Island LandCare's Remote Sites Weed Control Programme 2020/21

Funded by FIG's Environmental Studies Budget

Report Authors: Ken Passfield and Sally Poncet, Island LandCare

Date: 20 May 2021

Calafate amongst old vehicles at Bluff Cove, February 2021

CONTENTS

1. Introduction and acknowledgements
2. Fulfilment of ESB objectives
3. Additional weed control carried out
4. Fieldwork log
5. Future work
6. Post visit reports
    - 6.1 Weddell Island calafate
    - 6.2 North East Island spear thistles
    - 6.3 Philimore Island creeping thistles
    - 6.4 Bluff Cove calafate
    - 6.5 Island Harbour calafate
    - 6.6 Port Stephens mouse-eared hawkweed
    - 6.7 Port Stephens calafate
    - 6.8 Philomel Farm calafate

1. INTRODUCTION

Fieldwork for this project was carried out at a variety of locations island-wide from 31 December 2020 to 15 May 2021. See fieldwork log below for details. Post-visit reports were compiled for each site visit where any significant amount of spraying was done. These reports were forwarded to the Environment Department and a copy sent to the landowner; they have also been compiled as a single pdf to accompany this project report. The remote sites work was carried out in parallel to Island LandCare's on-going weed control programme on 11 offshore islands (the majority accessed on SV *Porvenir II*) and a number of sites on mainland East and West Falklands including Stanley Common and Mare Harbour.

Data recording is an essential part of weed control. Island LandCare staff use a bespoke mobile phone app in the field to record plant spatial co-ordinates, surface area of plant cover and spray quantities. The ILC weed app data are synced to the ILC weed database daily and archived with Island LandCare, Stanley. The app was developed by Kelvin Floyd, advisor to ILC and consultant for Indigena Ltd, New Zealand (Indigena is the contracted company that we work for in South Georgia; they also carried out calafate control for the DoA in the Falklands in 2019). ILC weed control database records provide a readily accessible history of herbicide use, locations visited and surface area of weeds, providing quantifiable data for monitoring weed control progress.

Our thanks to Denise Blake (FIG Environment and Policy) and Matt McNee (Department of Agriculture) for their support for weed control, to Peter and Ann Robertson for their hospitality at Port Stephens, and to those people who have reported to us their sightings of weeds, in particular Dan Fowler, Sammy Marsh, Paul Robertson, Leiv Poncet, Caroline McLaren, Michael Clarke, Critta Lee, Ricky Evans, Suzi Clarke, Fraser McKay and Jeremy Poncet.

2. FULFILMENT OF ESB OBJECTIVES

ESB Objective 1: *To carry out annual control of calafate Berberis microphylla at sites around the Islands that are not currently managed under existing control programmes run by DoA and ILC; namely Governor Island, Weddell Island, Port Stephens and Philomel Farm.*

Calafate control was carried out at the above four sites. In addition, calafate was controlled at the East Falkland sites of Island Harbour, Fitzroy settlement and Bluff Cove. Bluff Cove had the highest level of infestation and will require control next year ie 2022, as will those sites where initial control was carried out (Weddell Island, Philomel Farm).

Site	Sq m calafate	Comments
Governor Island	0	followup visit: no calafate found after control of single bush in 2006.
Weddell Island	20	initial control at Stop Cove: one fruiting bush, several non-fruiting outliers
Port Stephens	402	followup control at Snipe Rincon: last controlled 2017, single large low-lying fruiting bush and several outliers; initial control at The Cutting: single non-fruiting bush; initial control at settlement garden: several non-fruiting bushes.
Philomel Farm	90	initial control at settlement: 3 large non-fruiting bushes
Island Harbour	6	followup control: last controlled in 2017, several seedlings plus 3 fruiting bushes.
Bluff Cove	420	initial control: 3 mature fruiting bushes at settlement, several hundred plants spread 1.3km from settlement to the Bluff.
Fitzroy settlement	1	initial control in gardens: single small non-fruiting bush

ESB Objective 2: *To carry out control of creeping thistles Cirsium vulgare on Phillimore Island.*

The large patch of 2,500 square metres of creeping thistles was sprayed on 16 January 2021. In addition,

a site visit was made to Douglas Station on 24 February to confirm id for a patch of creeping thistles at the Moro. Due to heavy rain, these could not be sprayed on the day.

ESB Objective 3: *To carry out heather Calluna vulgaris control at Port Stephens, Fox Bay, Port Howard.*

At Port Stephens, we discussed various aspects of heather control with Ann Robertson and Paul Robertson, relying on their personal knowledge and experience of dealing with this species in comparison with the highly invasive species, mouse-eared hawkweed, also found at Port Stephens. At their request, we spent project time assisting them with mouse-eared hawkweed control in the Stephens Peak area rather than heather. The former species presents a higher threat to native species and habitats, is more widespread and faster spreading than heather and is therefore a higher priority for control.

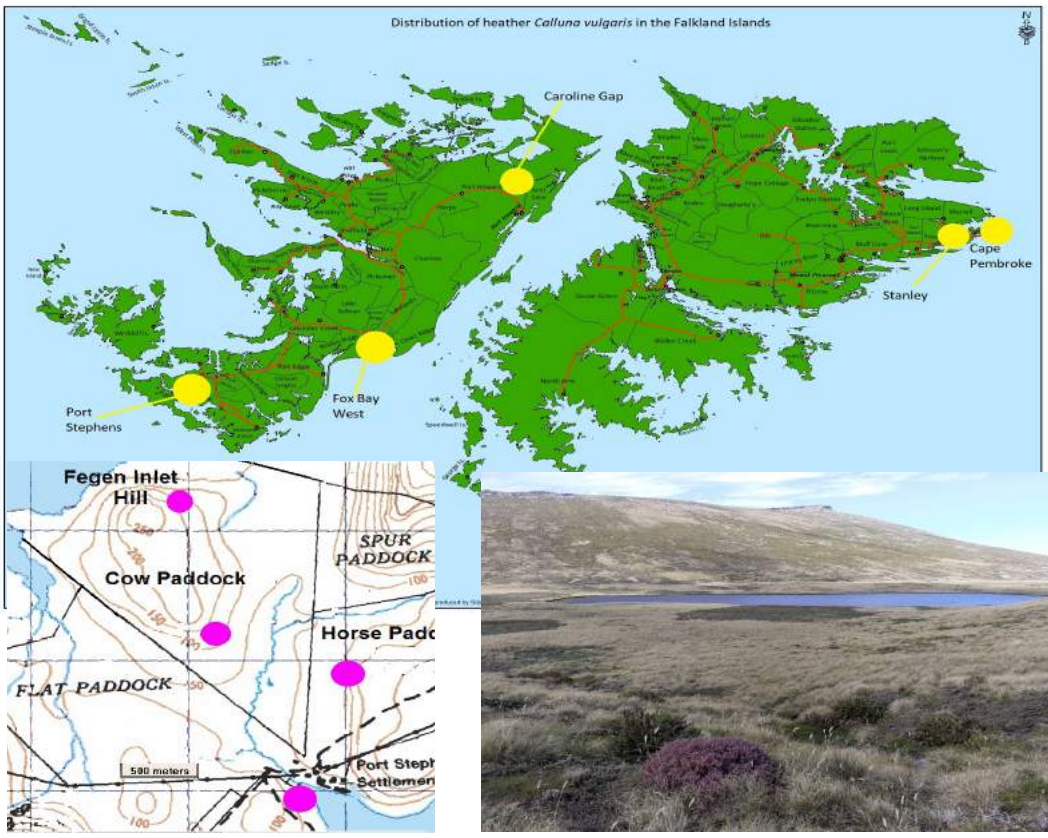
We did not search for heather at Fox Bay West, having been given to understand that it was no longer present. We subsequently learnt from Sammy Marsh (Rincon Ridge Farm), that the heather is in fact still present at the farm rubbish dump and that Sammy intends to start control by spraying.

Similarly at Port Howard, we had heard of a single heather plant somewhere on the lower slopes of Mt Caroline but without a precise location, we did not feel it a good use of project time to search for it, especially since farm manager Critta Lee agreed to keep an eye out for it when next gathering the Camp. Critta has now forwarded us a description of its location and a photo.

Objective 4: *To map the distribution and abundance of heather Calluna vulgaris on West Falkland.*

We have mapped the distribution and abundance of all known heather sites.

Site	**coverage**	**approx location**
Port Stephens settlement paddocks	2 ha	see map inset
Fox Bay West (dump)	50 sq m.	-51.949 S, -60.0838 W
Port Howard (Caroline Gap)	1 sq m.	-51.496 S, -59.514 W
Cape Pembroke	6 sq m.	-51.683 S, -57.738 W



Heather at Caroline Gap, Port Howard Farm (photo. C. Lee)

3. ADDITIONAL WEED CONTROL CARRIED OUT DURING THIS PROJECT

Mouse-eared hawkweed *Pilosella officinarum* - Port Stephens
We carried out control of mouse-eared hawkweed in the Stephens Peak area with Diane Towersey, Paul Robertson and Ann Robertson in the period 7 - 12 March. We sprayed 1,000 litres of herbicide mix on approx 5,000 sq metres of hawkweed. Port Stephens Farm have been carrying out successful control for several years and it was helpful to assist with more labour input.

Spear thistle *Cirsium vulgare* - North East Island and Pebble Island
Whilst in the Philimore Island area spraying creeping thistle, we received a report from Leiv Poncet of the presence of spear thistles on nearby North East Island. This was the first record of this species at this island. On landing, it was obvious the plants had been established for several years, most likely through wind-borne dispersal of seed from East Cove in Mare Harbour. We carried out control using herbicides, spraying approx 175 sq metres of plants in three different areas.

At Pebble Island we carried out followup control on spear thistles which we had sprayed in December 2019 in the settlement gardens and the Rabbit Point area. The spraying had been successful. However seed had germinated at both sites; several dozen plants were manually removed.

4. FIELDWORK LOG

Date	Site	Work carried out	Person days
29 December 2020	Governor Island	Calafate – followup control	2
31 December 2020	Weddell Island	Calafate - initial control	2
28 - 9 January 2021	North-East Island	Spear thistles - initial survey/control	3
16 January 2021	Philimore Island	Creeping thistles - followup control	2
26 - 27 February 2021	Bluff Cove	Calafate - initial control	4
4 March 2021	Island Harbour	Calafate - followup control	1
7 - 12 March 2021	Port Stephens	Calafate - followup & Mouse-eared hawkweed - ongoing control	10
13 March 2021	Pebble Island	Spear thistles – followup control	2
15 March 2021	Philomel Farm	Calafate - initial assessment	1
1 April 2021	Philomel Farm	Calafate - initial control	1
15 May 2021	Fitzroy Farm	Calafate - initial control	1
24 March 2021	Douglas Station	Creeping thistles - survey	1/2
17 May 2021	n/a	Report writiing	1/2
Total days			**30**

4. FUTURE WORK – LOOKING AHEAD

ILC are keen to continue weed control around the Islands. Our weeds database and mobile phone app give us the capacity to acquire, store and review past and current control efforts and survey data, and to accurately monitor control progress. Information received from landowners and visitors is invaluable, being an essential part of the process required to locate invasive weeds. ILC's response to reports depends on logistics and resources required to access a site, but wherever possible, we will endeavour to initiate control, of spear thistles in particular, as soon as possible.

This year, we will be applying to ESB for funding to further develop our national thistle control programme, as part of our long-term commitment to weed control. There are several thistle species in the Islands, but from our work so far, we consider that only 2 of them (spear thistle and creeping thistle) warrant long-term control.

Spear thistles: ILC has 7 years of experience of controlling spear thistles. This species (along with mouse-eared hawkweed) presents the highest risk of becoming a “beyond feasible control” species if no action is taken now to limit its dispersal. If left unchecked it will invade coastal habitats and pond margins to the exclusion of native habitats; on farm land it will seriously affect wool quality through contamination

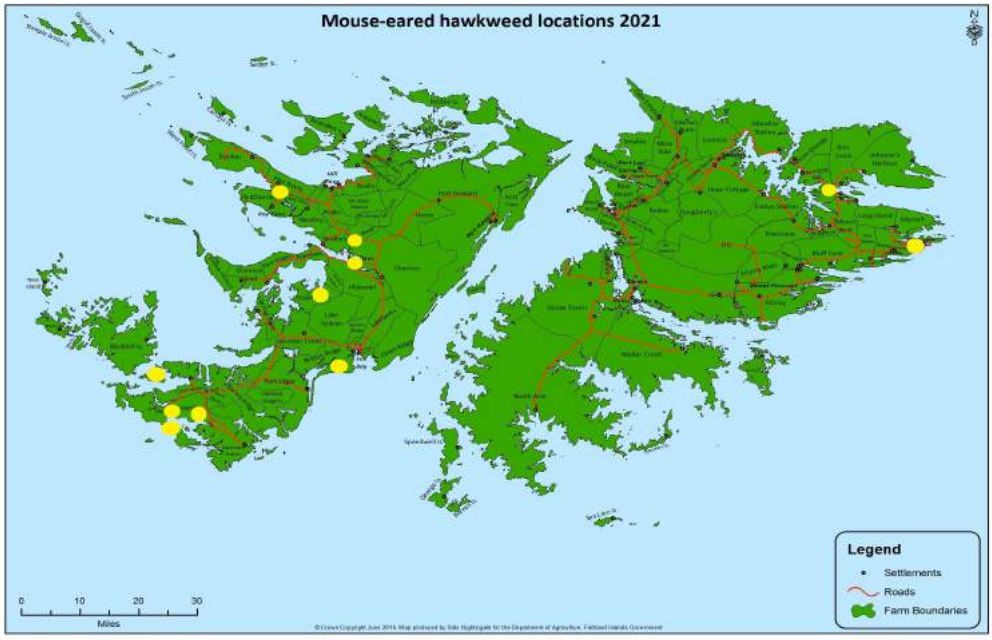
of fleeces. Control is labour-intensive and unrelenting, requiring a minimum of twice-yearly follow-up visits if it is to be effective (see post-visit report for North East Island). The life span of the seedbank is still unknown, but is likely to be at least 20 years. Without continual annual control, the spread of this species is guaranteed. This thistle is a key target for the national thistle control programme.

Creeping thistles spread more slowly, but if left unchecked, the infestations will eventually completely cover the ground through vegetative spread, as can be seen at sites around Stanley. Action is required now, in these early days of their spread, to eradicate while it is still possible. ILC is recording the distribution and abundance of creeping thistle across the Islands, and has initiated control at some sites (see post-visit report for Philimore Island). Control is quick and easy; all plants within the well-defined infested area die after treatment and followup only requires a search for the few outliers that are usually within the old infested area boundary.

ILC's remote site weed control programme also includes calafate and heather. The distribution of **calafate** across the Islands is now well documented. Initial control has been carried out at many of the sites by several different agencies over the years, with 100% success at the small infestations, as this species is not difficult to contain. However, followup is essential, ideally within 3 years of initial control, and at 3 year intervals thereafter. ILC post-visit reports include site-specific recommendations for on-going control. The large-scale infestations at Sussex are more challenging, and require a long-term financial commitment from FIG together with the skills and capacity of a professional, qualified operator, e.g. the New Zealand company Indigena who initiated the control programme at Sussex in 2019-20.

The spread of **heather** into native vegetation across the Islands has been slow but steady. New recent records of single bushes at Cape Pembroke were reported to ILC by Dan Fowler and one at Caroline Gap by Critta Lee. At Port Stephens, within 40 years, heather has gone from a garden ornamental to a highly invasive species covering at least 2 hectares, and its current spread at Fox Bay West is of concern. Control has been carried out by ILC at Cape Pembroke and Ann Robertson at Port Stephens. More resources are needed to continue the control at Port Stephens.

Mouse-eared hawkweed is fast becoming the number one priority for control. Its distribution and abundance across the Falklands (see map below) presents as serious a threat to native plant habitats and agricultural land as do spear thistles and calafate. Control is unrelenting, as the plants spread by wind-dispersed seeds and probably by livestock movement. The work done over the years at Port Stephens by the Robertsons shows that control is effective, but that additional resources are essential in order to contain and stop its spread as soon as possible. Preventing this species from spreading further, and informing farmers of the very real need to act quickly, now, are of utmost priority.



POST-VISIT WEED CONTROL REPORT

Calafate *Berberis microphylla*

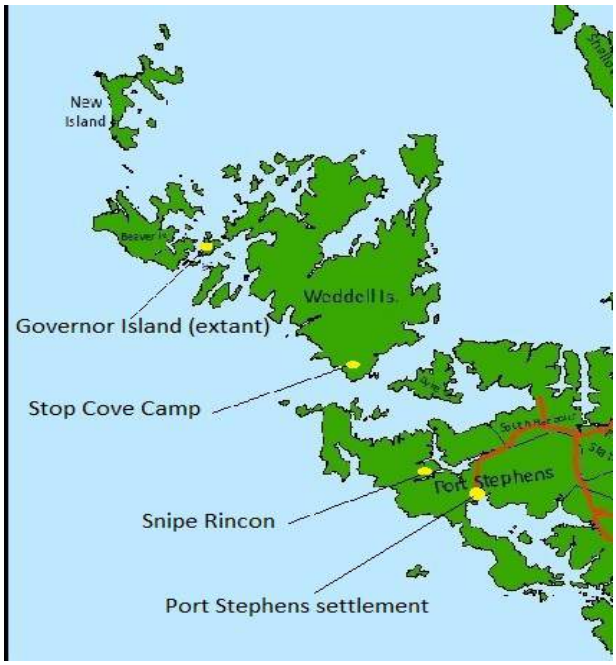
Weddell Island - 31 December 2020

Island LandCare, PO Box 538, Stanley, Falkland Islands FIQQ 1ZZ
sallyponcet@horizon.co.fk porvenir@mailasail.com

Weddell Island, 31 December 2020: main calafate bush at right; outlier in foreground.

Report Author(s)	Ken Passfield, Sally Poncet
Report date	05/01/21
Site visited	Stop Cove Camp, Weddell Island
Landowner	Byron Holdings
Date(s) of visit	31/12/21
Operator(s)	Ken Passfield and Sally Poncet
Access	To/from Weddell by *s/v Porvenir II.* To spray site by Landrover
Accommodation	Day visit only
Biosecurity	All gear cleaned prior to landing on and before departing from Weddell Island
Main funder	Falkland Islands Government (Environmental Studies Budget: ILC Remote Sites Weed Control Programme 2020/21)
Co-funding/in-kind assistance	Transport and travel time to/from Weddell provided by ILC; transport to site provided by Lewis Clifton; herbicide from the Department of Agriculture.
Target species	Calafate *(Berberis microphylla)*
Weed cover	20 square metres
Area controlled	20 square metres
Overall search area	200 ha (approx)
Hours of work on sites	6 person hours including searching

Hours travel to sites	2 person hours not including travel to/from Weddell
No. of days invoiced	1 person day out of ESB funding
Control method	Foliar application of herbicide using knapsack sprayers
Herbicide mix used	'Eliminate' (triclopyr and picloram) @ 6ml/litre, 'Meturon' (metsulfuron) @ 0.5g/litre, organosilicone @ 1ml/litre, red dye @ 8ml/litre
Litres of mix used	5
Data recorded	Operators GPS search tracks, plant co-ordinates and spray quantities, hours worked and travelled, are archived with Island LandCare. All data recorded in the field on phone app and synced to weeds database on return.
Weather conditions	Fine and dry
Comments	A single bush in fruit and its approximate location were reported in ca. 2016, this being the first record for this species on Weddell. The nearest known calafate is 13 km to the southeast in Snipe Rincon at Port Stephens, which is the most likely source of seed. Its introduction to Weddell is likely to have been by dispersal of seed in fruit ingested by upland geese (less likely by thrushes as they are not common in the vicinity) about 10-15 years ago. On 31 December 2020 Ken and Sally landed at Stop Cove at 0700, having anchored there overnight on *Porvenir II*, and Lewis drove down from the settlement. Ken searched the area to the NW of the shanty on foot initially, then when Lewis arrived on site at 0900 we searched using the vehicle. After about a hour's searching the bush was located; its large size (ca. 1.5m tall) made it visible from a considerable distance. As well as the single bush originally reported there was a second smaller satellite bush 20m away that had established since the first sighting. Both bushes were in flower with developing fruits, and both had sent out suckers to a distance of 0.5 - 1 metre away. This showed the plant was actively spreading and that it was well worth undertaking control at this time.
Followup work	An annual followup visit to this site recommended to check on any regrowth from leaves that may have missed being sprayed, and to search for additional seedlings. Next visit December 2021.
Acknowledgements	We thank Denise Blake, FIG's Environmental Officer, and Matt McNee from the Department of Agriculture for their support for this programme.



Distribution of calafate in the southwest region: Stop Cove Camp (Weddell Island), Governor Island (now extant), Snipe Rincon and Port Stephens settlement (on-going control).

POST VISIT WEED CONTROL REPORT

Spear thistle *Cirsium vulgare*

North East Island - 8 & 9 January 2021

Island LandCare, PO Box 538, Stanley, Falkland Islands FIQQ 1ZZ
sallyponcet@horizon.co.fk porvenir@mailasail.com

Spear thistles amid bluegrass, wild celery and oxeye daisies, North East Island (north), 8 January 2021

Report Author(s)	Ken Passfield, Sally Poncet
Report date	23/01/21
Site visited	North East Island
Landowner	Ian Bury (northern part) and Sally Poncet (southern part)
Date(s) of visit	8 & 9 January 2021
Operator(s)	Ken Passfield and Sally Poncet
Access	*s/v Porvenir II*
Accommodation	*s/v Porvenir II*
Biosecurity	All gear cleaned prior to landing on and before departing from North East Island
Main funder	n/a
Co-funding/in-kind assistance	Boat logistics provided at a heavily discounted rate by Ken Passfield.
Target species	Spear thistles *(Cirsium vulgare)*
Weed cover	175 square metres
Area controlled	175 square metres
Overall search area	300ha
Hours of work on sites	12 person hours
Hours travel to sites	8 person hours
No. of days invoiced	n/a
Control method	Foliar application of herbicide using knapsack sprayers

Herbicide mix used	Meturon @ 0.5g/litre, organosilicone @ 1ml/litre, red dye @ 8ml/litre
Litres of mix used	39
Data recorded	Operators GPS search tracks, plant co-ordinates and spray quantities, hours worked and travelled, are archived with Island LandCare. All data recorded in the field on phone app and synced to weeds database on return.
Weather conditions	Dry and sunny, moderate winds
Comments	The presence of spear thistles was reported to us on North East Island northern section, by Leiv Poncet approx 1 week before our visit. We found 3 discreet areas of thistles. Site ST-23 was approx 200m east of the old corral, in a shallow damp valley filled with wild celery, bluegrass, oxeye daisies and Magellanic penguin burrows. This site had approx 30sq m of thistles spread over a total area of approx 2ha. Site ST-24 was in the centre of the island next to a nearly dried up pond colonised by dock sp. Plants were widely scattered across an area of 4 ha, often near Magellanic penguin burrows, and were hard to locate in the chest-high bluegrass. Site ST-25 was just inland from the sand dunes on the south coast of the island, immediately N of the sand isthmus that links the north island with the south. Plants were spread across approx 1ha. The largest thistle bush we have ever seen, approx 1.5m high and 3m across was found at this location. Plants ranged in size from small seedlings to the monster bush mentioned above, but the majority were between 0.5 and 1 m high with developing flower heads, although no purple flower heads were found, indicating they still had a while to go before setting seed. Water for spraying was brought from the boat in jerry cans for site ST-23. Sufficient freshwater was available at the pond for sites ST-24 and ST-25 though in some seasons, this pond dries up completely. A search was carried out in potential thistle habitat on the south island, and none found. No spear thistles have been found on North East Island in the past, and it is likely that they have established by seed blown in from Mare Harbour. Only a handful of dead stalks from old plants were found with remnant thistle down on the ground around them, indicating that thistles probably arrived here within the last 6 -7 years.
Followup work	Annual followup visit required, ideally in December when thistles are at their highest, and visible above the surrounding bluegrass
Acknowledgements	Thanks to Leiv Poncet for passing his sighting of spear thistles on North East.

POST VISIT WEED CONTROL REPORT

Creeping thistles *Cirsium arvense*

Philimore Island - 16 January 2021

Island LandCare, PO Box 538, Stanley, Falkland Islands FIQQ 1ZZ
sallyponcet@horizon.co.fk porvenir@mailasail.com

Sprayed creeping thistles Philimore Island

Report Author(s)	Ken Passfield, Sally Poncet
Report date	23/01/21
Site visited	Philimore Island
Landowner	Sally Poncet
Date(s) of visit	16/01/21
Operator(s)	Ken Passfield and Sally Poncet
Access	*s/v Porvenir II*
Accommodation	n/a - day visit only
Biosecurity	All gear cleaned prior to landing on and before departing from Philimore
Main funder	Falkland Islands Government (Environmental Studies Budget)
Co-funding/in-kind assistance	Boat logistics provided at a discounted rate by Ken Passfield

Target species	Creeping thistles *(Cirsium arvense)*
Weed cover	2500 square metres
Area controlled	2500 square metres
Overall search area	3000 square metres
Hours of work on sites	8 person hours
Hours travel to sites	8 person hours
No. of days invoiced	2
Control method	Foliar application of herbicide using knapsack sprayers
Herbicide mix used	Meturon @ 0.5g/litre, organosilicone @ 1ml/litre, red dye @ 8ml/litre
Litres of mix used	80
Data recorded	Operators GPS search tracks, plant co-ordinates and spray quantities, hours worked and travelled, are archived with Island LandCare. All data recorded in the field on phone app and synced to weeds database on return.
Weather conditions	Calm and dry
Comments	This large patch of creeping thistles was controlled by spraying in December 2012 and May 2013 by the MPA conservation group which greatly reduced its extent. However followup was not carried out, and in the 8 years since it has recovered and regained its previous extent. The area was blanket sprayed. The eastern end was sprayed using herbicide mixed in salt water as a trial. There was no water in the pond adjacent to the thistles and all freshwater was brought ashore from the boat by jerrycan. 70 litres of freshwater mix was used and 10 litres of saltwater mix.
Followup work	Annual summer visit recommended, any time between mid-November and mid-March
Acknowledgements	We thank Denise Blake, FIG's Enivronmental Officer, for her support for this programme.

POST VISIT WEED CONTROL REPORT

Species *Berberis microphylla*
Bluff Cove 26 and 27 February 2021

Island LandCare, PO Box 538, Stanley, Falkland Islands FIQQ 1ZZ
sallyponcet@horizon.co.fk porvenir@mailasail.com

Site of calafate bushes at the Bluff on the the west side of the entrance to Bluff Cove inlet.

Report Author(s)	Ken Passfield, Sally Poncet
Report date	03/03/21
Site visited	Bluff Cove
Landowner	Kevin and Hattie Kilmartin
Date(s) of visit	26 and 27 February 2021
Operator(s)	Ken Passfield and Sally Poncet
Access	By vehicle from Stanley
Accommodation	n/a - day visits only
Biosecurity	All gear cleaned before departing from, and on return to Stanley
Main funder	Falkland Islands Government (Environmental Studies Budget)
Co-funding/in-kind assistance	Herbicide from the Department of Agriculture
Target species	Calafate - *Berberis microphylla*
Weed cover	420 square metres
Area controlled	420 square metres
Overall search area	85ha

Hours of work on sites	28 person hours
Hours travel to sites	8 person hours
No. of days invoiced	4 person days
Control method	Foliar application of herbicide using knapsack sprayers
Herbicide mix used	Eliminate® (triclopyr & picloram) @ 6 ml/litre, Eradicate® (metsulfuron) @ 0.5g/litre, organosilicone @ 1ml/litre, red dye @ 8ml/litre
Litres of mix used	100
Data recorded	Operators GPS search tracks, plant co-ordinates and spray quantities, hours worked and travelled, are archived with Island LandCare. All data recorded in the field on phone app and synced to ILC's Weeds Database on return.
Weather conditions	Dry, sunny, warm, moderate winds
Comments	Plants were found at the locations (red dots) shown in Fig 1 below. They ranged in size from seedlings to long established bushes up to 5m tall. Three plants (all long established large bushes, the oldest probably planted in the 1960s) were found with developing fruits: two at the settlement below the house and one at the old gardens on the coastline east of the settlement. The furthest outlier was ca. 1.3 km SSE of the settlement on the Port Fitzroy coastline.
Followup work	Essential for farm staff and landowners to keep an eye out for bushes in all areas, but especially along the shoreline of the the east entrance to Bluff Cove inlet opposite the Bluff; this area has not yet been searched. Recommend annual follow up spray visit of 2 person days in spring, summer or autumn. We have found herbicides be effective on calafate any time from September to May so precise timing is unimportant.
Acknowledgements	We thank Denise Blake, FIG's Environmental Officer and Matt McNee of the Department of Agriculture for their support for this programme.

Fig 1. Distribution of calafate plants at Bluff Cove: one red circle = one or more plants within 5m of circle

POST VISIT WEED CONTROL REPORT

Species *Berberis microphylla*

Island Harbour - 5 March 2021

Island LandCare, PO Box 538, Stanley, Falkland Islands FIQQ 1ZZ
sallyponcet@horizon.co.fk porvenir@mailasail.com

Outlying calafate bush 4 March 2021

Report Author(s)	Ken Passfield
Report date	05/03/21
Site visited	Island Harbour, Fitzroy Farm
Landowner	Falkland Landholdings
Date(s) of visit	04/03/21
Operator(s)	Ken Passfield
Access	By vehicle from Stanley
Accommodation	n/a day visit only
Biosecurity	All gear cleaned prior to departing from, and on return to Stanley
Main funder	Falkland Islands Government (Environmental Studies Budget)
Co-funding/in-kind assistance	Herbicide from Department of Agriculture
Target species	Calafate *(Berberis microphylla)*
Weed cover	6 square metres

Area controlled	6 square metres
Overall search area	50ha
Hours of work on sites	5
Hours travel to sites	2
No. of days invoiced	1
Control method	Foliar application of herbicide using knapsack sprayers
Herbicide mix used	Eliminate® (triclopyr & picloram) @ 6 ml/litre, Eradicate® (metsulfuron) @ 0.5g/litre, organosilicone @ 1ml/litre, red dye @ 8ml/litre
Litres of mix used	3
Data recorded	Operators GPS search tracks, plant co-ordinates and spray quantities, hours worked and travelled, are archived with Island LandCare. All data recorded in the field on phone app and synced to weeds database on return.
Weather conditions	Fine and dry with light winds
Comments	Calafate in the area was sprayed by Brian Summers (South Atlantic Invasive Species Programme) in ca. 2010, and followup was carried out by FIG DoA contracted staff in 2018. Both operations were very successful and no regrowth was observed on any of the dead bushes that had been sprayed. There was some regrowth on a stump at the old gardens that may have been cut down. The area where calafate has been recorded in the past was searched and a total of 15 new bushes were found and sprayed at the locations shown in Fig 1. below. Three of these bushes were about 1m tall and had fruits. The remaining bushes were much smaller and low lying with no fruit. Leftover herbicide (approx 5 litres of mix) was sprayed onto several small outlying gorse bushes.
Followup work	Recommend farm staff keep a good lookout for calafate bushes in the area. A detailed followup visit recommended in 2 year's time - ie 2022/23 summer
Acknowledgements	We thank Denise Blake, FIG's Environmental Officer, and Matt McNee Department of Agriculture for their support for this programme.

Fig 1. Calafate plants sprayed at Island Harbour in 2021. Red circle = location of one or more bushes

POST VISIT WEED CONTROL REPORT

Species *Berberis microphylla*

Island Harbour - 5 March 2021

Island LandCare, PO Box 538, Stanley, Falkland Islands FIQQ 1ZZ
sallyponcet@horizon.co.fk porvenir@mailasail.com

Outlying calafate bush 4 March 2021

Report Author(s)	Ken Passfield
Report date	05/03/21
Site visited	Island Harbour, Fitzroy Farm
Landowner	Falkland Landholdings
Date(s) of visit	04/03/21
Operator(s)	Ken Passfield
Access	By vehicle from Stanley
Accommodation	n/a day visit only
Biosecurity	All gear cleaned prior to departing from, and on return to Stanley
Main funder	Falkland Islands Government (Environmental Studies Budget)
Co-funding/in-kind assistance	Herbicide from Department of Agriculture
Target species	Calafate *(Berberis microphylla)*
Weed cover	6 square metres

Area controlled	6 square metres
Overall search area	50ha
Hours of work on sites	5
Hours travel to sites	2
No. of days invoiced	1
Control method	Foliar application of herbicide using knapsack sprayers
Herbicide mix used	Eliminate® (triclopyr & picloram) @ 6 ml/litre, Eradicate® (metsulfuron) @ 0.5g/litre, organosilicone @ 1ml/litre, red dye @ 8ml/litre
Litres of mix used	3
Data recorded	Operators GPS search tracks, plant co-ordinates and spray quantities, hours worked and travelled, are archived with Island LandCare. All data recorded in the field on phone app and synced to weeds database on return.
Weather conditions	Fine and dry with light winds
Comments	Calafate in the area was sprayed by Brian Summers (South Atlantic Invasive Species Programme) in ca. 2010, and followup was carried out by FIG DoA contracted staff in 2018. Both operations were very successful and no regrowth was observed on any of the dead bushes that had been sprayed. There was some regrowth on a stump at the old gardens that may have been cut down. The area where calafate has been recorded in the past was searched and a total of 15 new bushes were found and sprayed at the locations shown in Fig 1. below. Three of these bushes were about 1m tall and had fruits. The remaining bushes were much smaller and low lying with no fruit. Leftover herbicide (approx 5 litres of mix) was sprayed onto several small outlying gorse bushes.
Followup work	Recommend farm staff keep a good lookout for calafate bushes in the area. A detailed followup visit recommended in 2 year's time - ie 2022/23 summer
Acknowledgements	We thank Denise Blake, FIG's Environmental Officer, and Matt McNee Department of Agriculture for their support for this programme.

Fig 1. Calafate plants sprayed at Island Harbour in 2021. Red circle = location of one or more bushes

POST VISIT WEED CONTROL REPORT

Calafate *Berberis microphylla*

Port Stephens - 9 - 12 March 2021

Island LandCare, PO Box 538, Stanley, Falkland Islands FIQQ 1ZZ
sallyponcet@horizon.co.fk porvenir@mailasail.com

Sprayed calafate at Snipe Rincon 9 March 2021

Report Author(s)	Ken Passfield, Sally Poncet
Report date	17/05/21
Site visited	Port Stephens
Landowner	Peter and Ann Robertson, Falkland Berntsen
Date(s) of visit	9 - 12 March 2021
Operator(s)	Ken Passfield and Sally Poncet
Access	By vehicle from Port Stephens settlement
Accommodation	Stayed with Peter and Ann Robertson at Port Stephens
Biosecurity	All gear cleaned prior to arrival at on and before departing from Port Stephens
Main funder	Falkland Islands Government (Environmental Studies Budget)
Co-funding/in-kind assistance	Accommodation and vehicle supplied by Port Stephens Farm. Driven to Snipe Rincon site by Diane Towersey; herbicide from Department of Agriculture
Target species	Calafate *(Berberis microphylla)*
Weed cover	402 square metres
Area controlled	402 square metres
Overall search area	n/a - we were aware of all three locations
Hours of work on sites	n/a - work carried out concurrently with mouse-eared hawkweed control

Hours travel to sites	n/a - work carried out concurrently with mouse-eared hawkweed control
No. of days invoiced	n/a - work carried out concurrently with mouse-eared hawkweed control
Control method	Foliar application of herbicide using knapsack sprayers
Herbicide mix used	Eliminate® (triclopyr & picloram) @ 6 ml/litre, Eradicate® (metsulfuron) @ 0.5g/litre, organosilicone @ 1ml/litre, red dye @ 8ml/litre
Litres of mix used	23 litres
Data recorded	Operators GPS search tracks, plant co-ordinates and spray quantities, hours worked and travelled, are archived with Island LandCare. All data recorded in the field on phone app and synced to weeds database on return.
Weather conditions	Fine and dry with light winds at the time of spraying
Comments	The majority of calafate around the settlement has been sprayed and manually removed by Ann Robertson. Most of this work has been highly successful. Calafate was sprayed in three locations on this visit: 1. Snipe Rincon. One large spreading bush with several small outliers, first controlled in 2017, however the weak mix of Tordon Brushkiller @ 2.5ml/llitre used at the time may not have been strong enough to kill the plant completely, and in addition, with no followup having been carried out since on any small regrowth, the bush had regained its previous extent. 2. The Cutting. One bush approx 1m tall was found in the Cutting whilst searching for hawkweed, detailed searching then found a small seedling 100m down hill. 3. Forky's garden. An ornamental hedge had been planted many years ago in the garden of a house, belonging to Falkland Berntsen, in the settlement. Most of the bushes were dead but there were a few with vigorous fresh shoots.
Followup work	Followup visits required to all three sites in summer 2021/22, with the expectation that there may be small surviving seedlings to deal with.
Acknowledgements	We thank Denise Blake, FIG's Environmental Officer, and Matt McNee, Department of Agriculture, for their support for this programme.

POST VISIT WEED CONTROL REPORT

Calafate *Berberis microphylla*

Philomel Farm - 1 April 2021

Island LandCare, PO Box 538, Stanley, Falkland Islands FIQQ 1ZZ
sallyponcet@horizon.co.fk porvenir@mailasail.com

Sprayed calafate bush near sheep pens 1 April 2021

Report Author(s)	Ken Passfield
Report date	02/04/21
Site visited	Philomel Farm settlement
Landowner	Scott and Rachel Short
Date(s) of visit	15 March 2021 and 1 April 2021
Operator(s)	Ken Passfield and Sally Poncet
Access	By vehicle
Accommodation	n/a - day visits only
Biosecurity	All gear cleaned prior to arrival and on departure
Main funder	Falkland Islands Government (Environmental Studies Budget)
Co-funding/in-kind assistance	Assistance provided by Scott Short using tractor and loader to access heart of largest bush. Herbicide from Department of Agriculture
Target species	Calafate *(Berberis microphylla)*

Weed cover	90 square metres
Area controlled	90 square metres
Overall search area	1 ha
Hours of work on sites	7 person hours
Hours travel to sites	9 person hours
No. of days invoiced	2 person days
Control method	Foliar application of herbicide using knapsack sprayers
Herbicide mix used	Eliminate® (triclopyr & picloram) @ 6 ml/litre, Eradicate® (metsulfuron) @ 0.5g/litre, organosilicone @ 1ml/litre, red dye @ 8ml/litre
Litres of mix used	30
Data recorded	Operators GPS search tracks, plant co-ordinates and spray quantities, hours worked and travelled, are archived with Island LandCare. All data recorded in the field on phone app and synced to weeds database on return.
Weather conditions	Fine, dry and sunny, light NW winds
Comments	The first visit was on 15 March to assess the site, however strong winds and rain on this day made spraying impossible. On 1 April a return visit was made. The largest bush was located on the settlement green. It covered approximately 60 square metres and was approx 5m tall. I was able to reach the centre of the bush from the tractor's front end loader. A second bush of approx 25 square metres was growing next to the sheep pens near the old house. A third bush was found in the mature trees located down the valley from the settlement. This consisted of several tall stalks growing from a single 20cm diameter trunk that appeared to be an old tree that had died and then come to life again. None of the three plants had fruit and it was reported that they have never been known to set fruit, although in the 2019/2020 summer they were in flower for the first time and on this visit there were signs of it having flowered this summer. All three plants were sending out suckers into the surrounding tall grass.
Followup work	Followup will be required - specifically keeping an eye out for green shoots in the heart of the large bush and suckers around the margins of all three bushes. These can either be sprayed or manually removed.
Acknowledgements	We thank Denise Blake, FIG's Environmental Officer, and Matt McNee of the Department of Agriculture for their support for this programme.

POST VISIT WEED CONTROL REPORT

Mouse-eared hawkweed *Pilosella officinarum*

Port Stephens - 7 - 12 March 2021

Island LandCare, PO Box 538, Stanley, Falkland Islands FIQQ 1ZZ
sallyponcet@horizon.co.fk porvenir@mailasail.com

Breezy day on Stephens Peak at the location of furthest hawkweed outliers. March 2021

Report Author(s)	Ken Passfield, Sally Poncet
Report date	17/05/21
Site visited	Port Stephens (Stephens Peak and the Cutting)
Landowner	Peter and Ann Robertson
Date(s) of visit	7 - 12 March 2021
Operator(s)	Ken Passfield and Sally Poncet
Access	By ferry and vehicle to Port Stephens, by vehicle to Stephens Peak.
Accommodation	With Peter and Ann Robertson
Biosecurity	All gear cleaned prior to arriving at and before departing from Port Stephens
Main funder	Falkland Islands Government (Environmental Studies Budget)
Co-funding/in-kind assistance	Accommodation was provided by Peter and Ann Robertson, Port Stephens Farm provided a vehicle to access the sites, Paul Robertson took a 1000 litre cube tank of herbicide around to the site by tractor and trailer. We provided labour to assist Paul and Ann with their spraying.

Target species	Mouse-eared hawkweed (*Pilosella officinarum)*
Weed cover	>5,000 square metres
Area controlled	5,000 square metres was controlled (based on an estimate from herbicide use)
Overall search area	>100 ha
Hours of work on sites	64 hours (includes work on calafate)
Hours travel to sites	36 hours (includes work on calafate)
No. of days invoiced	12 person days
Control method	Foliar application of herbicide using 3 knapsack sprayers and quadbike sprayer
Herbicide mix used	Tordon brushkiller XT@ 2.5ml/litre, organosilicone @ 1ml/litre, red dye @ 8ml/litre
Litres of mix used	600 litres
Data recorded	ILC operators' GPS search tracks, plant co-ordinates and spray quantities, hours worked and travelled, are archived with Island LandCare. All data recorded in the field on phone app and synced to weeds database on return.
Weather conditions	Dry but extremely windy on most of the days.
Comments	See map below for the areas controlled. Large areas had to be covered on foot as they were too steep to drive on, however having Diane deliver jerry cans of herbicide mix by motorbike greatly reduced the amount of walking required. Outliers were found on top of Stephens Peak.
Followup work	Mouse-eared hawkweed is well established in the area and presents a real risk to native pastures. All possible support should be given to landowners in their control of it.
Acknowledgements	We thank Denise Blake, FIG's Environmental Officer, for her support for this programme, and Peter and Ann for their hospitality.

The Stephens Peak area that was searched for mouse-eared hawkweed (red line); red circles show infested areas sprayed.