Report on a visit to Falklands Conservation owned North, Saddle, Cliff Knob, Ship, Coffin and Beef Islands in 2019

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Summary

A trip was undertaken on the 30th Nov. to 4th December 2019 to Falklands Conservation (FC) owned North, Saddle, Cliff Knob, Ship, Coffin and Beef Islands.

The purpose of the trip was to gather further baseline data on the islands in order to inform management proposals for each site. The intention is that the management considerations and information provided within this document will be fed into management planning for each island. Consequently, this report and its content should be considered a *supporting document* and not a management planning document for the sites. Information builds on that gathered during the previous trip in 2016 (Stanworth et al 2017) and other trips referenced therein.

Further survey effort on North Island continued to establish the significant conservation value of this site at a national and global level. In addition to its valuable seabird populations and rodent free status, pristine bluegrass habitats supporting one of the largest, if not likely the largest, Falkland rock-cress populations, would likely also merit the site for Important Plant Area status. This information should also be included in a review of the New Island Key Biodiversity Area. National Nature Reserve (NNR) status should be sought for the site in order to conserve it, with Privately Protected Area status pursued if NNR designation is not forthcoming.

Saddle is increasingly important as a breeding and haul out site for pinnipeds, predominantly southern sea lion (over 136 individuals were present during the survey). Its tussac dominated habitat appears in good condition.

Cliff Knob Island is near pristine. It is tussac dominated and well covered by slender-billed prion burrows. It appears rodent free, with Cobb's wren present.

Ship Island remains strongly influenced by historic degradation through grazing, burning, and the introduction of non-native species; however, it continues to support a good bird assemblage for a site of its size. This includes a small southern giant petrel breeding colony (an Agreement for the Conservation of Albatrosses and Petrels (ACAP) species) which appears stable in number over recent years. Natural regeneration following the removal of grazing livestock is difficult to evidence and planting trials of native species have been initiated to aid recovery. Non-native gorse eradication work has begun.

Coffin has been historically impacted by grazing and modified by the introduction of non-native grasses, particularly Yorkshire fog. Previous bare ground resulting from die-back had revegetated with non-native species, though planting to re-vegetate with native species would reduce the risk of repeated occurrence. Indications are that the island remains rodent free. Surveys located additional areas of native bluegrass giving optimism for increasing colonisation by this species and a potential source of tillers for planting.

Beef Island appears to be slowly recovering from historic livestock grazing. Existing tussac grass appears healthy and younger tussac plants around the margins indicate a steady expansion. There remain native plant species within those areas of introduced grasses that still provide scope for native plant dominance over time. Indications are that the Island is rodent free.

Cursory investigation of soil depth and moisture broadly indicate increased depth and moisture under tussac habitat. This is not unexpected as native grass species, particularly tussac but also bluegrass and even whitegrass (*Cortidera pilosa*), form tussocks or 'bogs' when mature, providing increased shelter at ground level aiding moisture retention and enhancing soil formation. Whilst the information is certainly not conclusive, establishing/further expanding native grassland through planting on sites such as Ship Island would hopefully aid the recovery process from thin, compacted soils with open dry heath to more typical, naturally functioning small island ecosystems.

There remain a number of repeated management considerations across FC Island reserves, which are:

- rodent surveillance – challenging given the short time available for visits. Longer-term monitoring protocols are needed
- biosecurity measures - critical as colonisation by alien vertebrates would have irreversible significant impacts
- monitoring pinnipeds and seabirds - most sites have potential to support further burrowing seabird species
- monitoring large-scale changes in vegetation and erosion - regeneration of native habitats and die-back occurrence will inform any planting requirements to encourage native biodiversity and prevent soil loss
- Active habitat modification over natural recovery – a number of islands where grazing has been removed 30-40 years prior, have shown little natural recovery either from impoverished dry heath, or non-native dominated grasslands. The merits of more active management to facilitate regeneration to more naturally occurring habitats needs consideration.

Drone imagery remains a useful approach to general monitoring of habitats, bare ground and seabird colonies.

Introduction

A trip was undertaken from the 30th November to 4th December 2019 to Falklands Conservation (FC) owned North, Saddle, Cliff Knob, Ship, Coffin and Beef Islands (**Figure 1**). FC staff comprised Andy Stanworth, Esther Bertram and Michelle Winnard. Lindsay Ireland attended from Detroit Zoological Society. Francesco Ventura, a researcher from New Island also accompanied the trips. The boat – MV Holdfast was skippered by and crewed by Alec Hazell. Accommodation was provided by New Island Conservation Trust.

Figure 1. Site locations within the Falkland Islands

The purpose of the trip was to gather further baseline data on the Islands in order to inform management proposals for each site. The intention is that the management considerations and information provided within this document will be fed into management planning for each island. Consequently, this report and its content should be considered a *supporting document* and not a management planning document for the sites.

Developing management plans for these sites would support objectives in the Falkland Islands Biodiversity Framework 2016-2030 and the Falklands Conservation 5-year Plan 2020-25.

The group landed at:

Ship Island (30 Nov.)
Beef Island (1 Dec.
North Island (2 Dec.)
Saddle Island (2 Dec.)
Cliff Knob Island (2 Dec)
Ship Island (2 Dec.)
Coffin Island (3 Dec.)

Methods

A few days is insufficient time to gather comprehensive data on the Islands. The main aims were to gather as much general information about the habitats and species present on each Island, including both native and non-native, as possible. This was done through circumnavigation of the Islands and boat-based photography, drone use for aerial photography, and shore visits. Where time permitted, lists and counts of fauna and flora observed were made for smaller numbers of species, photos of larger colonies were taken. Video footage and photos were also collected to support wider promotion of FC sites. Landing sites and access considerations were recoded for future planning.

Specific activities for each Island were:

North Island

- Check for ringed black-browed albatross from New Island.
- Health observations on black-browed albatross and southern rockhopper penguin.
- Habitat survey of grassland area to the north end of the island – a previous burn area.

Saddle Island

- Pinniped count

Ship Island

- Improve detail on previous habitat survey
- Soil depth and moisture measurements
- Southern giant petrel colony count by drone
- Check recent gorse spraying
- Further assess slender-billed prion population
- Check for ringed brown skuas from New Island
- Trial planting bluegrass and boxwood

Cliff Knob Island

- Habitat survey
- Cursory assessment of burrowing seabirds

Coffin Island

- Further assess burrowing seabirds
- Soil depth and moisture measurements
- Check bare ground for erosion or re-vegetation
- Collect and plant bluegrass in bare ground
- Update habitat survey

Beef Island

- Habitat survey
- Soil depth and moisture measurements
- Bird survey

Results

North Island

Figure 2. North Island (drone image)

Access

The Island was accessed at a previously used location at approximately -51.660233°, -61.225345°. Several southern sea lions were associated with the landing area and up into the tussac above. If disturbed these animals present a risk to personnel as they charge down the slope to the water and landing parties need to be mindful of this. Landing here would be difficult in anything but favourable sea conditions and other landing options appear unlikely.

Habitats and Flora

In 2016 the interior of North Island was not accessed and only a small number of native and non-native species were recorded from the peripheral tussac habitat on the eastern side (Stanworth et al 2017). With little previous documented information on the habitats and flora of North Island; effort was made on this visit to access other areas of the Island, particularly to assess residual impacts of, or recovery from, the recorded burn in 1989 (Falkland Islands Biodiversity Database).

Figure 3. Survey features plan, North Island. Black line – survey track, blue polygon – approximate bluegrass habitat extent.

A walk-over survey was conducted of the northern part of the island (**Figure 3**.) Time constraints and challenging access through dense tussac permitted a survey route principally of the interior. Although there is localised variation over the survey area (blue polygon) it is described as a whole with regard to species abundance listed in **Table 1**.

Species		Status	Abundance scale (DAFOR)
Sheep's Sorrel	*Rumex acetosella*	I	R
Emerald-bog	*Colobanthus subulatus*		R
Lesser Sea-spurrey	*Spergularia marina*		R
Lesser Swine-cress	*Coronopus didymus*		O
Falkland Rock-cress	*Phlebolobium maclovianum*	E	O
Wild Celery	*Apium australe*		R
Wiry Azorella	*Azorella filamentosa*		R
Balsam-bog	*Bolax gummifera*		F
Mountainberry	*Gaultheria pumila*		O
Antarctic Bedstraw	*Galium antarcticum*		O
Coastal Nassauvia	*Nassauvia gaudichaudii*	E	R
Vanilla Daisy	*Leucheria suaveolens*	E	R
Smooth Ragwort	*Senecio vaginatus*	E	F
Prickly Sow-thistle	*Sonchus asper*	I	O
Native Wood-rush	*Luzula alopecurus*		O
Antarctic Hair-grass	*Deschampsia antarctica*		O
Fuegian Couch	*Elymus glaucescens*		R
Cinnamon-grass	*Hierochloe redolens*		O
Bluegrass	*Poa alopecurus*		D
Tussac	*Poa flabellata*		F
Shore Meadow-grass	*Poa robusta*		R
Spiked Oat-grass	*Trisetum phleoides*		O

Table 1. Plant species recorded within bluegrass grassland on North Island. E – Endemic, I – Introduced, D – Dominant, F – Frequent, O – Occasional, R – Rare.

The survey area was found to be covered by unimproved, near-pristine, bluegrass acid grassland covering around 20 hectares (**Figure 4**) and containing good examples of aged, established balsam bogs (**Figure 5**). Bluegrass habitat is identified as a 'threatened habitat' in the Falkland Islands Important Plant Areas Directory (Upson 2012).

Figure 4. View south across North Island showing tussac-fringed bluegrass habitat (lighter green/brown area).

Figure 5. Bluegrass dominated grassland with large balsam bogs, North Island.

There was occasional evidence of previous impacts (likely fire burnt areas) on the island habitats, but these were very limited in extent and consisted of a small number of open areas where non-native sheep's sorrel dominated (**Figure 6**) or damaged balsam bogs appeared to be recovering (**Figure 7**).

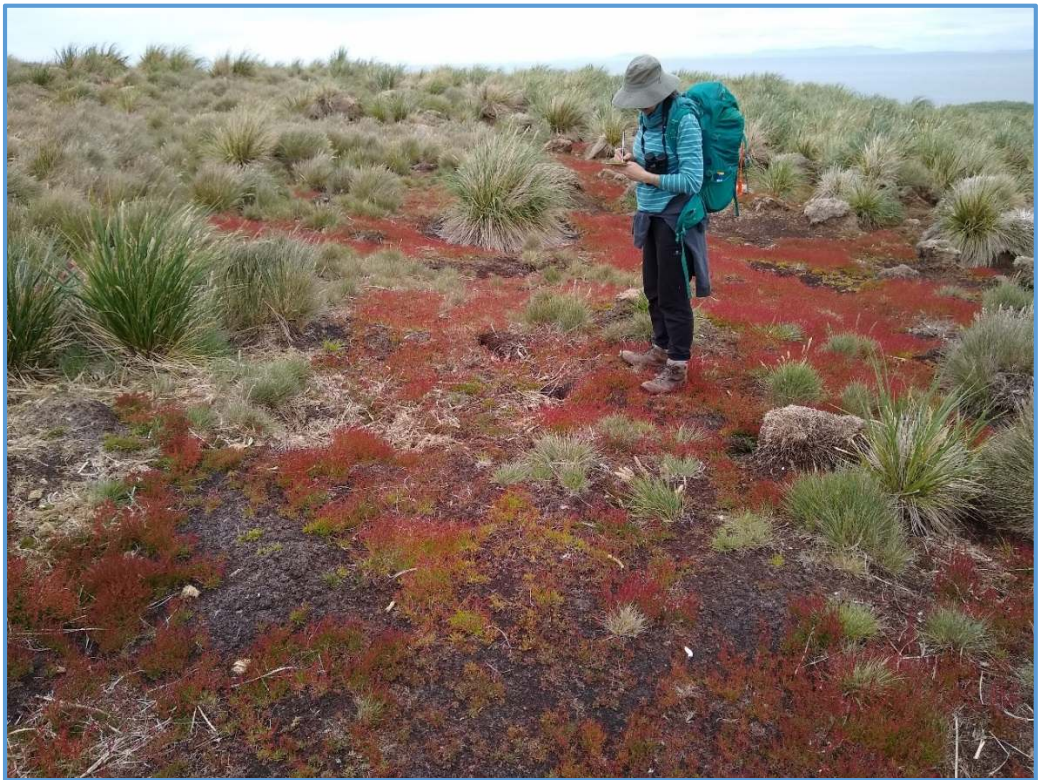

Figure 6. Open area dominated by sheep's sorrel, presumed to result from a previous fire, North Island

Figure 7. Recovering balsam bog, North Island.

A notable feature of the bluegrass habitat was the presence of a significant population of the endemic, globally 'endangered' and nationally 'vulnerable' Falkland rock-cress. Locations recorded for this species on the survey route are shown in **Figure 8**. A total of sixty-five plants were observed; however, given the limited detailed coverage of the site the actual population would be expected to be significantly higher and it is considered likely that North Island certainly represents one of the key sites, if not the most significant site, known for this species globally.

Figure 8. Locations for Falkland rock-cress on the survey route (green circle – point records of 1-5 plants, small green polygon - 11 plants, larger green polygon - 19 plants).

Figure 9. Flowering Falkland rock-cress amongst bluegrass.

Some of the Falkland rock-cress plants showed signs of disease akin to ‘white blister’ (*Albugo candida*), a common disease of brassicas (**Figure 10**).

Figure 10. Flowering Falkland rock-cress showing white blisters on leaves.

Also widely distributed throughout the bluegrass habitat were hundreds of endemic smooth Falkland daisy. A few were in flower (**Figure 11**), but the majority were yet to flower; however this would be a very good site for this species.

Figure 11. Flowering smooth Falkland daisy amongst bluegrass.

Fauna

Large number of South-American fur seals (*Arctocephalus Australis*) were hauled out on the rocky shore in the south-eastern corner of the Island (**Figure 12**). No specific count was taken on this occasion, or drone imagery; however estimates of high 10s to low 100s are comparable to the last visit in 2016 (Stanworth et al 2017). There was no evidence of breeding at the time of the visit.

Figure 12. South-American fur seals hauled out on the south-eastern coast of North Island.

Southern Sea Lions (*Otaria flavescens*) were present at the landing stage and scattered around the coastline of the Island. Fifty three individuals were estimated from photos.

As in 2016 drone footage was achieved of all the seabird colonies on the plateau of the island (**Figure 13**). As total counts are demanding, sub-samples of the colony may be utilised to examine colony changes in extent and nesting density; however, total counts will still be conducted as part of Falkland Conservation's Island-wide Census work.

Black-browed albatross within the plateau colony area were checked, though not comprehensively, for rings to see if there was any evidence of interchange between the New Island and North Island colonies. No rings were observed.

Broad health observations were made of black-browed albatross and southern rockhopper penguin (**Figure 14**). No external evidence or clear symptoms of disease were observed.

A single black-browed albatross was observed with oiled plumage (**Figure 15**). The oiling was relative light and restricted in area with the bird exhibiting normal behaviour. As the bird was incubating at a remote site there was no further action that could be taken.

Figure 13. Mixed Black-browed Albatross and Southern Rockhopper colonies on North Island.

Figure 14. Southern rockhopper penguin on North Island.

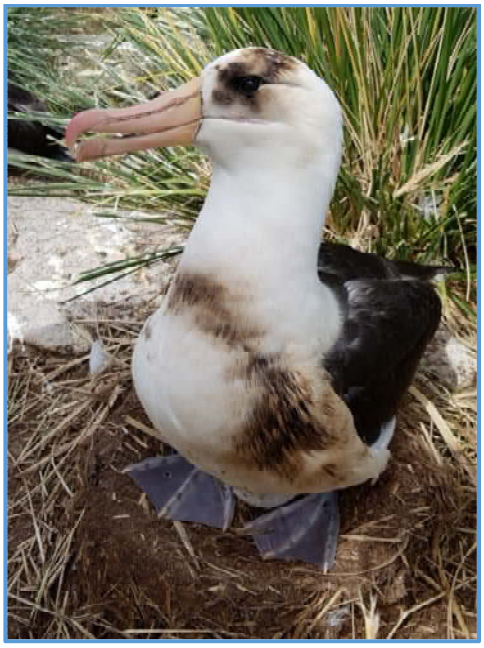

Figure 15. Oiled black-browed albatross, North Island.

Other bird species and counts made during the visit are shown below in **Table 2**.

Species		Number	Status	Notes
Slender-billed Prion	*Pachyptila belcheri*	1 ind	Breeding	
Brown Skua	*Catharacta antarctica*	1 ind	Non-breeding	
Falkland Steamer Duck	*Tachyeres brachypterus*	2 ind	Probably breeding	
Yellow-billed Teal (Speckled Teal)	*Anas flavirostris*	1 ind	Possibly breeding	Flushed from bluegrass area
Snowy Sheathbill	*Chionis albus*	2 ind	Non-breeding	
Blackish Oystercatcher	*Haematopus ater*	2 ind	Probably breeding	
Peregrine Falcon	*Falco peregrinus*	1 ind	Possibly Breeding	
Striated Caracara	*Phalcoboenus australis*	8 ind	Breeding	
Austral Thrush (Falkland Thrush)	*Turdus falcklandii*	10 ind	Breeding	
Long-tailed Meadowlark	*Sturnella loyca*	4 ind	Probably breeding	
Dark-faced Ground Tyrant	*Muscisaxicola maclovianus*	1 ind	Probably breeding	
Black Cinclodes (Tussacbird)	*Cinclodes antarcticus*	25 ind	Breeding	
Grass Wren	*Cistothorus platensis*	1 ind	Probably breeding	
Cobb's Wren	*Troglodytes cobbi*	5 ind	Breeding	
White-bridled Finch	*Melanodera melanodera*	13 ind	Breeding	

Table 2. Bird species recorded on North Island. Ind – individuals

No evidence of rats or mice was noted during the visit; however, no extensive search was made.

Management Considerations

Access

Access is difficult and could not be assured. Terrain is difficult and movement on the Island is time consuming.

- *Any intended visits would need favourable weather and sea conditions, flexibility in landing options and more time or resource ashore.*

- *It is important to ensure that biosecurity elements of FC's Field-working Standard Operating Procedure remain appropriate for visits to the Island.*

Habitats and Flora

There is little remaining evidence of negative impacts from the historic fire with only a few small areas remaining where species composition may indicate vegetative clearance by such an event.

More detailed investigation of the northern half of the island revealed a substantial and presumed near-pristine example of bluegrass meadow with a notable balsam bog component. This is identified as a 'threatened habitat' in the Falklands and such an area is of considerable conservation significance in the Islands. The additional presence of a relatively large, possibly the most significant recorded population of the endemic Falkland rock-cress, as well as an extensive population of the endemic Falkland smooth daisy further increases the value of this site

- *Aerial and/or ground-based surveys of the northern section of the Island would be useful over time to establish any encroachment of peripheral tussac habitat into the more valuable bluegrass meadow as well as tracking any developing changing composition or erosion development*

- *A more systematic survey for Falkland rock-cress would inform whether this site indeed supports the largest remaining population of this species in the Falklands, and therefore globally.*

- *The presence of the Falkland rock-cress population and example of bluegrass meadow should merit Important Plant Area status for the island. Designation should be pursued and should be fed into the broader New Island Key Biodiversity Area designation*

Given the botanical significance of the site, invasive plant species could pose considerable threat to valuable features. No further non-native species were recorded from the last visit in 2016 and those present would not be considered a significant threat currently.

- *Given the logistical constraints, terrain and habitats, large-scale control or eradication of non-native plant species is probably unrealistic.*

- *Biosecurity to prevent the arrival of non-native invasive plant species is critical as is monitoring to check for arrival of such species that would allow early intervention and eradication.*

Fauna

The large numbers of South American fur seals still suggest that this is a regular haul out for this species, probably from breeding colonies on New Island. Though it was not evident on this visit, it is possible that breeding could occur in the future.

- *Continue to collect information on pinniped numbers at the site on any subsequent visits, either*

anecdotally or qualitatively, as opportunity would allow, and also monitor breeding status and productivity, should breeding occur.

Breeding colonies of mixed black-browed albatross and southern rockhopper penguin were extensive and at the time of the visit no signs of disease or levels of mortality to cause concern were observed.

- *An island-wide census of black-browed albatross has recently been undertaken in the Islands (in prep), with signs of a stable or stable/increasing population. An Island-wide census of southern rockhopper penguin is due to be undertaken in 2020; however, this species remains of particular concern due to negative population trends. The population estimate for the Island should be updated in 2020. Disease currently presents significant additional pressure for both species and biosecurity procedures to avoid pathogen introduction are important.*

There was no direct evidence of rodents being present on the Island. The presence of Cobb's Wren and tussacbird also indirectly point towards the Island being rodent free.

- *These observations are still not conclusive - explore options for robust rodent surveillance.*

Saddle Island

Figure 16. Saddle Island (drone image).

Access

Saddle Island was accessed via the sandy bay on the south east side which has previously afforded a good sheltered landing (-51.671303°, -61.240094°). The main landing consideration remains the numbers of pinnipeds that utilise the landing beach, which had increased since the last visit (**Figure 17**).

Habitats and flora

No survey was made directly of habitats and flora; however drone video footage was made of the island. No visible change was apparent from the visit in 2016 in terms of habitat types and extent, although the ponds that were previously dry in 2016 contained water at the time of the current survey.

Fauna

Faunal surveys focussed on pinnipeds on the landing beach. Drone footage was taken during a flyover of the beach and then footage examined to provide estimates of species and number of seals present. The drone footage provided an estimate of 136 southern sea lions, of which there were ten apparent groups of a male and associated females (harems). On the main beach three southern elephant seals were also present.

Figure 17. Southern sea lions on landing beach Saddle Island, accompanied by Snowy Sheathbill.

Casual bird observations during the visit are summarised in **Table 3**.

Species		**Number**	**Status**
Dolphin Gull	*Larus scoresbii*	12 ind	Non-breeding
Kelp Goose	*Chloephaga hybrida*	3 ind	Probably breeding
Snowy Sheathbill	*Chionis albus*	15 ind	Non-breeding
Turkey Vulture	*Cathartes aura*	3 ind	Possibly breeding
Striated Caracara	*Phalcoboenus australis*	1 ind	Probably breeding
Black Cinclodes (Tussacbird)	*Cinclodes antarcticus*	5 ind	Probably breeding

Table 3. Bird species recorded on landing beach, Saddle Island. Ind – individual.

There was no direct evidence of rodents being present on the Island. The presence of tussacbird also indirectly point towards the Island being rodent free.

Management Considerations

Access

There is fairly reliable access at the landing bay; however, on this visit, compared to the last, pinniped numbers and distribution was such that access without causing disturbance was more challenging.

- *If the sea lion colony continues to increase and breeding occurs then access may need to be found elsewhere or avoided during key breeding times.*

Habitats and Flora

There was no update to the management recommendations made in Stanworth et al 2017.

Fauna

The site appears to be of increasing significance for southern sea lion and perhaps pinnipeds more widely. It is increasingly important that the population is monitored and potential disturbance avoided.

Other management recommendations from Stanworth et al 2017 remain relevant.

Ship Island

Figure 18. Ship Island (Drone image).

Access

Ship Island was accessed on two occasions (on the 1st Dec. and 2nd Dec.) - once from the northeast and once from the northwest where kelp beds are narrow. Access is relatively straightforward.

Figure 19. Ship Island survey features. Tracks show survey coverage. BW1 and BW2 show extents of boxwood planting. Bluegrass was planted around the dried pond. S1 through S20 show soil measurement points.

Habitats and Flora

A walk-over-survey of vegetation was conducted across most of the Island. Tracks are shown on **Figure 19**, with plant species recorded summarised in **Table 4**. Some areas were avoided because of breeding southern giant petrel.

The walk over survey results are consistent with previous descriptions of a mosaic of diddle-dee heath with non-native grasses and sheep's sorrel abundant. Native grasses are present though there is only a small area of remnant tussac which does not appear to be regenerating significantly. Vegetation remains short and cover is variable with numerous patches of bare ground. Twenty five species were recorded during the survey taking the overall species recorded to 34 of which 17 (50%) are non-native (**Table 4**).

Species		**Status**	**DAFORN**
Sheep's Sorrel	*Rumex acetosella*	I	A
Common Mouse-ear	*Cerastium fontanum*	I	O
Emerald-bog	*Colobanthus subulatus*		O
Procumbent Pearlwort	*Sagina procumbens*	I	O
Lesser Swine-cress	*Coronopus didymus*		R
Native Yarrow	*Acaena lucida*		O
Lesser Trefoil	*Trifolium dubium*	I	R
Gorse	*Ulex europaeus*	I	R
Common Storks-bill	*Erodium cicutarium*	I	O
Wiry Azorella	*Azorella filamentosa*		R
Diddle-dee	*Empetrum rubrum*		A
Mountainberry	*Gaultheria pumila*		O
Boxwood	*Hebe elliptica*		12 seedlings planted
Falkland Cudweed	*Gamochaeta malvinensis*	E	R
Pineappleweed	*Matricaria discoidea*	I	O
Coastal Nassauvia	*Nassauvia gaudichaudii*	E	O
Sea Cabbage	*Senecio candidans*		O
Groundsel	*Senecio vulgaris*	I	F
Native Rush	*Juncus scheuchzerioides*	I	R
Early Hair-grass	*Aira praecox*	I	F
Marram	*Ammophila arenaria*	I	R
Fuegian Fescue	*Festuca magellanica*		O
Yorkshire Fog	*Holcus lanatus*	I	F
Bluegrass	*Poa alopecurus*		R 10-15 tillers planted
Tussac	*Poa flabellata*		O
Rough-stalked Meadow-grass	*Poa trivialis*	I	O

Table 4. Plant species recorded on Ship Island.

The patch of gorse had recently been sprayed by Island LandCare, funded by Wild Planet Trust. No die-back was yet evident, but the red/pink dye from the herbicide was clearly visible (**Figure 20**).

Figure 20. Gorse patch on Ship Island (yellow area).

Twelve boxwood saplings sourced from New Island were planted as a trial on the north coast of Ship Island between points BW1 and BW2 (**Figure 21**).

Figure 21. Planting boxwood saplings, Ship Island.

A small number of bluegrass tillers, sourced on Ship Island, were planted near the dried pond as a trial (**Figure 22**).

Figure 22. Planting bluegrass tillers, Ship Island.

Soil moisture and depth measurements were taken on Ship Island (**Appendix 1**).

Fauna

A total of sixteen southern sea lion were hauled out on rocky ledges around the Island.

On bare ground to the southwest is a colony of southern giant petrel (**Figure 23**). An estimate from aerial photos taken by drone were of 315 apparently occupied nests (a proxy for breeding pairs) – less than the previous estimate of 355 in 2016 (Stanworth et al 2017), but still more than the 292 estimate from 2015 (Stanworth and Crofts 2017).

Figure 23. Southern giant petrel colony, Ship Island.

A small number of brown skuas were breeding thinly across the mid and southern section of the island. An estimate of 6-10 apparently occupied territories is less than the 20 pairs recorded by Woods in 2001 (Woods 2009); however, the maximum individual count of 40 individuals indicates larger numbers are associated with the Island. No skuas were observed to carry bands that could have been applied as part of the demographic survey on New Island.

Small numbers of slender-billed prion burrows (groups of several tens of burrows) were occasional around the soft coasts and coastal fringes to the north and northeast of the island and associated with the gorse. Breeding was confirmed using the burrowscope and birds were filmed entering and leaving a burrow with a camera trap (**Figure 24**).

Additional bird species recorded are listed in **Table 5**. The island supports a good assemblage of coastal bird species for its size. South American terns are possible breeders in small numbers at the site.

Figure 24. A slender-billed prion returns to its breeding burrow, Ship Island.

No signs of rodents were observed, however, the island is only approximately 300m from New Island which has rats and mice, and the absence of Cobb's wren indicates that rodents have been present if they are not currently.

Species		Number	Status
Southern Giant Petrel	*Macronectes giganteus*	315 AON	Breeding
Slender-billed Prion	*Pachyptila belcheri*	2 occupied burrows	Breeding
Brown Skua	*Catharacta antarctica*	40 ind max. 6-10 pairs	Breeding
South American Tern	*Sterna hirundinacea*	3 ind	Possibly breeding
Kelp Goose	*Chloephaga hybrida*	6 pairs	Breeding
Upland Goose	*Chloephaga picta*	16 ind	Probably breeding
Ruddy-headed Goose	*Chloephaga rubidiceps*	1 pair	Probably breeding
Falkland Steamer Duck	*Tachyeres brachypterus*	3 pair	Breeding
Crested Duck	*Lophonetta specularioides*	5 ind	Probably breeding
Magellanic Oystercatcher	*Haematopus leucopodus*	9 ind	Breeding
Blackish Oystercatcher	*Haematopus ater*	7 pairs	Breeding
Striated Caracara	*Phalcoboenus australis*	6 ind (including 2 pair)	Breeding
Black Cinclodes (Tussacbird)	*Cinclodes antarcticus*	16 ind	Probably breeding
Black-chinned Siskin	*Spinus barbatus*	1 ind	Non-breeding
White-bridled Finch	*Melanodera melanodera*	1 ind	Possibly breeding

Table 5. Birds recorded on Ship Island. Ind – individuals, AON – apparently occupied nests

Management Considerations

Access

There is relatively easy access to much of the coastline, especially where kelp beds are narrow.

- *Breeding southern giant petrel can be easily disturbed, ensure landing is away from the colony area during the breeding season and that the colony area is not approached.*
- *It is important to ensure that biosecurity elements of FC's Field-working Standard Operating Procedure remain appropriate for visits to the Island.*

Habitats and Flora

Habitats remain generally degraded and have a high proportion of non-native species. Young tussac plants were evident but substantial regeneration is not evident. A trial planting of boxwood along the northern coast and a small number of bluegrass tillers into the damper area by the dried pond was carried out.

- *Monitor the success of the bluegrass and boxwood planting on future visits.*
- *Continue aerial photography by drone to track any further development of eroded areas.*

The gorse patch has been herbicide treated to eradicate it (Poncet and Passfield 2019), but a small patch of marram remains. Gorse and marram grass still pose a threat to re-establishment/ restoration of native habitats.

- *The effectiveness of the gorse spraying needs to be monitored and the marram grass requires removal or treatment.*

- *Monitoring of habitats would enable early intervention should invasive species appear*.

Fauna

The recommendations in Stanworth et al 2017 remain relevant.

Cliff Knob Island

Figure 25. Cliff Knob Island – western aspect.

Access

Cliff Knob Island was accessed by landing on a rock shelf on the western end of the Island (visible bottom left in **Figure 25**). Getting ashore requires ideal conditions and should only be attempted by fit and fully mobile individuals as it requires some clambering. Only a portion of the north-western end of the island was accessed

Habitats and flora

The island's vegetation is almost entirely tussac grass. One plant of the non-native sticky groundsel was recorded.

Fauna

Four southern sea lions were observed hauled out on the various rocks and ledges around Cliff Knob. There were no indications of breeding. A limited range of bird species were recorded (**Table 6**); however, the most notable feature was the amount of slender-billed prion remains scattered throughout the tussac. Prions were heard calling in their burrows but searches of burrows with a burrowscope failed to observe individuals. There is potential for large numbers of this species to breed on the island, however predation pressure by Johnny Rooks appears high. A count of breeding rock shags was not conducted on this trip; however, a small colony in line with previous estimate of over a hundred pairs was present on the eastern end.

No signs of rodents were observed and Cobb's wren were recorded indicating a continued rodent free status.

Species		Number	Status
Slender-billed Prion	*Pachyptila belcheri*	possibly low thousands - though very heavily predated	Breeding
Brown Skua	*Catharacta antarctica*	7 ind	Non-breeding
Kelp Gull	*Larus dominicanus*	19 ind	Non-breeding
Blackish Oystercatcher	*Haematopus ater*	1 ind	Possibly breeding
Variable Hawk	*Geranoaetus polyosoma*	1 ind	Probably Breeding
Striated Caracara	*Phalcoboenus australis*	2 ind	Probably breeding
Dark-faced Ground Tyrant	*Muscisaxicola maclovianus*	2 ind	Probably breeding
Black Cinclodes (Tussacbird)	*Cinclodes antarcticus*	5 ind	Breeding
Cobb's Wren	*Troglodytes cobbi*	2 ind	Breeding

Table 6. Birds recorded on Ship Island. Ind - individuals

Management Considerations

Access

Access is difficult and should not be attempted without specific management requirements.

- *It is important to ensure that biosecurity elements of FC's Field-working Standard Operating Procedure remain appropriate for visits to the Island.*

Habitats and Flora

Habitats remain in good condition. Monitor on future visits.

Fauna

No current management is necessary

Coffin Island

Figure 26. Coffin Island from north (drone image)

Figure 27. Coffin Island survey features (Google Earth image). Sba – small bluegrass area, mba – medium bluegrass area, lba – large bluegrass area, cv – patch of common violet, JR – Striated caracara (Johnny Rook) nest, prion – nesting prion observed with burrowscope.

Access

The same landing site was used as in 2016 (Stanworth et al 2017), located on a shelved rocky shoreline in a north-facing 'cove' providing a number of landing options between the kelp beds (-51.737567°, -61.262563°).

Habitats and Flora

The focus for Coffin Island was to revisit areas reported previously as suffering from vegetative die-back on the east side of the Island, and to explore options for late planting of native plants into such areas. Survey tracks (**Figure 27**) extend previous coverage of the site, but only to note key vegetation types.

The walkover survey was productive in identifying a good number of patches of bluegrass, usually along the upper edge of the tussac habitat. Small and medium blue grass areas (sba and mba) constituted several tens of plants or several metres cover respectively; however, a previously unreported larger area (lba) was noted covering perhaps one third of a hectare (**Figure 28**). The increased distribution and abundance of bluegrass is almost certainly a result of increased survey effort rather than new areas, but it provides optimism for the gradual recovery of this habitat on the Island.

Figure 28. Larger bluegrass area on the south-eastern slopes of Coffin Island.

Several patches of common violet (*Viola maculate* var. *maculata*) were flowering (**Figure 29**) and Falkland strawberry plants (*Rubus geoides*) were again frequently observed in other areas, as noted in Stanworth et al 2017.

Figure 29. Patch of common violet, Coffin Island.

Significant changes were evident at the previously recorded bare areas (**Figure 30**), with sheep's sorrel and Yorkshire fog to a lesser degree providing extensive vegetative cover (**Figure 31**).

Figure 30. Area of die-back of Yorkshire Fog in 2016, Coffin Island.

Figure 31. Area of die-back of Yorkshire Fog in 2016, in 2019, Coffin Island.

A few bluegrass tillers were collected and planted in bare ground (**Figure 27** and **Figure 32**).

Figure 32. Newly planted bluegrass tillers, Coffin Island.

Soil moisture readings were recorded at ten locations on the island and are reported in **Appendix 1**.

Fauna

There was no specific survey conducted for fauna on this visit; however the burrowscope was repeatedly used on the survey track to check burrows for seabirds. Three nesting prions were observed using the burrowscope.

A striated caracara with green Darvic ring and white lettered ‘R36’ was observed.

Management Considerations

Access

Access remains unchanged since the previous visit: the Island provides fairly sheltered access, but could be difficult under adverse sea conditions or strong northerly winds.

Habitats and Flora

There is an increase in the known area of bluegrass providing increased optimism for recovery of native habitats. Bare areas have become recolonised by non-native species; however, vegetative cover is preferable to bare earth and the option remains to expand planting of native species to encourage dominance of these in the long-term. It is possible that the non-native species may fail again over time, as evidence suggests Yorkshire fog was prevalent in the areas before and then died-back. This die-back is associated with a grub that is likely to persist on the island and could strike again in the future. Sheep’s sorrel can be a good early coloniser, but may not persist.

- *Larger areas of bluegrass are now known on the Islands. There is sufficient to provide tillers for replanting of other areas.*

- *The fate of the re-vegetating bare areas is uncertain and monitoring and possible pre-emptive native species planting should be considered.*

Fauna

Considerations in Stanworth et al 2017 remain relevant.

Beef Island

Figure 33. Beef Island – western aspect (drone image).

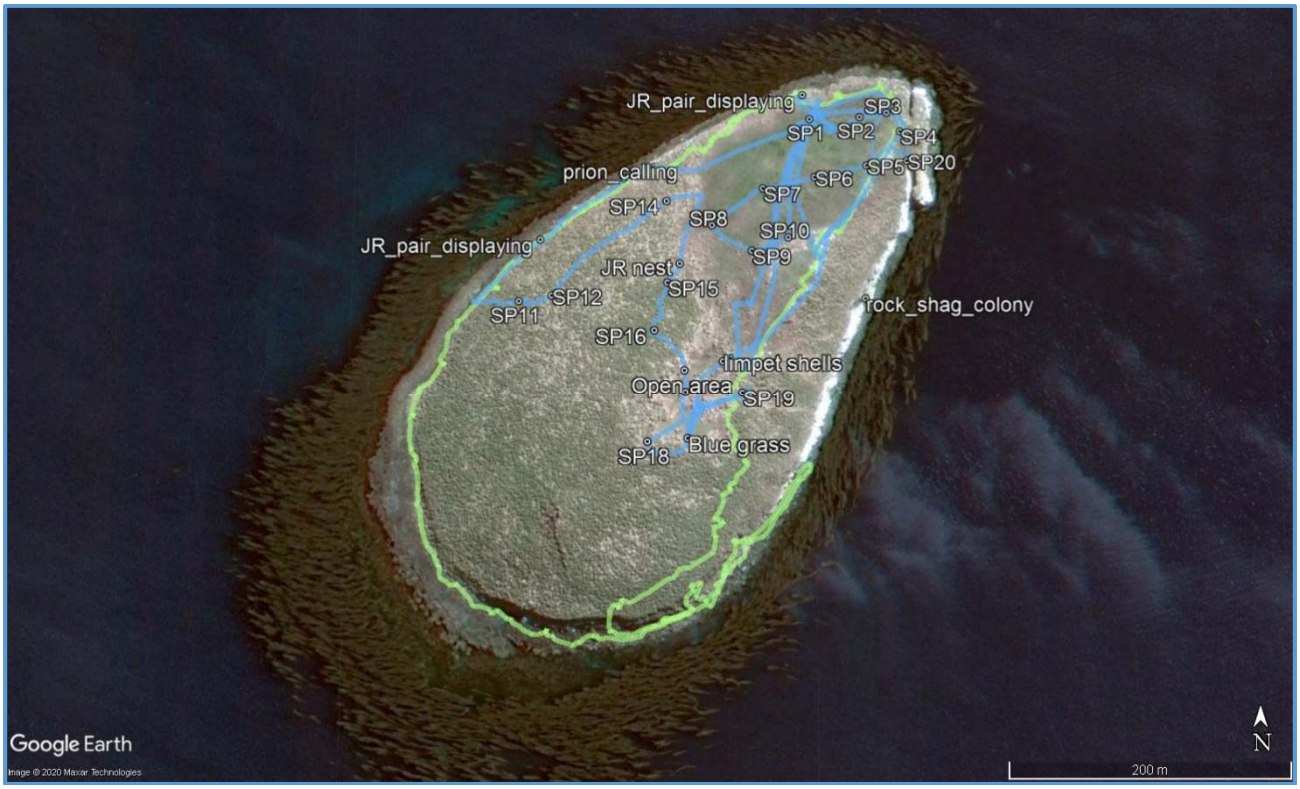

Figure 34. Beef Island survey features. SP – Soil measurement point

Access

Beef Island was accessed on the western side of the northern tip. Here a rock shelf provides reasonable landing; however kelp beds need negotiating. The western side of the Island generally provides landing

options but the east side of it is inaccessible due to cliffs.

Habitats and flora

The island's vegetation is approximately three-quarters tussac grass, with an open area of predominantly neutral grassland dominated by non-native species towards the northern end of the island (**Figure 35**). Soil depth and moisture readings were taken in both habitats (**Appendix 1**).

Figure 35. Neutral grassland dominated by non-native species, Beef Island.

The majority of species recorded were present in this habitat (**Table 7**), which also occurred in open areas within the tussac (**Figure 36**).

Figure 36. Neutral grassland within tussac, showing the small number of bluegrass plants, Beef Island.

Species		Status	Neutral grassland DAFORN	Tussac DAFORN
Sheep's Sorrel	*Rumex acetosella*	I	O	
Calandrinia (unnamed)	*Calandrinia sp.*	I	R	
Emerald-bog	*Colobanthus subulatus*		R	
Procumbent Pearlwort	*Sagina procumbens*	I		
Shepherd's-purse	*Capsella bursa-pastoris*	I		
Lesser Swine-cress	*Coronopus didymus*		R	
Native Yarrow	*Acaena lucida*			
Oval-leaved Prickly-burr	*Acaena ovalifolia*		O	
Common Storks-bill	*Erodium cicutarium*	I	O	
Diddle-dee	*Empetrum rubrum*		R	
Mountainberry	*Gaultheria pumila*		O	
Pineappleweed	*Matricaria discoidea*	I		
Coastal Nassauvia	*Nassauvia gaudichaudii*	E	O	
Sticky Groundsel	*Senecio viscosus*	I	O	R
Early Hair-grass	*Aira praecox*	I	O	
Cock's-foot	*Dactylis glomerata*	I	R	
Fuegian Fescue	*Festuca magellanica*		R	
Yorkshire Fog	*Holcus lanatus*	I	A	
Bluegrass	*Poa alopecurus*			R
Tussac	*Poa flabellata*			D

Table 7. Plant species recorded on Beef Island. D – dominant, A – abundant, O – occasional, R – rare. I – introduced, E – endemic.

Of the 20 plant species recorded on Beef Island, half were non-native.

Fauna

Seven southern sea lions were hauled out around the rocky shelves and ledges of Beef Island. A dead seal

pup was found during the survey indicating that occasional breeding may occur. No previous reports of breeding are known, but the site could certainly provide suitable habitat.

Fourteen species of birds were recorded as breeding or probably breeding on Beef Island, including slender-billed prion of which the Island has potential to support a breeding population in the 1000s (**Table 8**). There is potential for other burrowing seabirds such as Wilson's storm petrel (*Oceanites oceanicus*) or common diving petrel (*Pelecanoides urinatrix*), though no systematic surveys have been conducted. The survey points to a broader and more abundant better bird assemblage at the site than described after visits in both 1995 and 2001 (Woods 2009).

No signs of rodents were observed and Cobb's wren were recorded (**Figure 37**) indicating a continued rodent free status.

Species		**Count**	**Status**
Black-browed Albatross	*Thalassarche melanophris*	2 ind	Non-breeding
Southern Giant Petrel	*Macronectes giganteus*	3 ind	Non-breeding
Slender-billed Prion	*Pachyptila belcheri*	100s to 1000s	Breeding
Rock Shag	*Phalacrocorax magellanicus*	60-100 pairs	Breeding
Brown Skua	*Catharacta antarctica*	12 ind (1-3 territories)	Breeding
Kelp Gull	*Larus dominicanus*	1 ind	Non-breeding
Black-crowned Night Heron	*Nycticorax nycticorax*	2 ind	Probably breeding
Kelp Goose	*Chloephaga hybrida*	3 ind	Probably breeding
Upland Goose	*Chloephaga picta*	1 family	Breeding
Falkland Steamer Duck	*Tachyeres brachypterus*	3 pair, 2 ind	Breeding
Crested Duck	*Lophonetta specularioides*	1 pair	Possibly breeding
Blackish Oystercatcher	*Haematopus ater*	2 ind	Probably breeding
Turkey Vulture	*Cathartes aura*	2 ind	Probably breeding
Striated Caracara	*Phalcoboenus australis*	16 ind 3 nests	Breeding
Austral Thrush (Falkland Thrush)	*Turdus falcklandii*	5 ind	Probably breeding
Dark-faced Ground Tyrant	*Muscisaxicola maclovianus*	2 ind	Probably breeding
Black Cinclodes (Tussacbird)	*Cinclodes antarcticus*	33 ind	Breeding
Cobb's Wren	*Troglodytes cobbi*	12 ind	Breeding
Black-chinned Siskin	*Spinus barbatus*	4 ind	Possibly Breeding
White-bridled Finch	*Melanodera melanodera*	1 pair	Probably breeding

Table 8. Birds recorded on Beef Island. Ind. - individuals

Figure 37. Cobb's wren, Beef Island.

Management Considerations

Access

Access is hindered slightly by kelp beds around the entire periphery of the Island. The east side is too sheer to gain access, though the western side provides a range of landing opportunities onto rock shelves in good conditions.

- *It is important to ensure that biosecurity elements of FC's Field-working Standard Operating Procedure remain appropriate for visits to the Island.*

Habitats and Flora

Tussac habitat appears in good condition with indications of slow regeneration in to neutral grassland areas. Native species occur sporadically throughout the neutral grassland and are likely to persist and spread over time. Accounts from previous visits indicate that this is likely to be a slow process, as no significant change appears to have occurred in nearly 20 years. As much of the neutral grassland consist of Yorkshire Fog, die-back remains a possibility. This would result in a large area of bare ground.

- *Habitat monitoring and drone imagery on subsequent visits should track significant vegetative change including any die-back.*

- *Pre-emptive planting of native grasses may improve transition from Yorkshire fog dominated neutral grassland to a native sward that would be more resistant to die-back.*

Fauna

The island has potential to support more burrowing seabirds than slender-billed prion.

- *A more structured assessment of the island's burrowing seabird population would provide useful baseline information for management planning.*

There was no direct evidence of rodents being present on the island. The presence of numerous Cobb's Wren and tussacbird also indirectly point towards the island being rodent free.

- *These observations are not conclusive - explore options for improved incursion surveillance for rodents*.

Conclusions

Further survey effort on North Island continued to establish the significant conservation value of this site at a national and global level. In addition to its valuable seabird populations and rodent free status, pristine bluegrass habitats supporting one of the largest, if not likely the largest, Falkland rock-cress populations, would likely also merit the site for Important Plant Area status. This information should also be included in a review of the New Island Key Biodiversity Area. National Nature Reserve (NNR) status should be sought for the site in order to conserve it, with Privately Protected Area status pursued if NNR designation is not forthcoming.

Saddle is increasingly important as a breeding and haul out site for pinnipeds, predominantly southern sea lion (over 136 individuals were present during the survey). Its tussac dominated habitat appears in good condition.

Cliff Knob Island is near pristine. It is tussac dominated and well covered by slender-billed prion burrows. It appears rodent free, with Cobb's wren present.

Ship Island remains strongly influenced by historic degradation through grazing, burning, and the introduction of non-native species; however, it continues to support a good bird assemblage for a site of its size. This includes a small southern giant petrel breeding colony (an Agreement for the Conservation of Albatrosses and Petrels species) which appears stable in number over recent years. Natural regeneration following the removal of grazing livestock is difficult to evidence and planting trials of native species have been initiated to aid recovery. Non-native gorse eradication work has begun.

Coffin has been historically impacted by grazing and modified by the introduction of non-native grasses, particularly Yorkshire fog. Previous bare ground resulting from die-back had revegetated with non-native species, though planting to re-vegetate with native species would reduce the risk of repeated occurrence. Indications are that the island remains rodent free. Surveys located additional areas of native bluegrass giving optimism for increasing colonisation by this species and a potential source of tillers for planting.

Beef Island appears to be slowly recovering from historic livestock grazing. Existing tussac grass appears healthy and younger tussac plants around the margins indicate a steady expansion. There remain native plant species within those areas of introduced grasses that still provide scope for native plant dominance over time. Indications are that the Island is rodent free.

Cursory investigation of soil depth and moisture broadly indicate increased depth and moisture under tussac habitat. This is not unexpected as native grass species, particularly tussac but also bluegrass and even whitegrass (*Cortidera pilosa*), form tussocks or 'bogs' when mature, providing increased shelter at ground level aiding moisture retention and enhancing soil formation. Whilst the information is certainly not conclusive, establishing/further expanding native grassland through planting on sites such as Ship Island would hopefully aid the recovery process from thin, compacted soils with open dry heath to more typical, naturally functioning small island ecosystems.

There remain a number of repeated management considerations across FC Island reserves, which are:

- rodent surveillance – challenging given the short time available for visits. Longer-term monitoring protocols are needed
- biosecurity measures - critical as colonisation by alien vertebrates would have irreversible significant impacts
- monitoring pinnipeds and seabirds - most sites have potential to support further burrowing seabird species
- monitoring large-scale changes in vegetation and erosion - regeneration of native habitats and die-back occurrence will inform any planting requirements to encourage native biodiversity and prevent

soil loss

- Active habitat modification over natural recovery – a number of islands where grazing has been removed 30-40 years prior, have shown little natural recovery either from impoverished dry heath, or non-native dominated grasslands. The merits of more active management to facilitate regeneration to more naturally occurring habitats needs consideration.

Drone imagery remains a useful approach to general monitoring of habitats, bare ground and seabird colonies.

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Appendix 1 – Soil Measurements

Ship Island

Point	Lat.	Long.	Habitat	Soil moisture %	Soil Depth
S1	-51.708665°	-61.278119°	Heath/neutral grassland	14.7	12
S2	-51.709234°	-61.278183°	Heath/neutral grassland	10.9	8
S3	-51.709595°	-61.277851°	Heath/neutral grassland	16.9	5
S4	-51.709932°	-61.278586°	Heath/neutral grassland	22.6	150
S5	-51.709796°	-61.278665°	Heath/neutral grassland	52.3	46
S6	-51.709985°	-61.278520°	Heath/neutral grassland	44.2	38
S7	-51.710009°	-61.278537°	Heath/neutral grassland	12.5	187
S8	-51.710270°	-61.278669°	Heath/neutral grassland	8.5	Not done – measuring pole damaged.
S9	-51.709567°	-61.279355°	Heath/neutral grassland	9.1	Not done
S10	Not taken	Not taken	Heath/neutral grassland	15.8	Not done
Average				20.75	
S11	-51.710478°	-61.278388°	Tussac	25.2	Not done
S12	-51.710541°	-61.278528°	Tussac	21.7	Not done
S13	-51.710645°	-61.278507°	Tussac	36.3	Not done
S14	-51.710649°	-61.278354°	Tussac	21.0	Not done
S15	-51.710638°	-61.278202°	Tussac	34.1	Not done
S16			Neutral grassland	25.9	Not done
S17	-51.710263°	-61.278342°	Tussac	47.9	Not done
S18	-51.710218°	-61.278241°	Tussac	47.0	Not done
S19	-51.710176°	-61.278093°	Tussac	13.7	Not done
S20	-51.710095°	-61.277986°	Tussac	26.4	Not done
Average				30.37	

Coffin Island

Point	Lat.	Long.	Habitat	Soil moisture %	Soil Depth
S1	-51.737408°	-61.260734°	Degraded neutral grassland	5.9	Not done
S2	-51.737580°	-61.257091°	Centre of Balsam bog plant	1.1	Not done
S3	-51.737879°	-61.256530°	Area dominated by sheep's sorrel	11.1	Not done
S4	-51.740561°	-61.257230°	Sandy bare ground	23.5	Not done
S5	-51.741040°	-61.260610°	Heath	13.9	Not done
S6	-51.742619°	-61.255581°	Bluegrass habitat	10.0	Not done
S7	-51.742588°	-61.255186°	Beneath removed bluegrass plant	28.0	Not done

Beef Island

Point	Lat.	Long.	Habitat	Soil moisture %	Soil Depth
S1	-51.726519°	-61.272112°	Neutral grassland	0.6	27
S2	-51.726503°	-61.271568°	Neutral grassland	4.3	18
S3	-51.726467°	-61.271272°	Neutral grassland	4.6	13
S4	-51.726598°	-61.271134°	Neutral grassland	0.8	12
S5	-51.726843°	-61.271512°	Neutral grassland	2.0	35
S6	-51.726933°	-61.272080°	Neutral grassland	10.5	27
S7	-51.727018°	-61.272635°	Neutral grassland	15.0	16
S8	-51.727282°	-61.273183°	Neutral grassland	4.2	27
S9	-51.727453°	-61.272770°	Neutral grassland	24.3	20
S10	-51.727356°	-61.272382°	Neutral grassland	3.2	13
Average				7.0	20.8
S11	-51.727764°	-61.275210°	Tussac habitat	33.9	40
S12	-51.727731°	-61.274863°	Tussac habitat	43.2	65
S13			Tussac habitat	9.1	46
S14	-51.727106°	-61.273657°	Tussac habitat	43.3	55
S15	-51.727674°	-61.273653°	Tussac habitat	36.5	47
S16	-51.727986°	-61.273788°	Tussac habitat	21.8	70
S17	-51.728247°	-61.273483°	Tussac habitat	24.5	64
S18	-51.728695°	-61.273858°	Tussac habitat	32.2	48
S19	-51.728383°	-61.272892°	Tussac habitat	19.9	46
S20	-51.726802°	-61.271070°	Tussac habitat	17.8	66
Average				28.2	54.7