South Georgia weed database was updated to reflect the new information.

75 alien plants have now been recorded on South Georgia with 39 considered to present or have recent records. 32 species are low incidence and sustained control should enable the eradication of these. 3 species have larger populations that will require more resources to contain or eradicate, and 4 species are too widespread for eradication.

Eradication of many of the alien plant species from South Georgia is a realistic objective due to the low risk of reintroduction due to the islands location and the biosecurity measures in place. Many of the introduced plants are in relatively small populations and associated with areas of human disturbance, with only a few that have naturalised over much of the island.

29 sq m of Bittercress was sprayed this season down from 373 sq m last season and 617 sq m in 2010/11.

2 sq m of Pearlwort was controlled at Grytviken this season down from 33 sq m last season and 44 sq m in 2010/11.

Good control was observed at all low incidence sites followed up this season.

Stromness Bay stations received some control on low incidence species but due to the removal of the reindeer this peninsula will be a priority for follow up and further searching.

2.5 ha of Sheeps sorrel was sprayed at Grytviken this year with approximately 1 ha remaining; 0.5 ha was sprayed at Ocean Harbour with a small area left due to seal trampling.

Common Bent was mapped around Grytviken with 6500 sq m recorded, of which 1400 sq m has been sprayed to date.

RECOMMENDATIONS

- Control is continued on Pearlwort and Bittercress sites with regular searches for outliers. The control plan should be continually adapted based on plant growth and site history to ensure the most efficient use of time and herbicides. Currently adult Bittercress should be sprayed no later than mid January with searches undertaken in Dec and early Jan if staff time allows. Grytviken Pearlwort should be sprayed no later than the start of February.
- Annual checks of low incidence species previously visited (Database 'Tagged' sites) are continued.
- Prince Olav Harbour weeds should be surveyed and low incidence species controlled. For visibility of weeds and identification, late summer would be the ideal time to visit (Feb/Mar).
- Undertake site led control on *Poa pratensis* at Maiviken.
- Undertake selective herbicide trials on *Agrostis*, *Trisetum* and *Poa pratensis*.
- One person should be dedicated to weed control from early Jan to late Feb, early March.
- It will be very important to follow up on previous control and undertake weed searches at Stromness Bay due to the eradication of reindeer. It will enable previously grazed weeds to be controlled before they produce seed and also enable weed searches before other vegetation growth may make them more difficult to find. Estimated minimum time required is one week at Husvic with another week at Pintail Peninsula, Stromness and Leith Harbour. A minimum of two persons will be required for this period due to the remote camping. Priorities are low incidence species with others mapped and controlled if time allows. Grass Island also should be visited if possible.
- A weed management strategy be developed to provide direction for future weed control on South Georgia and to assist planning of the annual works required to ensure eradication success.

INTRODUCTION

The aim of this visit to South Georgia was to follow up on the control of Bittercress and other species that was undertaken in the previous season, along with gathering more information on the island's weed populations. 7 weeks were spent on the island from the 12th January to the 2nd March.

Keiron Fraser with the assistance of Andy Black and Katie Brigden had undertaken a lot of searching for Bittercress prior to my arrival on the island (mid Jan) which enabled the marked plants to be quickly sprayed before further searching was undertaken. While Bittercress was starting to develop seed at this time; for this season anyway, it wasn't until early February that seed had developed enough to be viable.

Katie also assisted in grid searching for Pearlwort and other species before joining the reindeer project.

Most of my time was spent at King Edward Cove and its surrounds although visits to other areas were undertaken when possible. Weed control visits were made to Ocean Harbour and Husvik to follow-up at previous sites and survey weed extents. A waxtag monitoring trip to the Greene enabled some weed searching, with a previously unrecorded species for the peninsula found (*Poa pratensis*). Visits to Stromness from ships on the way to and from the island also allowed the confirmation of some of the weed extents in the valley.

Sally Poncet and Ken Passfield visited Husvic, Stromness and Leith Harbour and were able to check on populations of historic records for these whaling stations. Some spraying was undertaken and the information gathered has been invaluable in confirming weed presence on the island and feasibility of control for many of the species. Sally's data has been entered into the weed database and the comprehensive gps points will enable relocating the sites found this season. The removal of reindeer from the Busen peninsula will have a marked effect on the vegetation and it will be very important to follow up at the Stromness bay whaling stations next season to ensure previously grazed weed species are contained.

Prince Olav is the last whaling station that requires a visit to confirm the small number of species historically recorded.

Following the surveys at the Stromness bay whaling stations the weed database was updated to reflect presence/absence of historical species. 75 alien plants have now been recorded on South Georgia with 39 considered to still be present or that have recent records. A few of these have not been seen for several years but the sites will need to be monitored. 30 species should be considered low incidence, the 'low hanging fruit' with regular visits that are likely to be successfully controlled. The seedbank life of these species is unknown on South Georgia but maintenance visits to the sites will ensure their eradication. A further 2 species (Bittercress and Pearlwort) will require more attention but current results are looking positive. 3 species should be able to be contained within their current distribution with local eradications possible with sustained effort, these are *Agrostis capillaris* (Common bent), *Rumex acetosella* (Sheeps sorrel) and *Trisetum spicatum* (Spike trisetum). 1 grass *Poa pratensis* (Smooth meadow grass) is widespread in some parts of the island but could be managed on a site basis and important areas such as Maiviken and the Green peninsula kept free of this invasive plant. Only 3 species; *Cerastium fontanum* (Common mouse-ear), *Poa annua* (Annual meadow grass) and *Taraxacum officinale* (Dandelion) are considered too widespread for control.

SOUTH GEORGIA WEEDS STATUS 2012/2013

***Achillea millefolium* Yarrow**

3 sq m sprayed at Grytviken this season, reduced from the original 20 sq m. The historic record for Husvik was searched for and not found in Feb 2013.

***Achillea ptarmica* Sneezewort**

Populations at Husvik and Leith Harbour have been sprayed. Plants were heavily grazed and station areas will need to be searched for unseen plants appearing following reindeer eradication. This species has had limited opportunities to flower with reindeer present, and could quickly expand its range without grazing pressure. The historic record for Stromness was searched for and not found in Feb 2013.

***Agrostis capillaris* Common bent**

The population at Grytviken has been mapped and control started on outliers of the main population which is behind the whaling station. All plants within the station have been controlled to minimise risk of spread due to the high visitor numbers.

Approximately 6500 sq m of Common bent occurs around King Edward Cove of which 1400 sq m has been sprayed to date. Control with glyphosate is effective however selective herbicides may be available to enable control with minimal non target damage.

Ocean Harbour has a large population and would require a good investment in time to undertake control. There are also plants around Stromness, Leith, Husvic and the Pintail Peninsula which require further mapping to assess control feasibility.

***Agrostis vinealis* Brown Bent**

The single site at Grytviken had no regrowth this year following last season's spraying. Prince Olav Harbour has a historical record which needs to be located.

***Anthoxanthum odoratum* Sweet vernal grass**

Sites on the lower slopes of the Husdal Valley, Husvic were confirmed by Sally and Ken. No control undertaken yet.

***Anthriscus sylvestris* Cow parsley**

The Grytviken site had some small adult plants controlled which were still contained in the original area. A historical record for Husvik was not found in 2013.

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

Records for KEP and Grytviken but not seen since 2006. Also a 1961 record from waste ground in Husvik, but not seen this season.

***Carex aquatilis* Water sedge**

3 sq m was controlled at Husvic this season, down from 200 sq m in Nov 2010.

***Carex nigra* Common sedge**

The site at Ocean Harbour was visited this season and no plants were found (100 sq m in Nov 2010, 5 sq m in Feb 2012).

Carex sp. Sedge

A new unidentified Carex species for the island found by Sally at Husvik. One site treated, others in the Karakatta Valley still need to be controlled.

Cardamine flexuosa Bittercress

All known Bittercress sites were checked during the season and searches undertaken to find other outliers or populations. No new areas of Bittercress outside of KEP were discovered although some more outliers were found at the KEP sites. A new small area of plants was found towards Grytviken along the track and other small sites were found scattered throughout other plots.

While some new plant sites were recorded, overall the total amount of Bittercress was much reduced from the previous seasons. Figure 1 shows total coverage in square metres recorded on South Georgia in the last three seasons.

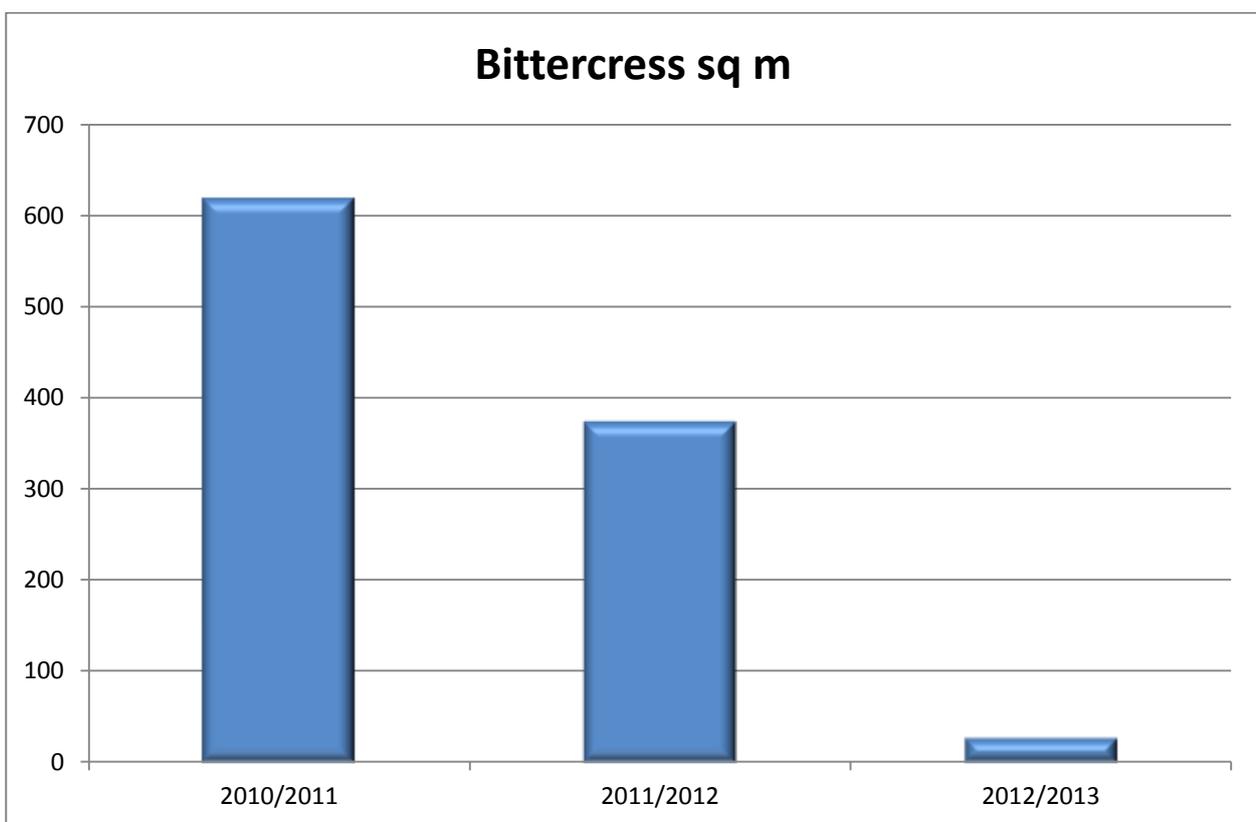


Figure 1: Bittercress coverage by season in square metres

Previous sites had a reduced coverage of Bittercress, however in some areas scattered plants were found over a larger area than before. The herbicides used are providing good control of Bittercress however detection of plants is the biggest issue. Plants can be very difficult to locate until the flower heads emerge from the native vegetation. Most of outliers found this season seemed to be older plants previously undetected, possibly as they hadn't flowered enough in previous seasons to be noticed.

To minimise spraying effort it is proposed to search sites when time allows, mark plants found and then monitor growth to determine timing for the control visit. Minimising control visits to known sites should allow more time for outlier searches.

To gain a better understanding of the growth of Bittercress three small sites have been left uncontrolled. These have been marked and should be inspected monthly to determine the growth rate and life cycle of the Bittercress on South Georgia. Seed heads should be removed after flowering at these trial sites so they

don't contribute to Bittercress spread. These trial sites will also give an indication of when searches or spraying should be undertaken at other sites.

***Dactylis glomerata* Cocksfoot**

Single plant controlled in 2010 at Grytviken and not seen since.

***Deschampsia cespitosa* Tufted Hair-grass**

All known locations from Ocean Harbour and Grytviken have been controlled and followed up this season. New records from Stromness Bay will require control.

***Deschampsia flexuosa* Wavy Hair-grass**

Plants recorded this season behind Husvic station on gravel plain which should be controlled next season while the population is still small. The Maiviken site from 2012 was clear.

***Deschampsia sp.* Unknown Hair-grass**

Small population of unidentified species of Hair Grass around Husvic villa and radio shack mapped this season.

***Elymus repens* Couch Grass**

Small sites at Leith and Husvik have been controlled this season. The Grytviken site was followed up this year and only had a single stem alive after control last season. Prince Olav has a record that needs searching for.

***Empetrum rubrum* Diddle Dee**

Single plant recorded from Hestesletten near King Edward Cove but not visited this season.

***Festuca rubra* Red fescue**

Sites at Husvik, KEP and Grytviken required minimal follow-up this season.

***Juncus filiformis* Thread rush**

The historic record for Husvic was found and controlled in February 2013. Historical records for Grytviken and Ocean Harbour have been searched for but not found.

***Leptinella scariosa* Feathery buttonweed**

Previously recorded from Grytviken but not seen for many years. New population found by Sally Poncet this season at the back of Leith Valley.

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

Single plant removed from KEP near the Fuel farm in 2012 and nothing found this season.

***Nardus stricta* Mat grass**

Single plant at Maiviken and another at Grytviken both controlled in 2010 with no new plants found since. The single plant recorded at Leith Harbour in 1981 had developed seedlings by 2013; all clumps there were controlled this season.

***Poa pratensis* Smooth meadow grass**

Small patch controlled near the Teal Ponds at Dartmouth Pt on the Greene Peninsula as there were no previous records for this grass on the Greene. Maiviken may be a candidate for site led control on this species as it has a very low population of this grass. Selective herbicides may be available to enable control with minimal non target damage.

***Poa trivialis* Rough meadow grass**

Historical records for Grytviken and Prince Olav but not found at Grytviken in the last two seasons.

***Pratia repens* Berry lobelia**

Nothing was found at the Grytviken site this season. Husvic sites were not controlled due to bad weather on the day of the visit. A small population on Grass Island should be searched for next season.

***Rumex acetosella* Sheeps sorrel**

The population at Grytviken was mapped this season with approximately 3.5ha recorded. Much of this was sprayed with about 1ha remaining near the old wooden dam behind the station. Follow-up will be required to find small plants not visible this year. A small plant was found at the top of Cardiac hill on the track to Maiviken and the 100 sq m patch next to a waterfall below this hill was also sprayed.

The Ocean Harbour infestation has also been mapped and control undertaken on much of the infested areas. Approximately 5000 sq m was sprayed with a small area left on the gravel plain next to the stream as it was very trampled and grazed so not suitable for spraying.

Husvik, Stromness and Leith also have sites that need further mapping with a view to control, Sorrel has shown the ability to become widespread over South Georgia and every attempt should be made to eradicate this species.

***Rumex crispus* Curled dock**

The small Grytviken sites showed no growth this season and the record from Husvik (1963) was not located.

***Ranunculus repens* Creeping buttercup**

Sites at KEP and Grytviken were followed up, most had no regrowth although one had some small flowering plants. Leith and Husvic populations were located and sprayed by Sally and Ken.

It has been searched for and not found at Ocean Harbour where it was last recorded in 1964. Prince Olav station has a known population recorded from 2009 by binoculars from outside.

Sagina procumbens* Pearlwort (Procumbent)*Grytviken**

Previous control seems to be very effective with only small plants found this season. It is likely that some small plants may not be seen until they get larger and due to the amount of disturbance at the station, sites will need to be checked regularly as early detection will be the key to eradication of this species. Figure 2 shows the amounts of Pearlwort controlled at Grytviken each season.

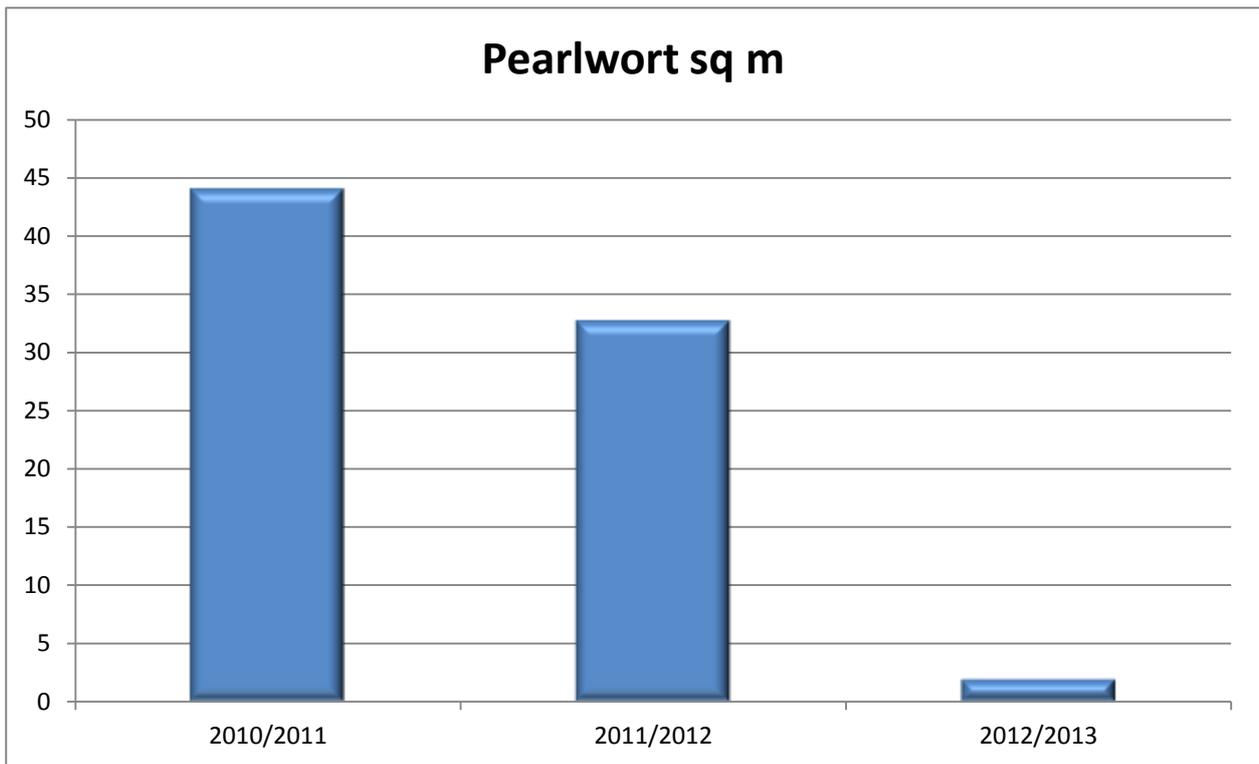


Figure 2: Coverage of Pearlwort for the last three seasons at Grytviken

Husvic and Leith Harbour

Historic records of Pearlwort at these stations were investigated this season by Sally and Ken and all known plants have been sprayed and the information entered into the weed database. Seal trampling and grass competition may have restricted the spread at these sites but it will be important to continue following up to ensure complete removal of Pearlwort at these stations.

Stellaria media Common chickweed

Historical records for Grytviken and KEP, not seen in recent years but can be difficult to distinguish from *Cerastium sp.*

Taraxacum sp. Small leaved dandelion

The small population in the lower Karakatta Valley, Husvik was relocated by Sally and Ken and also sprayed.

Trifolium repens White clover

No regrowth at the KEP and Grytviken sites this season. The Husvik site was located and sprayed. The Leith site has been located and there is a historical record for Stromness but not found this season.

Tripleurospermum indorum Scentless Mayweed

Single plant controlled in 2011 at Grytviken. Nothing found since.

Trisetum spicatum Spike trisetum

The small population located at Grytviken in 2012 was followed up with only a few small plants located. However it is widespread at Stromness and on the Pintail Peninsula. It may still be feasible to contain and control but will require a concerted effort. Selective herbicides may be available to enable control with minimal non target damage.

***Vaccinium vitis-idaea* Cowberry**

The small site in the Husdal valley, Husvik was revisited and the previous control attempted with Weedol in 2010 was found to be unsuccessful. The site was resprayed with Meturon, however rain later that day may have made it ineffective. New site found on the Pintail peninsula by Sally.

***Veronica serpyllifolia* Thyme leaved speedwell**

Recorded only from Grytviken and generally within areas containing Pearlwort. Some small areas of small plants and seedlings found this year but otherwise well controlled.

RECORDED COVERAGE

For low incidence species recorded in the database with a 'Site Tag'

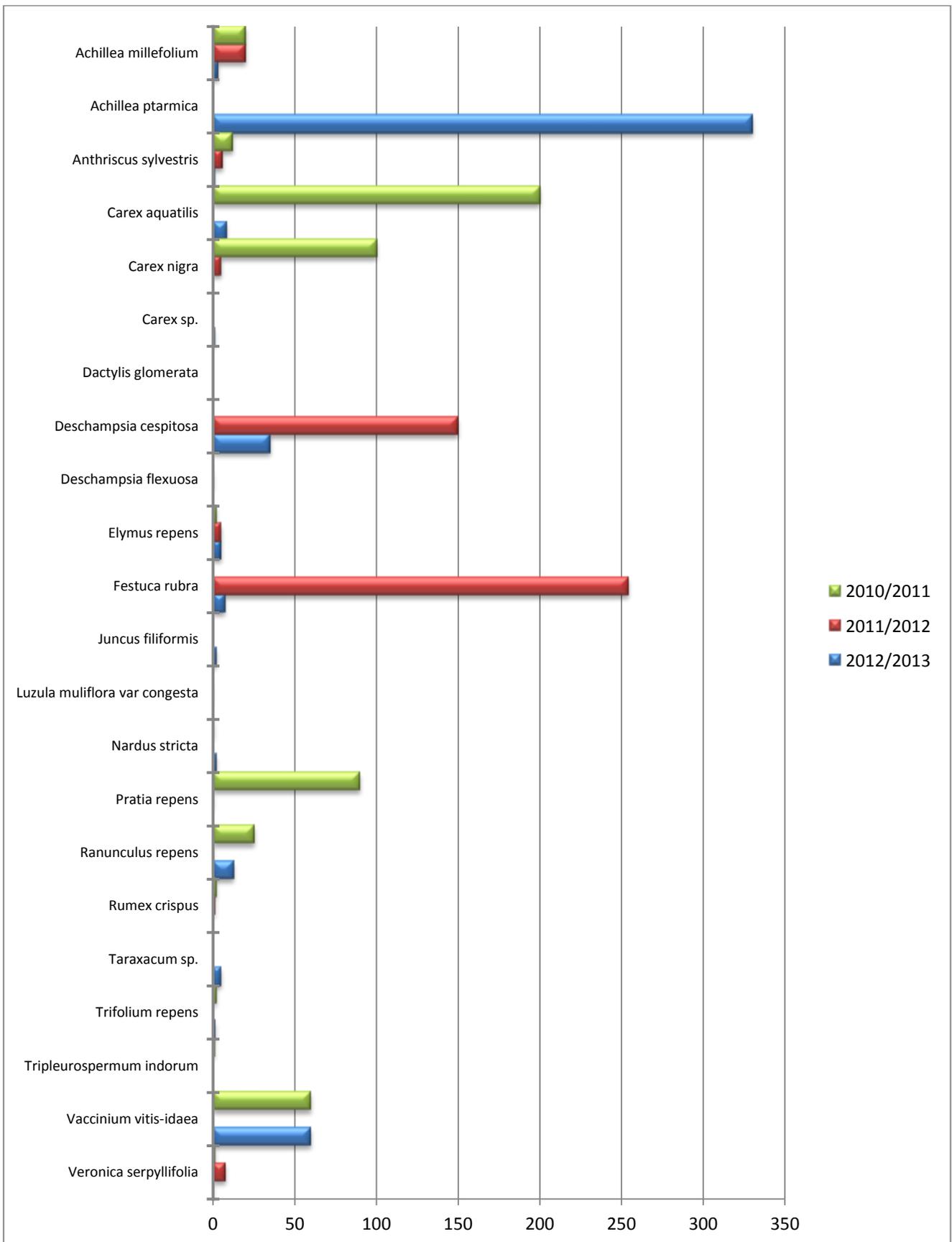


Figure 3: Coverage in square metres for measured weed sites.

OTHER SPECIES

Cerastium fontanum (Common mouse-ear), *Poa annua* (Annual meadow grass) and *Taraxacum officinale* (Dandelion) are not receiving control on South Georgia apart from some small areas sprayed at KEP and Grytviken in association with other species.

HERBICIDE USE

All herbicide use has been entered into the weed database, Table 1 shows herbicides used for the season by location reported from the database.

Table 1: Herbicide use

Location	Herbicide	Amount
Greene	Glyphosate 360g/L ai	100ml
	Organosilicone	5ml
Grytviken	Blue Dye	3030ml
	Flexidor 125	24ml
	Glyphosate 360g/L ai	2823ml
	Grazon 90	4388ml
	Meturon	46gm
	Organosilicone	781ml
	Pistol	700ml
	Ronstar Liquid	900ml
Husvik	Blue Dye	140ml
	Glyphosate 360g/L ai	530ml
	Meturon	12gm
King Edward Point	Blue Dye	206ml
	Flexidor 125	248ml
	Glyphosate 360g/L ai	38ml
	Grazon 90	292ml
	Organosilicone	18ml
Leith Harbour	Glyphosate 360g/L ai	290ml
Maiviken	Blue Dye	15ml
	Glyphosate 360g/L ai	2ml
	Meturon	1gm
Ocean Harbour	Blue Dye	500ml
	Glyphosate 360g/L ai	200ml
	Meturon	10gm
	Organosilicone	60ml