



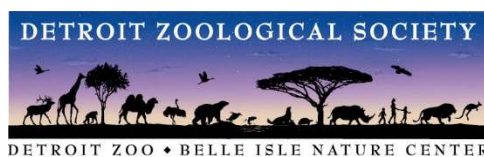
## Report on a visit to Falklands Conservation owned North, Saddle, Cliff Knob, Ship and Coffin Islands

May 2017

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Supported by



## Acknowledgements

Many thanks to Detroit Zoological Society (DZS), especially the Board and Trustees for supporting the trip and to Paul Buzzard for turning the concept into reality. Further thanks to Paul Buzzard and Charlie Ramsay at DZS for their involvement in the fieldwork and providing great company on the trip.

Falklands Conservation are very grateful to Marie-Paul, Hugues and Marilou Delignieres for fantastic logistical support in *Le Sourire*, to Martin & Jane Beaton on Weddell Island (Byron Marine) for their kind help with plane to boat transfers. Thanks to Charlene and John Rowlands at New Island, and Ali and Marlene Marsh at Shallow Harbour for their kind offers of logistical support.

Many thanks to those colleagues within Falklands Conservation – Farrah, Angie and Esther who were instrumental in making the trip a success.

### Citation:

Stanworth, A., Ross, K. and Spivack, D. (2017). Report on a visit to Falklands Conservation owned North, Saddle, Cliff Knob, Ship and Coffin Islands. Report to Falklands Conservation.

## Summary

A trip was undertaken on the 5-8 December 2016 to Falklands Conservation (FC) owned North, Saddle, Cliff Knob, Ship and Coffin Islands.

The purpose of the trip was to gather further baseline data on the Islands, which are rarely visited, in order to feed in to the development of management proposals for each site. The intention is that the management considerations and information provided within this document will be used in the production of a site information sheet and a table of management actions for each Island. Consequently, this report and its content should be considered a *supporting document* and not a management planning document for the sites.

North Island and Saddle Island are considerable conservation assets for FC supporting high profile species and relatively pristine native habitats. For these sites, biosecurity is critical as colonisation by alien vertebrates would have irreversible significant impacts. Monitoring key species populations over medium to long timescales will feed into broader understanding of Falkland Island trends and population estimates, but also identify the significance of each of the sites in a national context. It will also track the development of any potential threats on each of the Islands. Given the value of these sites monitoring the development and potential expansion of erosion should be considered.

Coffin Island is currently rodent free and supports remnant native flora with its associated fauna; however, it has been heavily modified and erosion through Yorkshire Fog die-back is a potential issue. Biosecurity is very important from the perspective of avoiding rodent re-introduction, but habitat monitoring should also be considered as a priority with a view to quickly implementing restoration measures if they become necessary.

Cliff Knob Island appears relatively pristine, and whilst it doesn't support high profile species it is likely rodent free. Biosecurity is therefore important, but risks are likely to be low given the access difficulties.

Ship Island is likely to have rodents or be subject to sporadic incursions by rodents; thus impacting both fauna and flora. The flora have been heavily modified with invasive Gorse and Marram introduced and native heath and Tussac in degraded conditions. Removal of invasive plants and potential restoration of Tussac and heath/grassland habitats are management considerations for this site.

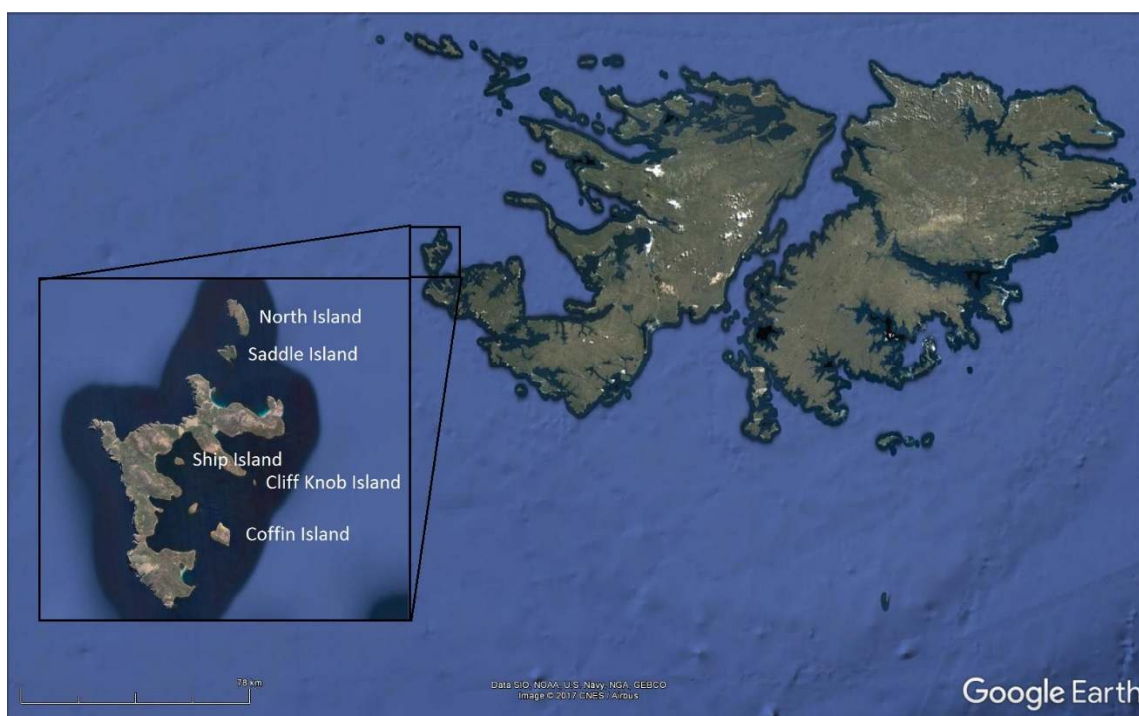
The trip highlighted a number of repeated management considerations across FC Island reserves, which are:

- rodent surveillance
- biosecurity measures
- monitoring pinnipeds and seabirds
- monitoring large-scale changes in vegetation and erosion.

The use of a drone proved to provide an extremely useful platform for monitoring conspicuous seabird and pinniped species and for habitat monitoring, but is dependent on appropriate flying conditions.

## Introduction

A trip was undertaken on the 5-8 December 2016 to Falklands Conservation (FC) owned North, Saddle, Cliff Knob, Ship and Coffin Islands (**Figure 1**). FC staff comprised Frin Ross, Andy Stanworth and David Spivack. Paul Buzzard and Charlie Ramsey attended from Detroit Zoological Society. The boat – *Le Sourire* was skippered and crewed by Hugues, Marie-Paul and Marilou Delignieres.



**Figure 1.** Site locations within the Falkland Islands

The purpose of the trip was to gather further baseline data on the Islands, which are rarely visited, in order to *feed in to* the development of management proposals for each site. The intention is that the management considerations and information provided within this document will be used in the production of a site information sheet and a table of management actions 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 Strategy 2015-2019.

The group landed at:

North Island (5 Dec.)  
Saddle Island (6 Dec.)  
Ship Island (6 Dec.)  
Coffin Island (7 Dec.)

and circumnavigated Cliff Knob Island (6 Dec.).

## Methods

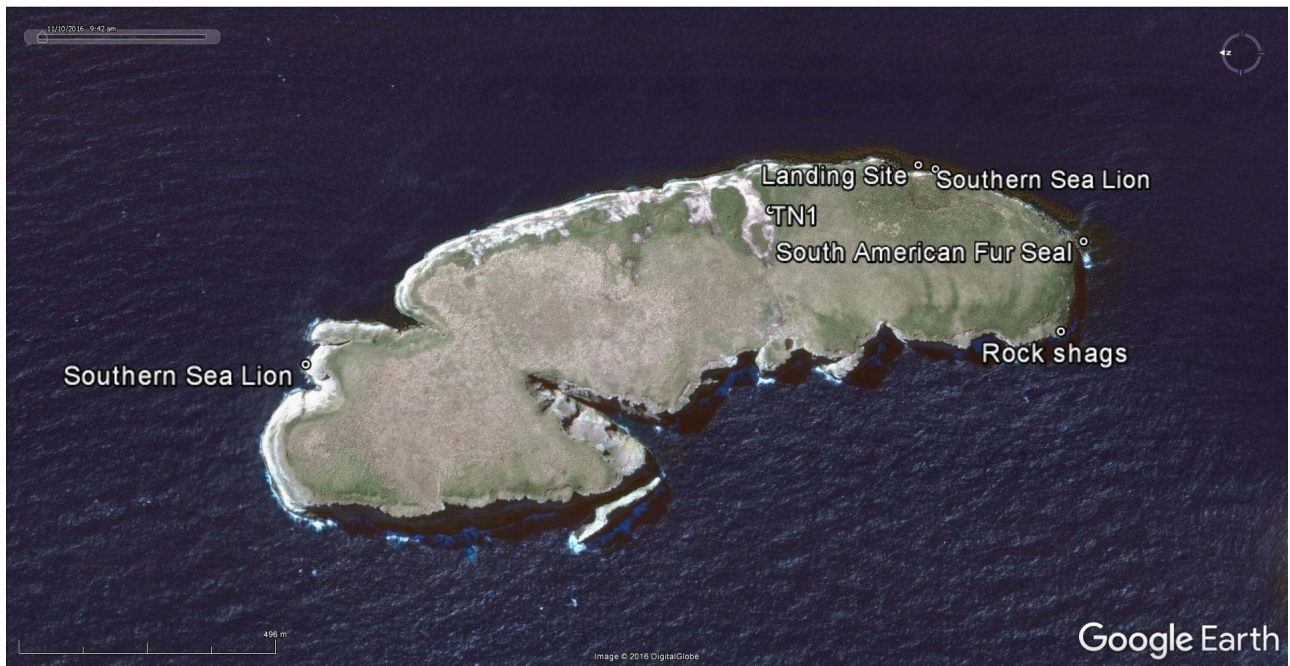
A three day trip is not sufficient time to gather comprehensive data on the Islands. Each of the different Islands have different challenges in terms of access and movement. Whilst there was opportunity to get ashore on North Island, the almost impenetrable Tussac (*Poa flabellata*) in places prevented access to areas and made movement slow-going. Even a walk of the perimeter would have taken many hours at a speed where little information could be gathered. Given the time restrictions 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. Lists and counts of fauna and flora observed were made for smaller numbers of species, photos of larger colonies were taken.

Feather samples were taken under the FC general licence from Southern Rockhopper Penguin on North Island for future genetic and/or isotope analyses. Scat samples were collected from Black-browed Albatross on North Island for future dietary analyses. Options for these analyses are being explored.

Landing sites and access considerations were recoded for future planning.

## Results

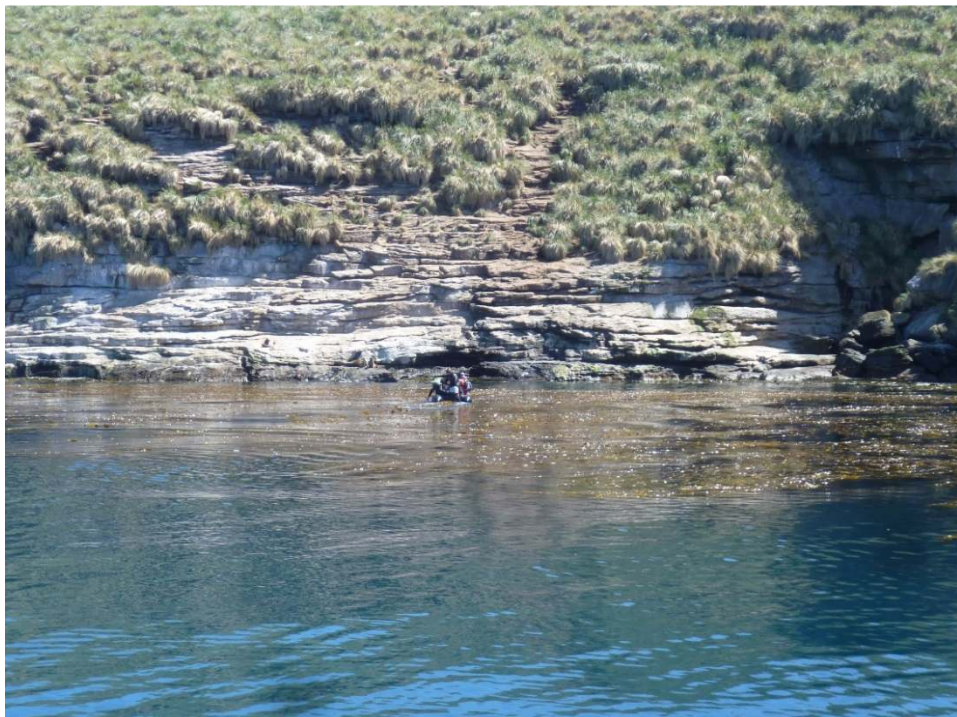
### North Island



**Figure 2.** North Island (Google Earth image)

### Access

The Island was accessed by going ashore onto a rocky, kelp covered ledge below a short, steep cliff which had to be ascended and could be slippery in damp conditions ( $-51.660233^\circ$ ,  $-61.225345^\circ$ ) (**Figure 3**). Sea Lions appear to use the landing site as a regular haul-out. Landing here would be difficult in anything but favourable sea conditions.



**Figure 3.** Landing Site at North Island

## Habitats and Flora

There is little previously documented information on the habitats and flora of North Island; however, the Tussac habitat on North Island is recorded as partly burnt in 1989 (Falkland Islands Biodiversity Database).

A walk-over survey of vegetation was conducted between the landing site up to and around the first albatross colony (**Figure 2. TN1**(-51.657222°, -61.227297°)). The area surveyed comprised thick Tussac with common agricultural weeds present around albatross colonies and in small eroded areas. Occasional native species such as Wild Celery and Antarctic Bedstraw were found around the tops of cliffs where seabird colonies had cleared small areas of Tussac.

Species	Notes
Tussac	Tussac thick, well established bogs, pedestals over 1m high, whole plants over 2m.
Wild Celery ( <i>Apium australe</i> )	Cliff edges where Tussac cover reduced by nesting birds.
Sheep's Sorrel ( <i>Rumex acetosella</i> )	Non-native. Small areas where Tussac has been removed by erosion or nesting birds.
Antarctic Bedstraw ( <i>Galium antarcticum</i> )	Cliff edges where Tussac cover reduced by nesting birds.
Prickly Sow-thistle ( <i>Sonchus asper</i> ssp. <i>asper</i> )	Non-native. Around 10 individuals close to albatross colony. GPS position marked. Small areas where Tussac has been removed by erosion or nesting birds.
Lesser Swine cress ( <i>Lepidium didymus</i> )	Small number of plants in area surveyed – position as for Prickly Sow-thistle. Small areas where Tussac has been removed by erosion or nesting birds.

**Table 1.** Plant species recorded on North Island

Aerial photography indicates that this habitat type dominates the southern portion of the Island; however, that the central northern sections of the Island may support more open Tussac, Bluegrass (*Poa alopecurus*), and Balsam Bog (*Bolax gummifera*) habitat (**Figures 4, 5 and 6**). No large bare eroded areas were evident in the northern section of the Island however, aerial photography coverage at the northern end of the Island was not complete. Vegetative regeneration in this area includes patches of the non-native Sheep's Sorrel.



**Figure 4.** View south across North Island showing dense Tussac around the southern part (left of image) and more open habitat to the north (right of image).



**Figure 5.** The interface between Tussac and more open grassland/cushion plant habitat. Red patches are Sheep's Sorrel.



**Figure 6.** The interface between Tussac and Bluegrass habitat (top left of image).

### *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 7**). Drone counts provide an estimate of 132 individuals of which around half were bulls. There was no evidence of breeding at the time of the visit.



**Figure 7.** Drone image of South American Fur Seal on North Island.

Southern Sea Lions (*Otaria flavescens*) were present at the landing stage - a bull and up to eight females in a presumed breeding harem; however, again no signs of breeding were

evident during the visit. An additional six Southern Sea Lion were hauled out on the north coast.

Drone footage was achieved of all the seabird colonies on the plateau of the Island (**Figure 8 and 9**). Photographs from the boat were taken of the cliff nesting seabirds.



**Figure 8.** Mixed Black-browed Albatross and Southern Rockhopper colonies on North Island.



**Figure 9.** Drone image of seabird colonies showing Black-browed Albatross, King Shag and Southern Rockhopper.

The photos would allow count estimates of Black-browed Albatross to be made.

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

Species	Number	Status	Notes
Black-browed Albatross ( <i>Thalassarche melanophrys</i> )	TBC	Breeding	
Southern Rockhopper Penguin ( <i>Eudyptes chrysocome</i> )	Thousands	Breeding	
Rock Shag ( <i>Phalacrocorax magellanicus</i> )	Few hundred	Breeding	
King Shag ( <i>Phalacrocorax atriceps albiventer</i> )	Few thousand	Breeding	Breeding in patches amongst the Albatross
Striated Caracara ( <i>Phalcoboenus australis</i> )	2	Breeding	
Snowy Sheathbill ( <i>Chionis albus</i> )	8	Non-breeding	Associated with the South American Fur Seals
Tussacbird ( <i>Cinclodes antarcticus</i> )	2	Probably Breeding	
White-bridled Finch ( <i>Melanodera melanodera melanodera</i> )	10+	Probably Breeding	
Cobb's wren ( <i>Troglodytes cobbi</i> )	7	Probably Breeding	

**Table 2.** Bird species recorded on North Island.

Thirty scat samples were obtained from incubating Black-browed Albatross along with five feather samples from Southern Rockhopper Penguin.

No evidence of rats or mice was noted during the visit.

### 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 apparent gradual recovery from the fire in 1989. Much of the Island remains dominated by dense Tussac habitat, whilst the more northern section of the island appears to support a more open grassland/cushion plant habitat with Bluegrass and Balsam Bog.

- *Aerial and/or ground-based surveys of the northern section of the Island would allow monitoring of post-fire recovery. Broader vegetative assessments using aerial photography would allow monitoring of the development of any erosion.*

A number of common and widespread non-native species are present on the Island. Some such as Sheep's Sorrel may provide early recolonisation of areas denuded by the fire and could facilitate recovery. Sow Thistle is undesirable but appears to have limited potential to spread or densely colonise areas.

- *Given the logistical constraints, terrain and habitats control or eradication of this species is probably unrealistic.*

## Fauna

Breeding colonies of Black-browed Albatross and mixed Southern Rockhopper Penguin were extensive and at the time of the visit no signs of disease or higher than 'normal' levels of mortality were observed. It is currently not possible to monitor Rockhopper Penguin in the Falklands by photos.

- *The intention now is to undertake an aerial Black-browed Albatross census in 2017. At this stage it would not be prudent to invest a lot of time in counts of this species from the current trip; however, the counts once complete will provide useful additional information on this species and may allow estimates of the King Shag populations to be made. The intention is to count Southern Rockhopper Penguin as an Island-Wide Census (IWC) in 2020. From a management perspective it may be useful to time any management visits for counts of these species mid-way between IWC. On-the-ground monitoring of any other species would be extremely difficult and time-consuming.*

The large numbers of Fur Seals suggest that this is a regular haul out for this species, probably from breeding colonies on New Island. As with other sites it is possible that breeding could occur in the future.

- *It would be beneficial 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 potentially productivity.*

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 not conclusive - explore options for rodent surveillance.*

## Saddle Island



**Figure 10.** Saddle Island (Google Earth image).

### Access

A sheltered, sandy bay with a gap in the kelp provides good access to the Island ( $-51.671303^\circ$ ,  $-61.240094^\circ$ ). The main landing consideration is the numbers of pinnipeds that utilise the landing beach (**Figure 11**).



**Figure 11.** Landing site at Saddle Island

## Habitats and flora

As with North Island, limited information exists on the vegetation of Saddle Island. The Island has been previously grazed by cattle (Woods 2009) and a large cattle bone (perhaps a thigh bone) was found in one of the dry ponds during this visit.

Woods 2009, reports dense but low Tussac and Lesser Sea-spurrey (*Spergularia marina*) above the landing bay, whilst Passfield and Poncet 2011 report that away from the southern edge Tussac formed a continuous canopy and that small patches of false Ladle-Leaved Buttercup (*Ranunculus trullifolius*), Native Rush (*Juncus scheuchzerioides*) and Water-starwort (*Callitriche antarctica*) were found in small clearings in the Tussac along the drainage line leading down to the lower pond.

During the current visit a walk-over-survey of vegetation was conducted between the landing site and the points marked on the **Figure 10**. A list of species recorded is provided in **Table 3**. Travel between points 4, 5 and the beach was difficult as the Tussac was very dense.

On the peaty ground between Tussac bogs on the coastal fringes there were often huge amounts of Tussac seed but notably very few small Tussac plants were growing away outwith existing bogs. Tussac dominated the Island and few other plants were recorded (**Table 3**), despite habitat that would be appropriate for colonisation by other native species e.g. Wild Celery and Fuegian Couch (*Elymus magallanicus*).

Species	Notes
Tussac	Tussac very thick in the interior, often no obvious pedestals more just a thick layer of Tussac peat. Distinct pedestals around the coast and some small areas of erosion where the ground was very dry.
Annual Meadow Grass ( <i>Poa annua</i> )	Introduced. Only found in bottom of the pond at TN6
Nodding Club-rush ( <i>Isolepis cernua</i> )	Small carpet of this rush found around northern margins of the pond at TN6.
Southern Mudwort ( <i>Limosella australis</i> )	Flowering across the bed of pond at TN6. Beginning to dry out.

**Table 3.** Plant species recorded on Saddle Island.

Target notes for **Figure 10**.

1) Landing Site. Well established Tussac, pedestals around 0.5m high, whole plants around 1m – no other plants despite potential habitat (e.g. cleared coastal areas, shingle areas).

2) (-51.670812°, -61.240849°). Small bare patch, amongst large Tussac bogs, very dry with mobile peat. The bases of the surrounding pedestals looked a little like they might have been burnt (they were black) in the past however this could also be scorching by the sun, wind and mobile peat. No vegetation except Tussac.

3) (-51.670764°, -61.242258°) to 4) (-51.669460°, -61.244833°) Dry, eroded ridge with Tussac peat penetrated by roots from Tussac on top, 2.5-3m in depth (**Figure 12**). No

vegetation except Tussac noted.



**Figure 12.** Eroded peat bank on the south of Saddle Island.

5) (-51.668905°, -61.240937°). This pond appeared to have dried out recently, there was no vegetation on the bottom but bird foot prints in the dry mud were seen. The banks of this pond were vegetated by thick Tussac and nothing else.

6) (-51.669660°, -61.239884°). This pond had vegetation across the bottom indicating that it had been dry for some period, indeed this vegetation was now drying out. This was the only site visited which had vegetation other than Tussac. The pond bottom comprised: 2% Nodding club-rush (*Isolepis cernua*); 70% Southern Mudwort; <1% Annual Meadow Grass, 28% bare ground.

A drone fly-over of the Island revealed somewhere in the region of 95% or higher cover by Tussac with only small areas of exposed ground along the edges of the Island and two dried ponds centrally. The western tip has an area of exposed ground (**Figure 13**). On the eastern cliff top a low grassy area looks to support non-native grass with possible Emerald Bog (*Colobanthus subulatus*).

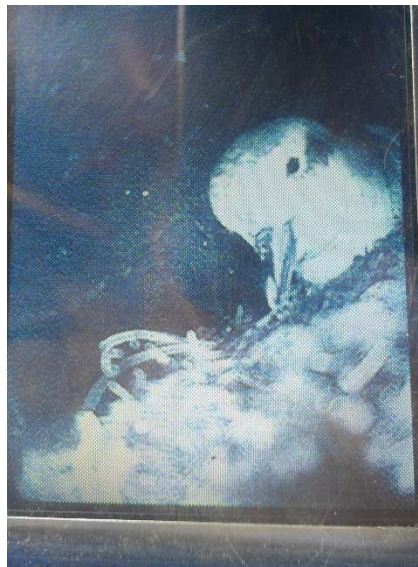


**Figure 13.** Eroded area on the western tip of Saddle Island.

### *Fauna*

Three juvenile Elephant Seals were present on the landing beach. Eleven bull and circa 50 female Southern Sea Lions were estimated to be present in the landing bay area and into the immediately surrounding Tussac. A further six Southern Sea Lions were hauled out on a rocky ledge on the east side of the Island. Breeding has been confirmed previously Hamilton 1939; however, there was no evidence of breeding recorded during the current trip. Numbers of individuals however are notably larger than previously recorded.

Between TN3 and TN5 many Cobb's Wrens were recorded and potentially prions. A small number of Slender-billed Prions (*Pachyptila belcheri*) were confirmed breeding using a burrowscope along the exposed dried peat face in **Figure 12**.



**Figure 14.** Slender-billed Prion on egg photographed using a burrowscope on Saddle Island.

Small burrows or runs (approximate diameter 4cm) were present around the pond at TN6, including amongst the Nodding Club-rush, but no evidence of mice (e.g. droppings or bones) were found. These may be Grey-backed Storm Petrel (*Garrodia nereis*) burrows, but could not be confirmed.

A search of the northern coastline of the landing bay revealed few or no burrows of smaller petrels or prions and certainly no indications of breeding Sooty Shearwater (*Puffinus griseus*) or White-chinned Petrel (*Procellaria aequinoctialis*), for which the habitat appears very suited.

Species	Number	Status	Notes
Falkland Steamer Duck ( <i>Tachyeres brachypterus</i> )	128	Probably Breeding	
Dolphin Gull ( <i>Larus scorebii</i> )	4 Adults, 4 Juveniles	Non-breeding	Associated with seals
Snowy Sheathbill	5	Non-breeding	Associated with seals
Falklands Thrush ( <i>Turdus falcklandii falcklandii</i> )	7	Probably Breeding	
Tussacbird	17	Probably Breeding	
Kelp Goose ( <i>Chloephaga hybrid malvinarum</i> )	1 Male, 1 Female	Probably Breeding	
White-bridled Finch	11	Probably Breeding	
Cobb's Wren	12	Breeding	
Black-crowned Night Heron ( <i>Nycticorax nycticorax falklandicus</i> )	1	Possibly breeding	
Turkey Vulture ( <i>Cathartes aura jota</i> )	4	Probably Breeding	
Striated Caracara	6-10	Breeding	Including 4 pairs. Green Darvic Ring Y9 on Adult present.
Rock Shag	40-50	Breeding	
Dark-faced Ground Tyrant ( <i>Muscisaxicola maclovianus maclovianus</i> )	2	Probably Breeding	
Slender-billed Prion	Unknown	Breeding	

**Table 4.** Bird species recorded on Saddle Island.

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.

## Management Considerations

### Access

Fairly reliable access at the landing bay.

- *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

The Island is dominated by Tussac with very little representation of other habitat types. Small open areas exist including a linear section of stone slabs on the southern side of the Island, but do not appear to be a significant erosion threat at the moment.

- *Vegetative assessments using aerial photography would allow monitoring of the development of any erosion.*

A very limited number of plant species were recorded – it is likely there may be several others present that remain unrecorded.

- *Given difficulties in movement across the site, due to dense Tussac, walkover surveys of the site at subsequent visits with GPS locations of plant records and a species list may be the most pragmatic way to improve information on the Islands flora.*
- *Monitoring of non-Tussac habitats and landing site would enable early intervention should invasive species appear.*

### Fauna

There may be a substantial number of Slender-billed Prions breeding on the Island. Woods 2009 suggests that 'The terrain and the Tussac habitat appear to be suitable for Sooty Shearwaters, White-chinned Petrels, Grey-backed Storm-Petrels and Diving Petrels and an extensive survey is required'. The small extent of the Island covered provided no evidence of larger burrowing petrels; however, smaller birds such as storm petrels could be present. Compared to neighbouring North Island there is a surprising paucity of nesting seabird species, with only Rock Shag recorded breeding.

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

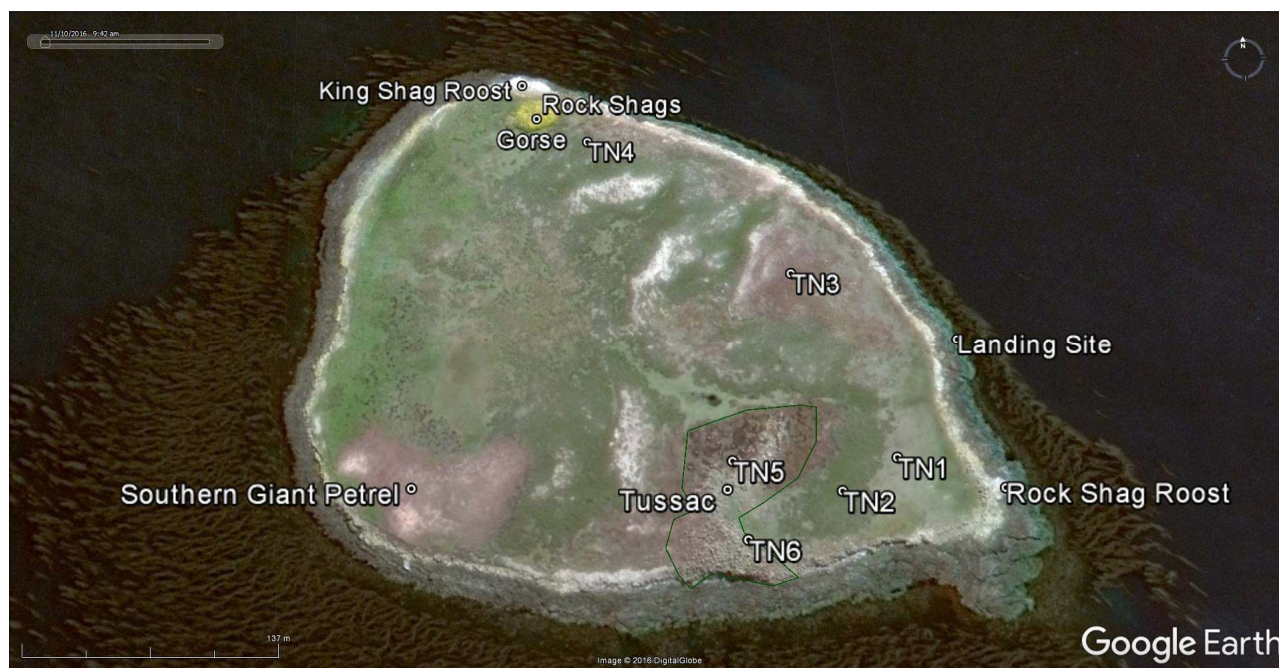
The Island appears to be increasingly valuable for Southern Sea Lion, with count numbers having risen notably since the last visit, with nearly a ten-fold increase.

- *It would be beneficial 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 potentially productivity.*

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.*

## Ship Island



**Figure 15.** Ship Island (Google Earth image).

### Access

Narrow kelp beds on the north-eastern side allow access to low rocky shore, though landing would be possible around most of the Island.

### Habitats and Flora

Four reported visits to Ship Island are recorded on the Falkland Islands Biodiversity Database. Woods 2009 summarise their 2001 and R. Fitter's 1979 previous visits to Ship Island and describes the vegetation. Fitter described it as 'a mosaic of Diddle-dee and Sheep's Sorrel heathland with some patches of dead and regenerating Tussac and native vegetation'. Woods 2009 observes that of 27 plant species recorded there was almost equal split between native and non-native with very poor vegetation cover, patches of bare sand and red ash from burnt Tussac.

A walk-over-survey of vegetation was conducted across most of the Island (**Table 5**). Some areas were avoided because of breeding Southern Giant Petrel (*Macronectes giganteus*).

An orange layer of burnt clay was visible in the soil at various points around the Island. Small eroded patches and only a small remaining stand of Tussac further suggested that much of the Island had been burnt and/or over-grazed in the past. Vegetation on the Island was generally very short and at the time of visiting it was very dry with even the Gorse (*Ulex europaeus*) exhibiting signs of die-back. Despite this, erosion was not currently widespread – though a large area of bare ground was associated with the breeding Southern Giant Petrels. Comparison of Google Earth images from 2014 and 2015 suggest that some areas *may* have revegetated, but the Island is currently dominated by non-native vegetation.

Species	Notes
Early Hair-grass ( <i>Aira praecox</i> )	Non-native
Sticky Groundsel ( <i>Senecio viscosus</i> )	Non-native
Sheep's Sorrel	Non-native
Yorkshire Fog ( <i>Holcus lanatus</i> )	Non-native
Common Storks-bill ( <i>Eropidium cicutarium</i> )	Non-native
Chickweed ( <i>Stellaria media</i> )	Non-native
Diddle-dee ( <i>Empetrum rubrum</i> )	
Mountain Berry ( <i>Gautheria pumila</i> )	
Smooth-stalked Meadow-grass ( <i>Poa pratensis</i> )	Non-native
Fuegian Fescue ( <i>Festuca magellanica</i> )	
Bluegrass	Mountain form
Native Yarrow ( <i>Acaena lucida</i> )	
Coastal Nassauvia ( <i>Nassauvia gaudichaudii</i> )	
Wild Celery	
Emerald Bog ( <i>Colobanthus subulatus</i> )	
Procumbent Pearlwort ( <i>Sagina procumbens</i> )	Non-native
Squirreldtail Fescue ( <i>Vulpia bromoides</i> )	Non-native
Lesser Swine-cress	
Sea Cabbage ( <i>Senecio candidans</i> )	
Tussac	Small open patch
Pineappleweed ( <i>Matricaria discoidea</i> )	Non-native
Oval-leaved Prickly-burr ( <i>Aceana ovalifolia</i> )	
Marram ( <i>Ammophila arenaria</i> )	Non-native. Single small clump
Gorse ( <i>Ulex europeaus</i> )	Non-native. Single patch approx. 25m in diameter

**Table 5.** Plant species recorded on Ship Island.

Target notes for **Figure 15**.

1) (-51.710160°, -61.276952°). Non-native grassland (very dry). Area with short grass and forbs, primarily non-native. Including: Sticky Groundsel (most common in disturbed ground around Prion burrows), Early Hair-grass, Sticky Groundsel, Sheep's Sorrel, Yorkshire fog, Common Storks-bill, and Chickweed.

2) (-51.710311°, -61.277430°). Dwarf shrub heath blending with Coastal cushion heath. Dominated by Diddle-dee with occasional Mountain Berry, Smooth-stalked Meadow-grass, Fuegian Fescue, Bluegrass (mountain form), Native Yarrow, Coastal Nassauvia, Wild Celery, Wiry Azorella, Emerald-bog, Squirreldtail Fescue, and Procumbent Pearlwort.

3) (-51.709153°, -61.277656°). Coastal grassland/cushion heath. Includes some eroded areas with Sheep's Sorrel and a range of other species with low abundance: Lesser Swine-cress, Sea Cabbage, Tussac (sparse, limited to top of the coast), Pineappleweed, Oval-leaved Prickly-burr and Wiry Azorella.

4) (-51.708131°, -61.279760°). Small clump of Marram and a Gorse bush (around 25m in diameter).

5) (-51.710134°, -61.278292°). Area with sparse Tussac, some bogs are eroding with bare ground common, also some new plants. The ground is hard rather than thick Tussac peat (maybe burned in the past? Or just grazed).

6) (-51.710521°, -61.278218°). Neutral grassland area dominated by Yorkshire Fog.

Aerial photos were obtained by drone use that could be used to compare habitat change, erosion development, or invasive species expansion over time (examples **Figure 16 and 17**).



**Figure 16.** Gorse patch on Ship Island (yellow area).



**Figure 17.** Main Tussac area on Ship Island.

## Fauna

A total of five Southern Sea Lion were hauled out on rocky ledges on the north side of the Island.

On bare ground to the southwest is a colony of Southern Giant Petrel. An estimate from aerial photos taken by drone were of 355 apparently occupied nests (a proxy for breeding pairs) – considerably more than the previous FC estimate of 20-30 pairs (Poncet 2013) and more than the 292 estimate from the previous season (Stanworth and Crofts 2017).

A small number of Falkland Skuas (*Catharacta Antarctica*) were breeding thinly across the mid and southern section of the Island. It is considered unlikely that there were as many as the 20 pairs recorded by Woods in 2001 (Woods 2009). No Kelp Gulls (*Larus dominicanus*) were recorded breeding as opposed to the 700 pairs again recorded in 2001 (Woods 2009). Additional bird species recorded are listed in **Table 6**.

Relatively 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. Breeding was confirmed using the burrowscope.

Species	Number	Status	Notes
Falklands Steamer Duck	2	Breeding	3 young observed
Blackish Oystercatcher ( <i>Haematopus ater</i> )	4	Breeding	
Rock Shag	17 individuals	Roosting	
Falklands Skua	18 individuals	Breeding	
Tussacbird	12+	Probably Breeding	
Kelp Goose	1 pair	Breeding	
Crested Duck ( <i>Lophonetta specularioides</i> )	4 individuals	Possibly breeding	
Magellanic Oystercatcher ( <i>Haematopus leucopodus</i> )	3 pairs	Breeding	Young present
Two-banded Plover ( <i>Charadrius falklandicus</i> )	1	Possibly breeding	
Southern Giant Petrel	355	Breeding	
Striated Caracara	At least 2 pairs (1 with 2 chicks), probably 3.	Breeding	
Slender-billed Prion	Few hundred pairs	Confirmed Breeding with burrowscope – egg observed	Estimate based on extent of patches of burrows
Upland Goose	1 pair	Probably Breeding	
King Shag	41	Roosting	

**Table 6.** Birds recorded on 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.

### *Management Considerations*

#### Access

Fairly reliable access along various places on the northern coastline and generally around the Island.

- *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 to suggest that over the last 20 - 30 years, *significant* recovery of this island's native vegetation has occurred. Habitats are generally degraded and have a high proportion of non-native species. Areas of exposed peat occur around the Tussac but significant erosion is not widespread. Marram grass was not previously recorded on the Island indicating further arrival of a non-native species that can spread and out-compete native plant species. Given the current impoverished state of the current habitats it may be difficult to restore native habitats readily across the Island. Furthermore, many of the non-native species are currently providing vegetative cover and are very difficult to control.

- *Bluegrass is present on the Island in small amounts, it could be considered along with Tussac for restoration of the eroding peat areas.*
- *Long-term monitoring (aerial photography) would allow the tracking of the development of eroded areas.*

Gorse and Marram Grass pose a threat to re-establishment/restoration of native habitats.

- *The removal of Gorse and Marram grass would prevent further spread and increased future efforts for eradication.*
- *Monitoring of habitats would enable early intervention should invasive species appear.*

#### Fauna

As an ACAP (<http://acap.aq/en>) species Southern Giant Petrel are notable and should be monitored. This will likely occur at approximately 10 year intervals as a result of Island-Wide Census work, but also remote monitoring of the Ship Island population has occurred by Paulo Catry (ISPA Instituto Universitário, Lisbon) and associated researchers on New Island.

- *Southern Giant Petrels at the site will be counted during Island-Wide Censuses (next proposed for 2025). However, other opportunistic counts during management visits would assist in monitoring trends.*

The Island may support rodents or may be subject to sporadic invasions from New Island. There is little to be gained from rodent eradication attempts unless combined with a New Island eradication.

## Cliff Knob Island



**Figure 18.** Cliff Knob Island – Northern aspect.

It was not possible to land at Cliff Knob Island due to difficult access opportunities. The Island rises steeply from the water with rocky cliffs. Towards the southwest corner there is improved opportunity to get ashore, but this would still be risky if not well managed. The Island was circumnavigated and photos taken.

The last reported visit by L. Poncet in 2013 records dense Tussac cover and many petrel burrows and remains, as well as no sign of rats or mice. L. Poncet also recorded Dark-faced Ground-tyrant, Tussacbird, Cobb's Wren, and Striated Caracara (1 pair at southern end behaving territorially, probable breeders. 1 lone individual).

There was no evidence of significant change to the flora since L. Poncet's visit. Over 100 Rock Shags nesting on the eastern end (as observed by L. Poncet) and four Striated Caracara were observed. Tussacbird were also seen.

## Coffin Island



**Figure 19.** Coffin Island (Google Earth image)

### Access

The Landing Site was on a shelved rocky shoreline in a north-facing 'cove' providing a number of landing options between the kelp beds ( $-51.737567^\circ$ ,  $-61.262563^\circ$ ) (**Figure 20**). Once ashore the Island interior was accessed near to the base of the historic fence-line (**TN1** ( $-51.737830^\circ$ ,  $-61.260855^\circ$ ) **Figure 19**).



**Figure 20.** Landing Site on Coffin Island

## Habitats and Flora

Coffin Island has two documented visits where habitats have been described and a plant list compiled.

Woods 2009 reports that in 2001, there was extensive Tussac habitat on the headlands. Non-native species such as Sheep's Sorrel, Yorkshire Fog and Sticky Groundsel were numerous with Fuegian Fescue, Coastal Nassauvia, Mountain Berry and Bluegrass growing between slabs of bare stone. Higher elevations were dominated by heath and grassland and towards the summit there were irregular patches of Coastal Nassauvia, Emerald-bog, Fuegian Fescue and Falkland Strawberry (*Rubus geoides*), while there were cushion plants on very thin soils and exposed rocks around the highest point. Six of the 24 recorded species of flowering plants were introduced non-natives.

Passfield and Poncet 2011 described that the steep coastal slopes and cliffs were mostly fringed in Tussac while the interior and a section of the northwest facing coast were covered in a mix of introduced grasses and native plant communities. On the higher slopes, grasses merged with Diddle-dee heath and scattered Bluegrass bogs before giving way to Balsam-bog dominated feldmark towards the Island's summit.

A walk-over-survey of vegetation was conducted across most of the Island (Species recorded are listed in **Table 7**). Limited drone footage was obtained due to strong winds.

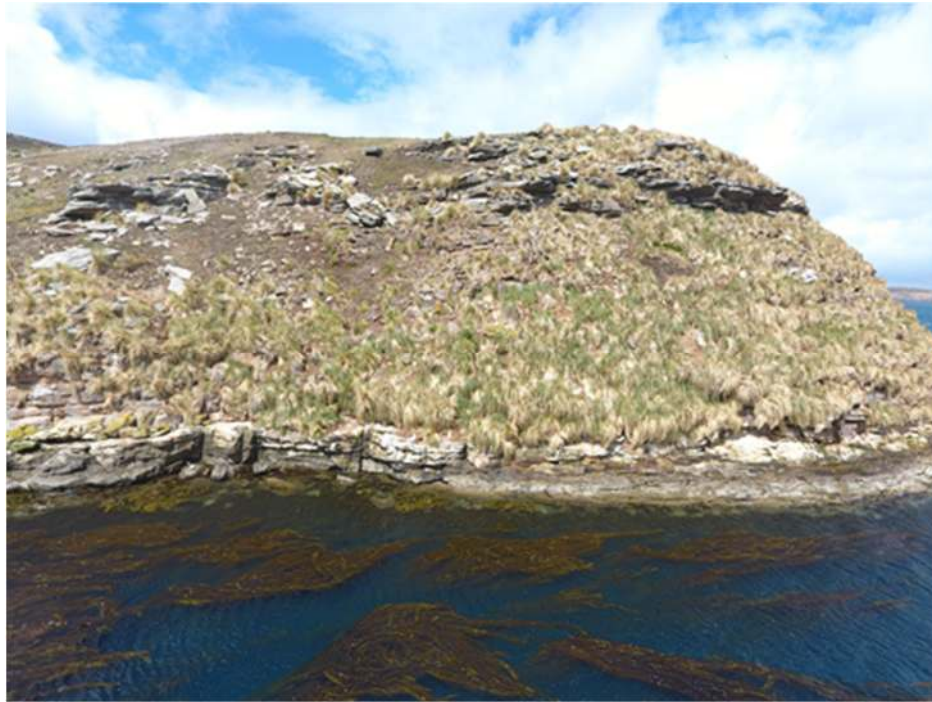
The Island was grazed until 1972 and remnants of the old pens still remain. This grazing has undoubtedly influenced the distribution of native species (such as Tussac) as has the introduction of non-native species such as Yorkshire Fog. As observed during the two previous visits Tussac remains present around the margins of the Island, with occasional Bluegrass also. Native cushion plants and dwarf shrub heath dominate in central higher ground but a range of non-native species also occur. An unusual feature of this Island was the proliferation of Falkland Strawberry plants across all areas (**Figure 21**).



**Figure 21.** Falkland Strawberry forming mats over quite large areas.

Three very broad habitat types were noted:

1. Tussac and Maritime cliff species (**Figure 22**). The coastline comprised steep slopes or cliffs, it was fringed by good amounts of Tussac including small, new plants. Damper areas were often colonised by Wild Celery.



**Figure 22.** Fringing Tussac on Coffin Island

2. Semi-improved/Neutral Grassland tending to Dwarf Shrub Heath (**Figure 23**). Above the coastline at the landing site area (and elsewhere) were areas dominated by Yorkshire Fog, which was often dying back (**Figure 24**) and/or grazed by geese. These areas contained (presumed Slender-billed) prion burrows and areas of dry exposed soil.



**Figure 25.** Dwarf Shrub Heath habitat amongst Yorkshire Fog die-back areas on Coffin Island.



**Figure 26.** Die-back of Yorkshire Fog is leaving large areas of exposed soil on Coffin Island.

Other species which occurred occasionally in these habitats included: Groundsel (particularly around prion burrows), Coastal Nassauvia, Wild Strawberry, Diddle-dee, Mountain Berry, and Christmas Bush. Rarer species in this area included: Common Violet (*Viola Maculata*), Fuegian Fescue, Native Fog (*Trisetum spicatum subsp. phleoides*), Native Yarrow, and Lesser Swine-cress. Though rare overall in this habitat Tussac and Bluegrass (mountain form) were present and where these had colonised they were often present as good sized tussocks (**Figure 27**).



**Figure 28.** Notable area of Bluegrass habitat on Coffin Island.

3. Feldmark. The centre of the Island (peaking at around 100m in height) was characterised by exposed rock, cushion plants (primarily Balsam Bog), Spiked Oat-grass, Fuegian Fescue and occasional larger tussocks of Bluegrass (mountain form) (**Figure 26**). Moss and Fuegian Fescue held small patches of earth together in some places and it appeared that native plant cover might be slowly spreading over areas of bare earth between rocks. Species were all occasional-to-rare in terms of overall percentage cover and included: Coastal Nassauvia, Balsam Bog, Fuegian Fescue, Christmas Bush, Spiked Oat-grass, Wild Strawberry (in lower areas), Diddle-dee and mosses.



**Figure 26.** Feldmark habitat with Balsam Bog at the top of Coffin Island.

*Calandrinia* presumed *Calandrinia cf nitida* (Upson 2014) was very common in the gully above the Landing Site (**TN1**).

Species	Notes
Tussac	Tussac thick, well established bogs, pedestals over 1m high, whole plants over 2m.
Wild Celery	Cliff edges where Tussac cover reduced by nesting birds.
Sheep' s Sorrel	Non-native. Small areas where Tussac has been removed by erosion or nesting birds.
Antarctic Bedstraw	Cliff edges where Tussac cover reduced by nesting birds
Prickly Sow-thistle	Non-native. Small areas where Tussac has been removed by erosion or nesting birds.
Lesser Swine-cress	Small number of plants in area surveyed – position as for sow thistle. Small areas where Tussac has been removed by erosion or nesting birds
Yorkshire Fog	Non-native
Balsam Bog	
Spiked Oat-grass	
Fuegian Fescue	
Christmas Bush	
Calandrinia	Presumed <i>Calandrinia cf nitida</i> (Upson 2014)
Bluegrass	Mountain form
Wild Strawberry	
Diddle-dee	
Emerald-Bog	
Mountain Berry	
Early Hair-grass	Non-native
Prickly-burr ( <i>Acaena magellanica</i> )	
Common Violet	
Sticky Groundsel	Non-native
Annual Meadow-grass	Non-native

**Table 7.** Plant species recorded on Coffin Island.

## Fauna

There was no circumnavigation of the Island to allow breeding pair estimates of species such as Rock Shag. Slender-billed Prion burrows were common around the coast, particularly in soft ground where Yorkshire Fog was growing. Cobb's Wrens and other small birds were common (**Table 8**).

Species	Number	Status	Notes
Falklands Steamer Duck	1	Breeding	2 young observed
Blackish Oystercatcher	2	Probably Breeding	
Rock Shag	4	Breeding	
Tussacbird	14	Probably Breeding	
Kelp Goose	3	Probably Breeding	
Striated Caracara	4	Probably Breeding	Green A3 ring on adult right leg
Slender-billed Prion	Probably 1000's	Breeding	Burrows in Tussac near landing site. Egg found with burrow scope
Upland Goose		Probably breeding	
Black-crowned Night Heron	1	Probably Breeding	
Black-faced Ground Tyrant	2	Probably Breeding	Near landing site
White-bridled Finch	1	Probably Breeding	
Cobb's Wren	4	Breeding	Near landing site
Peregrine Falcon	1 (female)	Possibly Breeding	
Black-throated Siskin	2	Unknown	

**Table 8.** Bird species recorded on Coffin Island.

One female Southern Elephant Seal and a single bull Southern Sea Lion were observed during the visit – though a circumnavigation of the Island is likely to have increased this count by a few individuals.

Two pods of Orca (*Orcinus orca*) (3-5 individuals in each) were observed from the Island in Grey Channel.

No evidence of rats or mice were found.

## Management Considerations

### Access

The Island provides fairly sheltered access, but could be difficult under adverse sea conditions or strong northerly winds.

### Habitats and Flora

The Island has been heavily modified by grazing and introduction of non-native species. Of particular note is the Yorkshire Fog which has covered relatively large areas in the past but appears to be suffering die-back leaving soil exposed. Gradual recolonisation from native

heath species is unlikely to keep pace with this dye back making soil erosion likely. Erosion could be further exacerbated by burrowing prions and foraging Striated Caracara which like to rake through these loose soil areas for invertebrates.

There are reasonable areas of remnant Tussac around the fringes of the Island and pockets of Bluegrass that may have once covered the non-Feldmark habitats.

- *Bluegrass is present on the Island in small amounts, and could be used to restore some of the eroding areas along with Tussac*
- *The development of erosion should be monitored, alongside the success of any attempts at restoration.*

#### Fauna

The Island supports breeding Slender-billed Prions, but also has the potential to support other species of burrowing petrel.

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

The Island does not currently appear to be an important site for pinnipeds or seabirds; however, expanding pinniped populations around the Islands and mobile species such as King Shag and gulls may establish.

- *Management visits should monitor seabird and pinniped populations.*

## Conclusions

North Island and Saddle Island are considerable conservation assets for FC supporting high profile species and relatively pristine native habitats. For these sites, biosecurity is critical as colonisation by alien vertebrates would have irreversible significant impacts. Monitoring key species populations over medium to long timescales will feed into broader understanding of Falkland Island trends and population estimates, but also identify the significance of each of the sites in a national context. It will also track the development of any potential threats on each of the Islands. Given the value of these sites monitoring the development and potential expansion of erosion should be considered.

Coffin is rodent free and supports remnant native flora with its associated fauna; however, it has been heavily modified and erosion through Yorkshire Fog die-back is a potential issue. Biosecurity is very important from the perspective of avoiding rodent re-introduction, but habitat monitoring should also be considered as a priority with a view to quickly implementing restoration measures if they become necessary.

Cliff Knob Island appears relatively pristine, and whilst it doesn't support high profile species it is likely rodent free. Biosecurity is therefore important, but risks are likely to be low given the access difficulties.

Ship Island is likely to have rodents or be subject to sporadic incursions by rodents; thus impacting both fauna and flora. The flora have been heavily modified with invasive Gorse and Marram introduced and native heath and Tussac in degraded conditions. Removal of invasive plants and potential restoration of Tussac and heath/grassland habitats are management considerations for this Site.

The trip highlighted a number of repeated management considerations across FC Island reserves, which are:

- rodent surveillance
- biosecurity measures
- monitoring pinnipeds and seabirds
- monitoring large-scale changes in vegetation and erosion.

The use of a drone proved to provide an extremely useful platform for monitoring conspicuous seabird and pinniped species and for habitat monitoring, but is dependent on appropriate flying conditions.

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