

# Island Visit Reports for 35 tussac islands surveyed between 2009 and 2011



*Flores Harbour Island, 24 May 2011*

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**Photographs:** K. Passfield and S. Poncet

## BACKGROUND

This report presents accounts for 35 of 42 islands surveyed during the course of the OTEP Cobb's Wren Conservation Project 2009-2011. It is one of a series produced by Beaver Island LandCare on tussac islands of the Falklands. The first report, produced in 2009, presented accounts for islands between Port Fitzroy and Adventure Sound (Passfield and Poncet 2009). Four others followed (Poncet 2009; Passfield and Poncet 2010a; 2010b; Poncet and Passfield 2010).

These reports are inspired by and complement the various Island Visit Reports compiled by Robin Woods. Full acknowledgement is given here for the impetus that Robin's reports have generated. Matching their high standard of presentation and accuracy is a challenge, as is the ultimate goal: that of visiting and cataloguing each and every tussac island in the Falkland Islands.

There are approximately 500 islands in the Falklands that have tussac cover or some other form of vegetation, and sufficient habitat to sustain long-term breeding populations of native fauna. We know the rodent status of approximately 340 of these islands, and most have also been surveyed for habitat, birds, plants and mammals. Descriptive accounts have been compiled for nearly 200 of them and are presented in various reports, all of which are listed in the References section.

Beaver Island LandCare has surveyed 90 islands since 2009. Most of these surveys were carried out under contract for various organisations: 33 islands were surveyed for the Royal Society for the Protection of Birds' South Atlantic Invasive Species Programme (RSPB SAISP) (Passfield and Poncet 2009); 11 for the Department for the Environment, Food and Rural Affairs (DEFRA), coordinated by the Joint Nature Conservation Committee (JNCC) in 2010 (Passfield and Poncet 2010a); 13 for the Falkland Islands Company (FIC) in 2010 (Passfield and Poncet 2010b); 11 for the Falkland Islands Government's Environmental Studies Budget (FIG ESB) in 2010 (Poncet and Passfield 2010); 42 for the Foreign and Commonwealth Office's Overseas Territories Environment Programme's Cobb's Wren Conservation Project FK602 (FCO OTEP CWCP) (Poncet 2011 and this report). A further 12 islands in the Beaver Island Group have also been surveyed (BILC unpublished data).

## SUMMARY

The islands surveyed are located in 4 broad geographical regions: Queen Charlotte Bay, Port Stephens, Eagle Passage and Falkland Sound. Environmental baseline data were collected for each island. Section 1 presents details of fieldwork. Section 2 presents the island inventories, which are effectively a statement of biodiversity for each island. Maps of the islands are in Appendix 3.

Fieldwork data were collected according to a biodiversity survey protocol designed primarily for recording wildlife and environmental variables.

Each island was surveyed for:

- rodent presence
- distribution and abundance of birds and seals
- plant species, plant communities, relative abundance of tussac
- wildlife habitats
- topography and coastline features
- past grazing history
- any other points of interest e.g. wrecks
- potential for rat eradication

### Principal findings

- 21 islands were confirmed rat-free, including 1 (Letterbox Island) where rats had been successfully eradicated and 11 new records: Calista, Edgar Ridge, Halfway Cove, Knob in Eagle Passage, Knob in Port Stephens, Knoblet, Mid, North Wedge, Wedge and West Islands and Wedge Islet.
- 14 islands were confirmed rat-infested.
- 4 rat-infested islands (Flores Harbour, Lion Creek Outer, Pitt and Knoll) were treated with rodenticide to eradicate rats subsequent to survey.
- 2 islands (George and Speedwell) were known ACAP sites with breeding populations of southern giant petrels; a third, Wedge Islet, was recorded as a probable breeding site for this species, with one pair present.
- 14 islands had Cobb's wrens, of which 7 (Calista, Halfway Cove, Knob in Eagle Passage, Mid, North Wedge, Wedge and West Islands) were new records.
- Peat, Knoll, Ten Shilling Bay East, Blind, Flat Wolfe, Flores Harbour and Wolfe Islands have an exceptionally broad range of plant species and wildlife habitats.
- Beef, Coffin, Flat Wolfe, Saddle and Wolfe Islands contain outstanding examples of prime rat-free passerine habitat.
- Thin-billed prions were confirmed breeding on Beef, Coffin and Saddle Islands.
- Remains of sooty shearwaters were recorded on Calista Island, but breeding was not confirmed.

### Recommendations

The principal recommendation of this report is that 15 islands currently with no designated protection be recognised for their exceptional ecological values. The islands are Clump, Edgar Ridge Islet, Flat Wolfe, Mid, Wedge Islet, West and Wolfe Islands (all rat-free), Flores Harbour, Lion Creek Outer and Knoll Islands (potentially rat-free having been recently baited) and Blind, Lion Creek, Peat and Ten Shilling Bay Islands (rat-infested).

All these islands are currently ungrazed tussac islands supporting diverse wildlife habitats. Those that are rodent-free with populations of breeding Cobb's wrens are particularly valuable. Some of the islands are managed as private nature reserves and so have adequate protection under current ownership. Some may prove to qualify for inclusion in an Important Bird Area or the proposed Protected Area framework. There are some however, that may be potential candidates for future re-stocking with sheep or cattle. Any grazing management scheme that does not include measures to prevent over-grazing of tussac will cause long-term and potentially irreversible damage to wildlife habitats. It may also jeopardise the agricultural potential of these islands as a sustainable source of tussac plants for pasture improvement on adjacent mainland coasts.

With respect to entering BILC survey data in the Falkland Islands Biodiversity Database (Falkland Islands Government 2010):

- Every island that has vegetation (and regardless of its size) is catalogued separately and not listed in conjunction with a neighbouring island.
- Small islands with no official name are given names and catalogued separately and are not listed in conjunction with a neighbouring island.
- 'Half-tide' islands that are 'tied' (joined) at low water to each other are listed as separate islands.

## SECTION 1 - FIELDWORK

### Fieldwork logistics

Logistics and accommodation during the course of fieldwork were yacht-based. The main support vessel was *Porvenir* (skipper Ken Passfield); a few surveys were done using *Le Sourire* (skippers Hugues Delignieres & Marie-Paul Guillaumot). No camping or helicopter transport was necessary. Permission to land and survey was obtained from the landowners. Care was taken to avoid disturbance to wildlife and precautions were taken at all times to avoid introducing alien species.

### Methodology

Surveys were conducted according to a biodiversity survey protocol developed by Beaver Island LandCare (Poncet 2008, revised 2010). These surveys are designed to be repeatable. Briefly, they consist of:

#### 1. Coastline transects

The entire coastline was surveyed by walking around the island's shoreline. The following information was recorded:

- A GPS track of the route walked: for calculating coastline perimeter, length of shoreline sections (e.g. cliff, beach), and surface area of the island and its vegetation cover
- The nature of the beach (e.g. boulder, shingle) and shoreline substrate
- Any sign of rodents (including burrows, tracks, droppings, feeding stations) at the beach margin and in the tussac
- All birds and seals seen (species and abundance) and their breeding status
- All plants seen (species)
- Amount of kelp debris washed up on the coast
- Beached debris e.g. fishing gear, wreckage
- The distance to the nearest land or island and the extent of kelp between
- Any evidence of fires or past grazing activities e.g. stock pens, fences

#### 2. Inland transects

Depending on the size and nature of the island, the interior was surveyed by completing at least one transect across the island. If the centre of the island was clear of tussac, the inland tussac margin was also surveyed. The following were noted:

- A GPS track of the route walked
- Any rodent sign (including burrows, tracks, droppings, feeding stations)
- All birds seen (species and abundance) and their breeding status
- All plants seen (species)
- Topography and presence of any freshwater ponds or seeps
- Any evidence of fires or past grazing activities

Between 1 and 4 hours were spent ashore depending on the size of the island (islands ranged from <1ha to over 5,000ha). Fieldwork involved walking at least 1 kilometre of coastline (and where possible the entire island perimeter) and completing at least one inland transect. Digital images were taken of each island's coastline and interior. Co-ordinates for each feature were recorded using a hand-held Garmin60 GPS unit. GPS data were downloaded using mapping software MapSource and/or OziExplorer. The locations of GPS waypoints, plants and birds (including census tallies) were recorded in Excel spreadsheets.

We counted all individuals of all bird species, with the exception of seabirds that flew past without landing. Coastal and inland transect counts were combined in order to produce a tally of birds counted. This tally provides an assessment of relative abundance and is not an absolute population count. Common names for birds were taken from Robin and Anne Woods' *Atlas of Breeding Birds of the Falkland Islands* (1997). The breeding status of each species was assessed on the basis of the number of birds recorded on the day, their behaviour, the habitat they were seen in, the time of year and our field experience.

Where rat sign was found, we recorded 'rats', as we were unable to identify to species level (Norway rats *Rattus norvegicus* or black rats *Rattus rattus*) although rat sign found was typical of Norway rats. Mice (believed to house mice *Mus musculus* but not confirmed) were only recorded as 'present' if live animals were seen. If mouse-sized burrows were seen, status was 'probable'. Where no mouse sign of any kind was found and Cobb's wrens were present, status was 'mouse-free'.

Wherever possible, islands were listed by the place-name shown on the Ordnance Survey D.O.S. 453 map sheets 1-29 and Admiralty charts. Where islands appeared to have no name, we created a place-name.

Any island that was joined (or 'tied') to another island by a spit, sand bar or reef that dried at low tide was considered to be part of the island to which it was joined, even if surrounded by water at high tide. The surface area of each island was derived from GPS tracks recorded when following the mean high water mark around the coastline. Although we were not able to take into account topography, most of the islands surveyed were more or less level, so measured surface areas are likely to correspond to actual surface area.

Plants are listed by their common names in the report, and cross-referenced to their Latin names in Appendix 1. Surface areas of plant communities were derived from tracks recorded when following vegetation boundaries. Although a systematic search was made for plants during the course of survey, the species list for some islands may not be complete. We also recorded the number of southern sea lions that were present, and noted known and possible breeding sites.

### **3. Other sources of information**

We interviewed former farmers and farm managers to confirm the grazing history of each island and wherever possible referred to relevant publications and reports. Google Earth images were used to confirm topographic and cartographic details.

## **Results**

A summary of key information for each island of the 35 islands surveyed is presented in Table 1. A descriptive account for each is presented in Section 2, with islands listed in alphabetical order. Note that the bird population data presented in the report tables are simply rough estimates based on a combination of the number of birds recorded in the field, and our field experience and assessment of available breeding habitat. They are not suitable for assessing population changes over time.

We completed coastal and inland transects on all of these islands. The original raw data are archived in Excel spreadsheets held by the authors (see Appendix 2 for an example). For the purpose of assessing change, any tallies from repeat surveys should be compared with data from the same transect line, as recorded in the spreadsheets. Such 'snapshot' data may not provide enough information on which to base reliable assessments of changes in ecosystems or breeding birds. However, they can be used for species presence versus absence records and for making inter-annual comparisons for abundance and distribution changes in key indicator species, namely, Falkland steamer ducks, kelp geese, Magellanic and blackish oystercatchers, rock shags and striated caracara.

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**Table 1. Islands surveyed**

Island	Location	Area (ha)	Rats	Mice	Cobb's wrens	IBA	Grazing status	Owner	Page
Beef Island	Queen Charlotte Bay	9.7	N	N	Y	Y	Ungrazed	Falklands Conservation	13
Blackfish Creek Island	Port Stephens	1	Y	N*	N	N	Ungrazed	P. Berntsen	15
Blind Island	Eagle Passage	130	Y	Y	N	N	Ungrazed	FLH	17
Calista Island	Falkland Sound	62	N	N	Y	Y	Ungrazed	E. Andersen	20
Clump Island	Falkland Sound	1.1	N	N*	N	N	Ungrazed	FIG	24
Coffin Island	Queen Charlotte Bay	53	N	N	Y	Y	Ungrazed	Falklands Conservation	26
Cross Island islet 3	Port Stephens	1	Y	N*	N	N	Ungrazed	P. Berntsen	29
Cross Island islet 4	Port Stephens	4	Y	N*	N	N	Ungrazed	P. Berntsen	29
Cross Island islet 5	Port Stephens	0.7	Y	N*	N	N	Ungrazed	P. Berntsen	29
Edgar Ridge Islet	Falkland Sound	2.5	N	N*	N	N	Ungrazed	FIG	33
First Island	Queen Charlotte Bay	750	Y	N*	N	N	Ungrazed	A. and M. Marsh	35
Fiat Wolfe Island	Falkland Sound	3.9	N	N	Y	N	Ungrazed	R. and N. Poole	39
Flores Harbour Island	Eagle Passage	26	E2011	N*	N	N	Ungrazed	FIC	42
George Island	Eagle Passage	2400	N	N	Y	Y	Grazed	C. and L. May	46
Halfway Cove Island	Eagle Passage	7.7	N	N	Y	Y	Occ. grazed	C. and L. May	49
Knob Island	Eagle Passage	0.5	N	N	Y	Y	Ungrazed	C. and L. May	52
Knob Island	Port Stephens	4	N	N*	N	N	Ungrazed	P. and A. Robertson	54
Knoblet Island	Port Stephens	1.3	N	N*	N	N	Ungrazed	P. and A. Robertson	57
Knoll Island	Port Stephens	106	E2010	N*	N	N	Ungrazed	P. and A. Robertson	59
Ladrillo Island	Eagle Passage	2.6	Y	N*	N	N	Occ. grazed	FLH	64
Letterbox Island	Queen Charlotte Bay	3	E2007	N*	N	N	Ungrazed	FIG	67
Lion Creek Island	Eagle Passage	8	Y	N*	N	N	Ungrazed	FLH	69
Lion Creek Outer Island	Eagle Passage	12	E2011	N*	N	N	Ungrazed	FIC	72
Mid Island	Eagle Passage	8	N	N	Y	Y	Ungrazed	A. Gisby	75
North Wedge Island	Falkland Sound	4.9	N	N	Y	Y	Ungrazed	FIG	78
Peat Island	Falkland Sound	34	Y	N*	N	N	Ungrazed	P. Berntsen	81
Pitt Island	Queen Charlotte Bay	42	E2009	N*	N	N	Ungrazed	A. Gisby	85
Saddle Island	Queen Charlotte Bay	35	N	N	Y	Y	Ungrazed	Falklands Conservation	88
Screeches Point Island	Port Stephens	1	Y	N*	N	N	Ungrazed	P. Berntsen	91
Speedwell Island	Eagle Passage	5150	N	N	Y	Y	Grazed	C. and L. May	93
Ten Shilling Bay Islands	Port Stephens	86	Y	N*	N	N	Ungrazed	P. and A. Robertson	96
Wedge Island	Falkland Sound	12.4	N	N	Y	Y	Ungrazed	E. Andersen	100
Wedge Islet	Falkland Sound	0.5	N	N	N	N	Ungrazed	E. Andersen	102
West Island	Falkland Sound	3.7	N	N	Y	N	Ungrazed	FIG	105
Wolfe Island	Falkland Sound	120	N	N	Y	N	Ungrazed	R. and N. Poole	108

Y = present and likely to breed; N = absent, N\* = no sign seen, E (year) = island treated with rodenticide, IBA = Important Bird Area

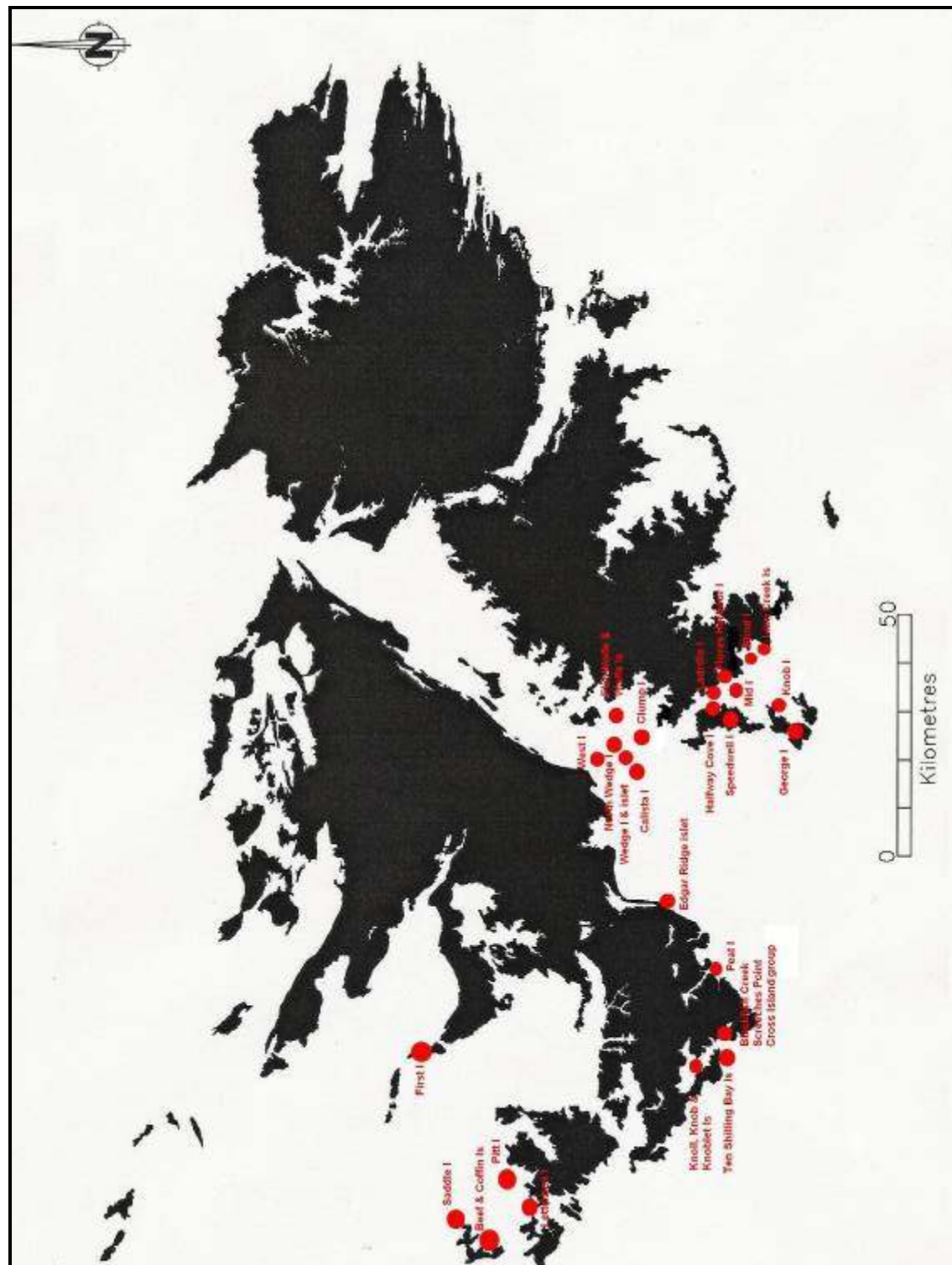


Figure 1. Locations of the 35 Islands surveyed

## SECTION 2 – ISLAND INVENTORIES

This section presents accounts for the 35 islands surveyed. Note that the population data presented in the tables are not suitable for assessing change over time. Maps of each island are presented in Appendix 3.



Striated caracara

## Beef Island

<b>Coordinates:</b>	51° 43.63'S, 61° 16.39'W
<b>Surface area:</b>	9.7 hectares
<b>Coastline perimeter:</b>	1.25 kilometres
<b>Owner:</b>	Falklands Conservation
<b>Land designation:</b>	Private Nature Reserve Important Bird Area
<b>Survey date:</b>	3 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

Beef Island lies at the entrance to South Harbour, 800m off New Island and 1.25km northwest of rat-free Coffin Island. It rises to over 50m elevation and is gently dome-shaped. The shoreline habitat along the west coast consists of a 1-10m wide beach of boulders and flat rocks with an extensive intertidal rock platform. On the east side, steep tussock-covered slopes rise above near vertical cliffs. For further details, refer to Strange (1989), Falklands Conservation (2006) and Woods (2009a).



*Beef Island's northwest-facing coastline, 3 November 2009.*

### Vegetation

The island was mostly covered in dense tussock, except at the north end where past grazing had opened up the tussock, creating about 1ha of short grasses (mostly Yorkshire fog) and scattered tussock bogs that extended from the beach to the summit. Above the pens at the north end were a number of native calandrinia plants. They were particularly abundant in areas of disturbed soil next to thin-billed prion burrows. The vegetation does not appear to have changed since the 1980s when Ian Strange (1989) described "heath and grass at the northeast end that extends from the inside perimeter of the coastal stand of tussock to the top of the island. This heath and grass formation covered about 1/8 of the island, the remainder being covered with a fairly dense cover of tussock of low to medium height."

*Native plant species:* bluegrass, coastal nassauvia, emerald-bog, Fuegian fescue, lesser swine-cress, mountainberry, native calandrinia, oval-leaved prickly-burr, tussock

*Introduced plant species:* chickweed, common stork's-bill, goosegrass, heath groundsel, procumbent pearlwort, sheep's sorrel, shepherd's-purse, Yorkshire fog

### Wildlife

Cobb's wrens and tussockbirds were numerous along the northwest shoreline. Several male black-throated finches were holding territory and feeding on the beach



and Falkland thrushes were common. No black-chinned siskins, dark-faced ground-tyrants or grass wrens were seen. Falkland skuas had just returned to their breeding site in the short grass area at the north end of the island. They were in loose pairs and not displaying territorial behaviour. Many thin-billed prions were nesting in the tussac; bones and fresh remains were scattered throughout and also in the vicinity of the skua breeding site and on the summit ridge near a pair of nesting striated caracaras. King shags and rock shags roosted at the north tip of the island and the latter also occupied cliff ledges along the east coast; neither species was nesting.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Thin-billed Prion	Confirmed	100s	1000s
Rock Shag	Confirmed	30	1 - 5
King Shag	Present	51	0
Black-crowned Night Heron	Probable	2	1 – 3
Upland Goose	Confirmed	2	1 – 3
Ruddy-headed Goose	Probable	1	1 – 3
Kelp Goose	Confirmed	3	3 – 5
Falkland Steamer Duck	Confirmed	3	3 – 5
Crested Duck	Probable	6	3 – 5
Crested Caracara	Present	1	0
Striated Caracara	Confirmed	12	5 – 7
Variable Hawk	Present	1	0
Blackish Oystercatcher	Probable	2	2 – 4
Falkland Skua	Confirmed	10	3 – 5
Dolphin Gull	Present	7	0
Kelp Gull	Present	2	0
Tussacbird	Confirmed	53	20 – 30
Cobb's Wren	Confirmed	10	10 – 20
Falkland Thrush	Confirmed	6	8 – 12
Black-throated Finch	Confirmed	9	5 – 10
Long-tailed Meadowlark	Probable	1	2 – 4

*Wildlife counts and breeding population estimates for Beef Island, 3 November 2009.*

### Survey effort

The main purpose of the visit was to assess the population of Cobb's wrens and their habitat and to introduce trainee surveyors to a rat-free pristine tussac island. A 800m coastal transect was completed from the southeast point clockwise around the island to a point 100m beyond the old pens at the north end of the island where the coast becomes cliff. The remainder of the coastline (approx 450m of the east coast cliffs) was surveyed from inflatable dinghy close inshore and birds noted on a sketch map. A 1km inland transect was completed from the beach midway along the northwest coast upslope through dense tussac to the southwest end of the summit ridge, then northeast along the ridge line and down to the pens and beach below.

### Human activity

The island was grazed by sheep and cattle until 1972 (Strange 1989). The remains of an old set of sheep pens are located on the lower slopes at the northwest end.

### Invasive species

No rat or mouse sign or invasive plant species were found.

### Ecological value

The island is of high ecological value, being rodent-free and ungrazed, with a large population of thin-billed prions, Falkland skuas, Cobb's wrens and tussacbirds. It has been managed for conservation since 1972, and is an officially designated Nature Reserve. It is also included in the New Island Group Important Bird Area (FK11).

## Blackfish Creek Island

<b>Coordinates:</b>	52° 12.09'S, 60° 39.34'W
<b>Surface area:</b>	1 hectare
<b>Coastline perimeter:</b>	440 metres
<b>Owner:</b>	Pam Berntsen
<b>Land designation:</b>	Private land
<b>Survey date:</b>	8 November 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice



### Site description

This small un-named tussac island lies 100m off the northwest tip of Rabbit Island at the entrance to Blackfish Creek and Kits Creek in Port Stephens. The east coast of the island slopes steeply to a narrow bedrock shoreline that in places covers at high water. An intertidal rock platform backed by low cliffs runs along the west coast. The cliffs reach 10m elevation at the north end of the island. A band of kelp fringes the entire island and extends across to Rabbit Island. The latter is effectively 'tied' to the mainland at low water by a reef that dries at low water and is grazed year-round by sheep.



*The east end of Blackfish Creek Island, looking east to Rabbit Island and mainland West Falklands beyond, 8 November 2009.*

### Vegetation

The island is covered in a healthy stand of dense tussac up to 2.5m high on deep peat. The bogs are separated by Magellanic penguin and seal paths making access from the shore to the interior relatively easy apart from an area of dense tussac in the centre. A small patch of sheep's sorrel was found close the shoreline in scattered tussac at the south end. There was no recent sign of fire.

*Native plant species:* fire liverwort, tussac

*Introduced plant species:* procumbent pearlwort, sheep's sorrel

## Wildlife

A small rock shag roost and a pair of breeding striated caracaras were seen on the cliffs at the north end. No passerines were observed and no petrel burrows were found. Magellanic penguin burrows were common, the birds accessing burrows from the eastern shoreline.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	5	20 – 50
Rock Shag	Present	4	0
King Shag	Present	1	0
Black-crowned Night Heron	Probable	1	1
Kelp Goose	Confirmed	1	1
Falkland Steamer Duck	Confirmed	2	2
Striated Caracara	Confirmed	2	1
Kelp Gull	Present	2	0
Southern Sea Lion	Present	1	0

*Wildlife counts and breeding population estimates for Blackfish Creek Island, 8 November 2009.*

## Survey effort

Two people landed on the island for 1 hour and walked from east to west across the island, returning along the north coast in tussac as the tide was too high to walk around the shoreline. The remainder of the coast was surveyed from the boat.

## Invasive species

Rat droppings were found along the peat banks and rock overhangs on the east coast shoreline but there was little sign inland in dense tussac, and no mouse sign.

## Human activity

The island appears unlikely to have been grazed in the past due to its small size.

## Ecological value

No Cobb's wrens were present. The island is well within swimming distance for rats from Rabbit Island which in turn is connected to the mainland at low tide. Hence, despite a healthy cover of ungrazed tussac, the island is of medium ecological value, and is not suitable for a rat eradication operation.



*West end of Blackfish Creek Island, 8 November 2009.*



## Blind Island

<b>Coordinates:</b>	52° 16.50'S, 59° 33.00'W
<b>Surface area:</b>	130 hectares
<b>Coastline perimeter:</b>	11 kilometres
<b>Owner:</b>	Falklands Landholdings
<b>Land designation:</b>	None
<b>Survey date:</b>	30 November 2009
<b>Rodent status:</b>	Rat-infested; mouse-infested



### Site description

Blind Island lies on the east side of Eagle Passage at the entrance to Wine Bay and 1.3km west of Wine Bay Point. The closest mainland point is north of the north tip of the island, across a 300m wide kelp-strewn passage. Lion Creek Outer Island is 2km to the southeast. Blind Island is gently undulating, rising to 15m elevation. Its heavily indented coastline has three distinctive peninsulas: one at the northwest end, another at the south and one on the east coast. The north peninsula curves around to create an unusual intertidal mudflat habitat within a shallow enclosed lagoon. There are several large boulder beaches on the west and south coasts. The remainder of the shoreline is mostly level intertidal rock platform at the foot of low cliffs.



*Corral on the north coast of Blind Island, entrance to the north peninsula lagoon in background, 30 November 2009.*

### Vegetation

Most of the coastline was fringed with tussac; the interior was predominantly diddle-dee heathland. The densest stands of tussac were along the east and south peninsulas, and these may have been the least affected by past grazing. Much of the diddle-dee appeared to be replacement vegetation following over-grazing and burning of large areas of tussac. The fires may date from the early sealing days as there is no evidence of any recent fires on the island. Flowering woolly Falkland daisy, scurvygrass and vanilla daisies were scattered across the diddle-dee; patches of introduced daisies grew around the corral. Other non-native plants included common orache and a dock sp. growing in shallow soil between cobbles and open tussac at the east entrance point of the lagoon.

*Native plant species:* buttonweed, christmas-bush, cinnamongrass, cudweed sp., diddle-dee, emerald-bog, field mouse-ear, Fuegian fescue, mountainberry, native

wood-rush, oval-leaved prickly-burr, pigvine, sea cabbage, scurvygrass, small-fern, smooth Falkland daisy, tussac, vanilla daisy, whitegrass, wild celery, woolly Falkland daisy

*Introduced plant species:* annual meadow-grass, common orache, dock sp., daisy, goosegrass, groundsel, heath groundsel, pineappleweed, procumbent pearlwort, sheep's sorrel, smooth-stalked meadow-grass

### Wildlife

Despite the presence of rats, a few tussacbirds were seen in the areas walked. Nesting black-throated finches and Magellanic oystercatchers were abundant and Magellanic snipe were also recorded but no rufous-chested dotterels or two-banded plovers despite suitable habitat. A large population of black-crowned night-herons was feeding and resting in the north peninsula lagoon, in company with numerous crested ducks and a pair of Chiloe wigeon. No waders were seen here during the survey but it is possible that the lagoon is a favoured foraging area. A pair of crested caracaras and at least one pair of striated caracaras were recorded.

A few sea lions were hauled out in the tussac in the areas surveyed including one large male on territory. Blind Island is one of the main sea lion breeding sites in the Islands, with 135 animals including 75 pups recorded on 10 February 1995 (Thompson et al 1995) and 274 pups on 12 February 1936 (Hamilton 1939). The site is on the east point of the island (Strange 1990).

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	23	100 – 500
Southern Giant Petrel	Present	4	0
Rock Shag	Confirmed	100	80 – 100
King Shag	Present	500	0
Black-crowned Night Heron	Probable	25	10 – 20
Upland Goose	Confirmed	42	15 – 30
Kelp Goose	Confirmed	24	20 – 30
Falkland Steamer Duck	Confirmed	36	25 – 50
Chiloe Wigeon	Present	2	0
Crested Duck	Probable	55	15 – 30
Turkey Vulture	Present	1	0
Striated Caracara	Confirmed	2	1
Crested Caracara	Probable	1	1
Magellanic Oystercatcher	Confirmed	28	20 – 40
Blackish Oystercatcher	Confirmed	9	5 – 15
Magellanic Snipe	Probable	1	5 – 15
Falkland Skua	Confirmed	26	10 – 20
Dolphin Gull	Present	28	0
Kelp Gull	Present	41	0
Brown-hooded Gull	Present	2	0
South American Tern	Present	8	0
Tussacbird	Present	8	0
Grass Wren	Confirmed	6	10 – 20
Dark-faced Ground-tyrant	Confirmed	6	10 – 20
Falkland Thrush	Confirmed	15	15 – 30
Black-throated Finch	Confirmed	27	20 – 50
Long-tailed Meadowlark	Confirmed	9	10 – 20
Black-chinned Siskin	Probable	11	10 – 20
Southern Elephant Seal	Present	1	0
Southern Sea Lion	Present	7	0

*Wildlife counts and breeding population estimates for Blind Island, 30 November 2009.*

**Survey effort**

Two surveyors walked 6.8km of coastline along the north and west coasts, and completed 2.5km of inland transects in favourable weather conditions.

**Human activity**

Blind Island was used by North Arm farm for grazing horses for many years, and was lightly grazed by cattle from 2007 to 2009. There is a large corral and set of pens on the north coast, and on the nearest mainland point is a boatshed and a set of pens, used when shipping horses and cattle to the island.

**Invasive species**

Rat sign was recorded in all areas visited, and a live rat was seen feeding on the shoreline. Small round mouse-sized holes were also found on the north shore of the island below the corral and in several other coastal areas. Annie Hill reported seeing two live mice in March 1996 (Hill 2000).



*Diagnostic size and shape of a mouse burrow entrance, Blind Island 30 November 2009.*

**Ecological value**

The island's original ecological value was undoubtedly very high, but it has been significantly altered, initially by burning and the introduction of rodents, and more recently by grazing of tussac. However, significant botanical and ecological gains are possible if the island continues to be left ungrazed. While rodent eradication is entirely feasible, the island's position 300m from the mainland presents a very high risk of future incursions by rats swimming from the mainland.



*Falkland thrush, Blind Island, 30 November 2009.*



## Calista Island

<b>Coordinates:</b>	52° 01.79'S, 59° 51.34'W
<b>Surface area:</b>	62 hectares
<b>Coastline perimeter:</b>	4.5 kilometres
<b>Owner:</b>	Eddie Andersen
<b>Land designation:</b>	Private wildlife sanctuary Important Bird Area
<b>Survey date:</b>	15 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

Calista Island lies at the southern entrance of Falkland Sound, 8km east of Coast Ridge on West Falkland and 2km southwest of Wedge Island. It rises to a small 20m high gently-domed hill in the centre, and is covered in dense tussac. Kelp beds fringe the entire coastline, with some clear water close inshore off the north end sand beach. Several freshwater seeps were found on the west coast and one on the east coast, but there appear to be no areas of permanent water.



*East coast sand beach and coastal green on Calista Island, 15 November 2009.*

On the east coast of the island near the north tip is a 300m long sand beach with sections of boulder and bedrock. The sheltered east coast runs north-south for 1.75km and is mostly medium to steeply sloping boulder beaches with piles of kelp debris. The northernmost 800m stretch of the west coast shoreline consists mostly of boulders deposited at the top of the beach and overlying bedrock which is exposed at low tide to form large intertidal pools. This is followed by a 300m long section of level 30m wide bedrock platform about 10m above sea level which runs to the southwest point of the island. Here, the cliffs become progressively higher and the rock platform widens to about 100m in places, ending in a low rock islet which connects to the south tip of the island at low water. The rock platform lies just above the average level of high water, although in strong gales and on spring tides much of it would be awash. It is one of the most striking features of the island, with numerous

rock pools exposed at low tide. Thirty metre high cliffs rise from the platform at the south end of the island.

### **Vegetation**

The island is covered in dense healthy tussac apart from a small clearing behind the sand beach on the east coast. The vegetation here was a short sward composed of a mix of native yarrow, wild celery, shepherd's purse, annual meadow-grass, goosegrass and a dried moss species, with a narrow strip of sandgrass along the top of the beach. Cattle would have been landed here, and their droppings no doubt contained seeds of the various introduced species. A small number of cudweed plants and two diddle-dee plants were found on the top of the low cliff at the south end of the sand beach, with an unidentified fern and about six prickly sow-thistle plants growing on the cliff crevices. Numerous dock plants were found midway along the west coast boulder beach. Along the southwest coast cliff top, the tussac was wind-pruned, exposing a band of tussac peat. At the north tip, the beach boulders were covered in orange lichen with areas of shallow sandy shellgrit soil between the tussac bogs, colonised by wild celery and native stonecrop.

*Native plant species:* cudweed sp., diddle-dee, fern sp., lesser sea-spurrey, goosefoot, lesser swine-cress, native stonecrop, native yarrow, sea cabbage, tussac, wild celery

*Introduced plant species:* annual meadow-grass, dock sp., groundsel, heath groundsel, goosegrass, prickly sow-thistle, procumbent pearlwort, sandgrass, shepherd's purse



*West coast cliffs of Calista Island, disused shag roost in foreground, wide rock platform along the shoreline, dense tussac habitat suitable for burrowing petrels on cliff top, 15 November 2009.*

### **Wildlife**

Over 2,000 king shags were present in the roost and breeding colony area located on ledges and the 30m wide level bedrock area at the southwest corner of the island (this section was not included in the coastal transect). The birds had not started laying, although nests were being lined with tussac and courtship rituals were observed. Rock shags were roosting and nesting here in smaller numbers, and also on the small section of 2m high cliffs at the north tip sand beach. Kelp geese and Falkland steamer duck pairs were abundant around the entire coastline, and large flocks of the latter were gathered on the east coast and at the south tip of the island. A couple of dozen kelp geese were feeding in the intertidal pools at the north tip in

company with over 100 sheathbills. Only four pairs of upland geese (two with young) and one pair of ruddy-headed geese were seen. They and a variety of passerines (which included a large flock of black-chinned siskins, a family of black-throated finches, numerous tussacbirds and several Falkland thrushes) were feeding on the small coastal green above the east coast sand beach. Cobb's wrens were abundant wherever the coastline was boulder beach, but they were also seen in tussac on the margins of the shag colony and roosts at the southwest corner. No dark-faced ground-tyrants or long-tailed meadow-larks were seen and only a few grass wrens were recorded.

The fresh remains of a sooty shearwater and two piles of prion feathers were found in dense tussac at the top of the cliffs along the south coast. These may have been birds killed at sea, rather than at their burrows on the island. However, paths in the tussac here were typical of those made by these two species, and although no definite evidence of breeding was found (e.g. no distinctive petrel smell, birds calling or freshly excavated burrows), it is possible that both species, and also grey-backed storm-petrels, breed here. Paths made by Magellanic penguins were common around all accessible parts of the shoreline and adjacent tussac, and many were heard calling in the evening. Up to ten pairs of striated caracaras were seen including 2 pairs at either end of the sand beach, a pair at the shag colony on the west coast, another at the south tip shag colony, and two pairs along the east coast.

Southern sea lions are known to breed on Calista Island; 2073 pups were counted on 18 February 1936 (Hamilton 1939); 55 animals including 7 bulls, 24 females and 21 pups were present on 7 February 1995 (Thompson et al 1995).

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	52	100s
Sooty Shearwater	Uncertain	1	Unknown
Thin-billed Prion	Uncertain	2	Unknown
Rock Shag	Confirmed	137	150 – 200
King Shag	Confirmed	900	800 – 1000
Black-crowned Night Heron	Probable	3	1 – 5
Upland Goose	Confirmed	11	5 – 10
Ruddy-headed Goose	Probable	2	1 – 3
Kelp Goose	Confirmed	76	15 – 20
Falkland Steamer Duck	Confirmed	173	12 – 15
Crested Duck	Confirmed	22	5 – 10
Turkey Vulture	Probable	4	1 – 5
Striated Caracara	Confirmed	12	7 – 10
Magellanic Oystercatcher	Probable	5	3 – 5
Blackish Oystercatcher	Confirmed	10	3 – 5
Falkland Skua	Present	1	0
Dolphin Gull	Present	2	0
Kelp Gull	Present	9	0
Tussacbird	Confirmed	64	30 – 50
Grass Wren	Confirmed	5	10 – 50
Cobb's Wren	Confirmed	18	10 – 20
Falkland Thrush	Probable	8	5 – 10
Black-throated Finch	Confirmed	9	5 – 10
Black-chinned Siskin	Probable	50	10 – 20
Snowy Sheathbill	Present	120	0
Southern Elephant Seal	Present	5	0
Southern Sea Lion	Present	16	0

*Wildlife counts and breeding population estimates for Calista Island, 15 November 2009.*



**Survey effort**

The entire 4.5km long coastline was surveyed, with the exception of a 1.5km section along the south coast cliffs which was observed from the cliff top as the rock platform below was intersected by several impassable gulches. A 600m circuit walk was made into the dense tussac interior behind the sand beach.

**Human activity**

The island had been grazed by cattle at some point in the past as evidenced by half a dozen cattle skeletons at the southwest end near the king shag colony. The fact these were all in one place indicates they must have been shot in a cull, possibly one carried out in the mid-1980s when the island was cleared of cattle (Christopher May pers comm). An area of scattered tussac bogs and short vegetation of mostly introduced species behind the east coast sand beach is also evidence of past grazing. Roddy Napier landed on the island in 1948 and recalls the tussac being “completely eaten out”.

**Invasive species**

No invasive plant or animal species were recorded.

**Ecological value**

The island has a very high ecological value, being ungrazed tussac, rat-free and with a large population of Cobb's wrens and tussacbirds. This is reflected in the protection given to it by the owner, Eddie Andersen, who manages the island as a private wildlife sanctuary where landings are not ordinarily permitted. It is included in the Elephant Cays Group Important Bird Area FK05.



*Large king shag colony on the west coast of Calista Island, 15 November 2009.*

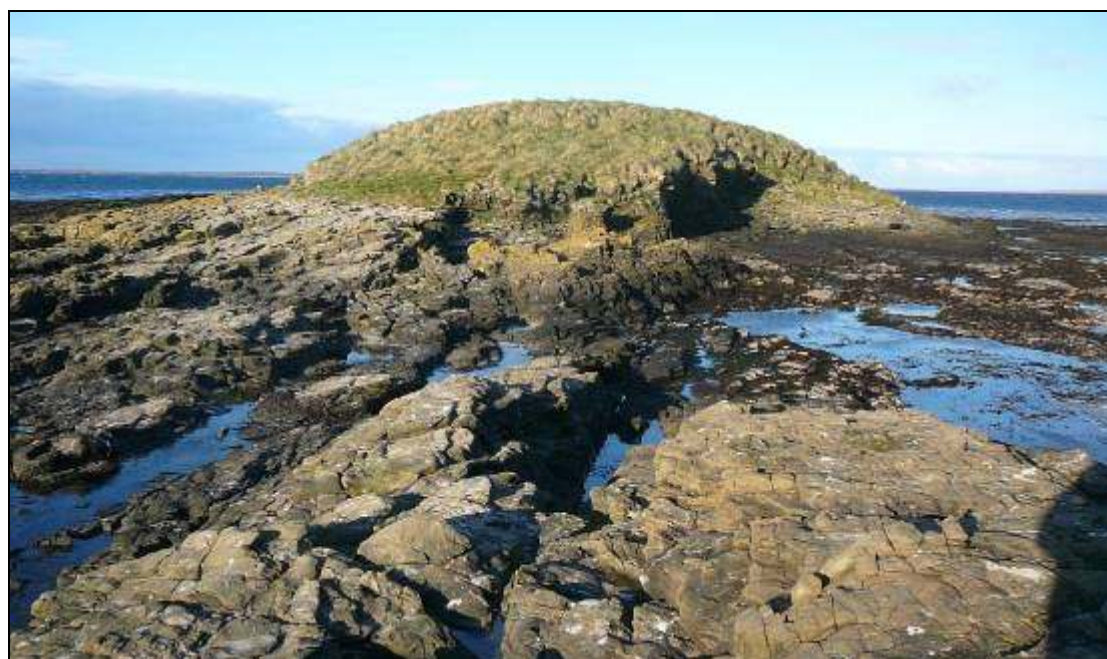
## Clump Island

<b>Coordinates:</b>	52° 01.47'S, 59° 45.22'W
<b>Surface area:</b>	1.1 hectares
<b>Coastline perimeter:</b>	0.5 kilometres
<b>Owner:</b>	Falkland Islands Government
<b>Land designation:</b>	None
<b>Survey date:</b>	23 November 2009
<b>Rodent status:</b>	Rat-free No evidence of mice



### Site description

Clump Island is a small oval-shaped tussac island lying at the south end of Falkland Sound, 3km northwest of Ruggles Island and 4km southeast of North Wedge Island. The majority of its coastline is bedrock that dries out at low tide to form an intertidal rock platform up to 30m wide. The platform extends south for about 100m at the south end of the island, drying out at low tide to create a network of tidal pools. Some short sections of low cliff (2m high) run along the east coast, but mostly the tussac slopes gently down to the shore. There are only three very short sections of beach: at the north end is a 30m long boulder and shingle beach covered in kelp debris, wedged between the cliffs. The other two beaches are at the south end of the island and are composed of angular boulders and flat rocks covered in orange lichen that extends some way up the west coast. A conspicuous 3m high guano-covered rock stack rises from the intertidal rock platform at the north tip. Extensive kelp banks lie off the south and east coasts.



*Low tide on the reef at the south tip of Clump Island, showing the two small areas of beach, 23 November 2009.*

### Vegetation

The island was covered in dense tussac and no other plant species were seen. The tussac was heavily wind-pruned at the southwest corner of the island but in the centre, bogs were 2-2.5m high with clear paths between bogs resulting from the



passage of Magellanic penguins and sea lions. The rocks at the high tide mark along the south coast were covered in conspicuous orange lichen.

*Native plant species:* tussac

*Introduced plant species:* none recorded

### Wildlife

The intertidal rock platform at the south end of the island appeared to be a gathering place for numerous kelp gulls, dolphin gulls, Falkland steamer ducks and rock shags. King shags were roosting on the stack at the northern landing beach, close to several pairs of nesting rock shags. One adult striated caracara was also present on the stack and probably breeding, although no nest was found. Magellanic penguins, kelp geese and blackish oystercatchers were confirmed breeding and tussacbirds were present around the entire coastline. Cobb's wrens had been reported from the island by Euan Dunn in February 2003 (Robin Woods pers comm) but none were seen on this survey after a thorough search of all shorelines and inland tussac.

One large male sea lion appeared to be holding territory on the south coast beach; three adult males were hauled out on the north coast. Five bulls, 14 females and 21 pups were counted on 9 February 1995 (Thompson et al 1995).

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	3	10 – 100
Rock Shag	Confirmed	51	10 – 30
King Shag	Probable	156	50 – 80
Black-crowned Night Heron	Probable	2	2 – 3
Kelp Goose	Confirmed	7	5
Falkland Steamer Duck	Confirmed	61	2 – 3
Crested Duck	Probable	2	1 – 2
Striated Caracara	Confirmed	1	1
Blackish Oystercatcher	Confirmed	1	1 – 2
Dolphin Gull	Present	42	0
Kelp Gull	Present	44	0
Tussacbird	Confirmed	11	3 – 5
Grass Wren	Confirmed	1	1 – 2
Falkland Thrush	Probable	1	1 – 2
Black-chinned Siskin	Probable	2	1 – 2
Snowy Sheathbill	Present	2	0
Southern Sea Lion	Present	6	0

*Wildlife counts and breeding population estimates for Clump Island, 23 November 2009.*

### Survey effort

The entire coastline was surveyed by one surveyor and a brief transect was made through the central tussac during the hour spent ashore.

### Human activity

There was no sign of the island ever having been grazed, which is unsurprising given its small size and difficult access.

### Invasive species

No invasive plant or animal species were found.

### Ecological value

The island is of very high ecological value as an ungrazed rat-free tussac island.

## Coffin Island

<b>Coordinates:</b>	51° 44.38'S, 61° 15.68'W
<b>Surface area:</b>	53 hectares
<b>Coastline perimeter:</b>	3.2 kilometres
<b>Owner:</b>	Falklands Conservation
<b>Land designation:</b>	Private Nature Reserve Important Bird Area
<b>Survey date:</b>	3 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

Coffin Island lies 900m off the east coast of New Island and 1.25km southeast of Beef Island. It is dome-shaped and rises to 109m elevation. For further details, refer to Strange (1989), Falklands Conservation (2006) and Woods (2009a).

### Vegetation

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 slopes just above the pens on this northwest coast, at the same location described in Woods (2009a), were several hundred plants of native calandrinias in flower. They were growing amongst Yorkshire fog and sheep's sorrel in the vicinity of thin-billed prion burrows. A freshwater spring, the only one seen on the island, emerged in this area and flowed down the hillside to the pens where wild celery was abundant. 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.



*Coffin Island viewed from the summit of Beef Island, 3 November 2009.*

**Native plant species:** balsam-bog, bluegrass, coastal nassauvia, christmas-bush, common violet, diddle-dee, emerald-bog, Falkland strawberry, Fuegian fescue, lady's slipper, mountainberry, native calandrinia, native rush, native wood-rush, native yarrow, oval-leaved prickly-burr, pigvine, scurvygrass, small-fern, tussac, wild celery, wiry azurella

**Introduced plant species:** annual meadow-grass, heath groundsel, sheep's sorrel, Yorkshire fog

## Wildlife

A deep gulch with steep tussac-covered sides located on the east coast near the south point of the island, provided excellent habitat for passerines: Cobb's wrens, tussacbirds, dark-faced ground-tyrants, Falkland thrush and black-chinned siskins were all seen here. Several Cobb's wrens were also seen at the top of the steep tussac slopes along the north and west points and there was a single bird on the rock platform below the pens. The total number seen (8) was surprisingly high, given that the shoreline has little intertidal zone and no boulders or kelp debris. The population was estimated at 10-15 pairs, and it may be higher, as not all the cliff tops were surveyed and it was difficult to see the birds from offshore.

Three black-crowned night herons were resting in the south point gulch but no nests were found. A group of 90 rock shags were roosting on the south point cliffs. It may have been too early in the season for these species to have started breeding. All 6 pairs of Falkland steamer ducks recorded were holding territory, but females had not started incubating. Large numbers of thin-billed prion burrows were noted. Their colonies were easily visible from a distance, with areas of bare sandy peat soil around the burrows and a scattering of Yorkshire fog and heath groundsel forming a distinctive patchwork. The majority of burrows were found on the northwest coast, with smaller groups on the slopes above the southern point. Several pairs of striated caracaras were seen on territory, and some juveniles were also present. At least four pairs were estimated to nest on the island, and numerous prion bones and carcass remains were found in the vicinity of territories.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Thin-billed Prion	Confirmed	100s	1000s
Rock Shag	Present	105	0
Black-crowned Night Heron	Probable	5	2 – 5
Upland Goose	Confirmed	22	10 – 20
Ruddy-headed Goose	Probable	1	1
Kelp Goose	Confirmed	5	4 – 6
Falkland Steamer Duck	Confirmed	12	6 – 8
Crested Duck	Probable	3	1 – 2
Turkey Vulture	Present	1	0
Variable Hawk	Present	1	0
Striated Caracara	Confirmed	21	4 – 8
Crested Caracara	Probable	2	1
Blackish Oystercatcher	Confirmed	4	2
Falkland Skua	Probable	2	1 – 3
Dolphin Gull	Present	60	0
Kelp Gull	Present	10	0
Tussacbird	Confirmed	46	20 – 50
Dark-faced Ground-tyrant	Probable	11	10 – 20
Grass Wren	Confirmed	1	1 – 3
Cobb's Wren	Confirmed	8	10 – 15
Falkland Thrush	Probable	15	5 – 10
Black-throated Finch	Probable	4	3 – 5
Long-tailed Meadowlark	Probable	2	3 – 5
Black-chinned Siskin	Probable	8	2 – 5
Snowy Sheathbill	Present	4	0
Southern Sea Lion	Present	6	0

*Wildlife counts and breeding population estimates for Coffin Island, 3 November 2009.*

**Survey effort**

The main purpose of the visit was to assess the population of Cobb's wrens and their habitat and to introduce trainee surveyors to a rat-free pristine tussac island. The steep cliffs around the island made a shoreline survey on foot impossible so the coast was surveyed from the boat positioned 30-50m offshore. Conditions were ideal with good visibility, no swell and a gentle 10-15 knot breeze. A landing was made on the northwest coast below the sheep pens. Three inland transects totalling 2km were made across the interior of the island covering the full range of habitats apart from the steep tussac cliffs.

**Human activity**

The island was grazed by sheep until 1972 (Strange 1989); the remains of an old set of pens on the northwest coast are still visible.

**Invasive species**

No rat or mouse sign or invasive plant species were found.

**Ecological value**

The island is of high ecological value, being rodent-free and ungrazed with a large population of thin-billed prions and breeding Cobb's wrens and tussacbirds. It has been managed for conservation since 1972 and is an officially designated Nature Reserve. It is included in the New Island Group Important Bird Area (FK11).



*Native calandrinia, Coffin Island, 3 November 2009.*



## Cross Island group

<b>Coordinates:</b>	52° 12.16'S, 60° 41.28'W
<b>Surface area:</b>	11 hectares (6 islets combined)
<b>Coastline perimeter:</b>	3 kilometres (6 islets combined)
<b>Owner:</b>	Pam Berntsen
<b>Land designation:</b>	Private land
<b>Survey date:</b>	7 and 8 November 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice



### Site description

Cross Island and a group of six small un-named tussac islets lie at the east entrance point to Port Stephens. A 400m wide channel of deep kelp-free water separates the group from Cross Island, but scattered kelp and reefs lie between the group and mainland West Falklands. Clear passages in the kelp with depths of between 3-5m allow small boat access to all the islets except islet 4. Cross Island itself is only 100m from mainland West Falklands and is known to be rat-infested (Robin Woods pers comm).



*Cross Island group, islet 4 viewed from the summit of islet 3, 8 November 2009.*

**Islet 1** (52° 11.63'S, 060° 41.84'W, 1ha, 400m perimeter, 15m elevation) is the most northerly and westerly islet in the group. It lies 400m south of Cross Island. Dense kelp and a low reef lie between it and islet 2 which is 300m to the east. Its coastline is mostly rock platform.

**Islet 2** (52° 11.75'S, 060° 41.45'W, 4ha, 800m perimeter, 15m elevation) also lies about 400m south of Cross Island. 700m of kelp strewn waters separate it from the other islets in the group which lie to the southeast. On the east coast of the islet is a short (<10m) sandy beach backed by steep banks and covered at high water. The remainder of the coastline is bedrock that forms a mostly level rock platform up to 30m wide on the exposed south coast, with little beached kelp debris.

**Islet 3** (52° 12.12'S, 060° 41.025'W, 1ha, 330m perimeter, 10m elevation) is at the south end of the group, about 150m off the mainland coast. A 20m long sandy beach

runs along the sheltered north coast of the islet, but otherwise the coastline is mostly 10-20m wide rock platform and there was little beached kelp debris.

**Islet 4** (52° 12.18'S, 060° 41.28'W, 4ha, 800m perimeter, 15m elevation) also lies at the south end of the group and is linked to islet 3 by 180m of shallow kelp-strewn waters. There is a small beach of shingle and small boulders at the southeast point, a 20-40m wide rock platform around the south coast, and a narrow steeply shelving rock coastline along the remainder, with little beached kelp debris.

**Islet 5** (52° 11.93'S, 060° 40.75'W, 0.7ha, 380m perimeter) lies 300m west of the mainland coast and islet 6. It is mostly bare rock with sparsely scattered tussac bogs growing on the steep rock banks around the shoreline. It may have been burnt a long time ago and the soil and tussac eroded away to bare rock.

**Islet 6** (52° 11.93'S, 060° 40.42'W) is the smallest in the group (<0.1ha) with a mostly low cliff coastline and no boulder beach habitat. A 20m wide kelp-strewn passage separates it from the mainland coast.

### **Vegetation**

Islets 1, 2, 3, 4 and 6 were entirely covered in dense tussac. Some bogs were up to 2.5m high on islets 2, 3 and 4, but passage between them was easy due to repeated passage of sea lions and Magellanic penguins. Islet 5 was mostly rock, with a few scattered tussac bogs on the steep banks above the coastline. None of the islets (apart from islet 5) appeared to have been burnt in recent times as the peat soil was over 2m deep in places with no visible burnt clay.

#### *Plant species list:*

Islet 1: (no landing) tussac

Islet 2: fire liverwort, lesser swine-cress, native stonecrop, tussac; annual meadow-grass, groundsel, heath groundsel, procumbent pearlwort, sheep's sorrel

Islet 3: tussac

Islet 4: tussac

Islet 5: (no landing) tussac

Islet 6: (no landing) tussac

### **Wildlife**

Weather conditions were very windy during landings on islets 3 and 4, and this may have accounted for the relative scarcity of passerines. However overall there did not appear to be many present in the group. For example, islet 2 which was surveyed in the most detail, only had one or two pairs of grass wrens; no black-throated finches, black-chinned siskins or dark-faced ground-tyrants were seen. Magellanic penguin burrows were found throughout the tussac on islets 2 and 3, although few appeared to be occupied; none were noted on islet 4 but this may have been due to incomplete coverage. No Cobb's wrens were seen on any of the islets.

Southern elephant seals were hauled out on islets 2, 3 and 4. They may breed on the nearby mainland coast in the Three Crowns camp (Peter Robertson pers comm). The 20m long sand beach on islet 3 was occupied by 4 adult bull southern sea lions and 6 females. This is likely to be the breeding site reported by Thompson et al (1995) who recorded 1 bull, 4 females and a pup on an island southeast of Cross Island on 6 February 1995. They also recorded a total of 87 animals (including 8 bulls, 37 females and 27 pups) on the 'eroded tussac island' southeast of Cross Island, which is likely to have been islet 5.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	3	20 – 50
Black-crowned Night Heron	Confirmed	2	2
Kelp Goose	Confirmed	5	5
Upland Goose	Confirmed	1	1
Falkland Steamer Duck	Confirmed	7	5
Crested Duck	Probable	6	1 – 3
Striated Caracara	Present	1	0
Magellanic Oystercatcher	Confirmed	2	1
Blackish Oystercatcher	Probable	3	1 – 2
Grass Wren	Confirmed	2	2
Black-chinned Siskin	Probable	2	1
Southern Elephant Seal	Present	4	0

*Wildlife counts and breeding population estimates for islet 2, 7 November 2009.*

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	6	20 – 50
Black-crowned Night Heron	Probable	2	1
Kelp Goose	Confirmed	5	3 – 5
Falkland Steamer Duck	Confirmed	1	3 – 5
Crested Duck	Probable	4	1 – 3
Southern Elephant Seal	Present	1	0
Southern Sea Lion	Present	10	0

*Wildlife counts and breeding population estimates for islet 3, 8 November 2009.*

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Kelp Goose	Confirmed	4	3 – 5
Falkland Steamer Duck	Confirmed	3	2 – 3
Crested Duck	Probable	4	1 – 2
Striated Caracara	Probable	1	1
Blackish Oystercatcher	Probable	2	1
Southern Elephant Seal	Present	1	0

*Wildlife counts and breeding population estimates for islet 4, 8 November 2009.*

### Survey effort

No landing was made on islets 1, 5 and 6. Islet 2 was surveyed on 8 November with a coastal transect completed for the entire coastline, supplemented by short detours into the interior tussac. Surveys were carried out on islets 3 and 4 on 9 November. However, due to the strong southwest winds and intermittent snow and hail squalls, coverage is likely to be incomplete. Islets 1, 5 and 6 were viewed from the boat positioned close inshore.

### Human activity

There was no indication that the islets had ever been grazed, and this was confirmed by Peter Robertson of Port Stephens Farm.

**Invasive species**

Rat sign – droppings, tussac litter nests and feeding stations of mostly limpet shells – were found on all three islets that were surveyed on foot (islets 2, 3 and 4), and are suspected on islets 1 and 5. No mouse sign was found.

**Ecological value**

The group as a whole has a high ecological value since it consists of tussac islands that do not appear to have ever been grazed. However, their proximity to mainland West Falkland rules them out as potential rat eradication sites. Cross Island, being only 120m from the mainland, is also unsuitable for rat eradication.



*Anchorage at islet 3 in the Cross Island group, mainland West Falklands on right, islet 6 centre background, 8 November 2009.*



## Edgar Ridge Islet

<b>Coordinates:</b>	52° 06.31'S, 60° 16.46'W
<b>Surface area:</b>	2.5 hectares
<b>Coastline perimeter:</b>	0.8 kilometres
<b>Owner:</b>	Falkland Islands Government
<b>Land designation:</b>	None
<b>Survey date:</b>	13 November 2009
<b>Rodent status:</b>	Rat-free No evidence of mice



### Site description

This small un-named tussac island lies a little over 1km south of the southern end of Edgar Ridge on the west side of Falkland Sound. The closest mainland point is 900m to the west on mainland West Falkland. Close off the islet's southeast coast are several reefs and skerries, surrounded by kelp. There are also extensive banks of straggly kelp between the islet and the mainland. The islet is 200m long and 100m wide, rising abruptly to a level interior of approximately 20m elevation. Its coastline is mostly cliff and steep rock faces scoured by wind and waves, with a shingle beach at the northwest corner and a deep gulch on the east coast. A small boulder beach lies at the head of the gulch and the steep tussac slope behind allows access to the interior.



Cliff-bound coastline (above) and east coast gulch and landing beach, Edgar Ridge Islet, 13 November 2009.

### Vegetation

The interior of the island was entirely covered in dense green tussac bogs up to 2m tall and well fertilised by southern sea lions which maintained open passages between the bogs. The absence of any introduced plant species suggested that it had never been grazed by livestock. The tussac peat was well over 1m deep even on the exposed cliff tops and showed no signs of having been burnt in recent times, as also noted by Strange (1989).

*Native plant species:* fire liverwort, tussac, water-starwort

*Introduced plant species:* none

### Wildlife

King shags and rock shags were roosting on the north coast, and the latter may breed here. No burrowing petrel remains or burrows were found in the area of tussac surveyed at the north end, and there was no indication that petrels nested on the islet. Several pairs of tussacbirds were seen both in the tussac and along the

shoreline, but no Cobb's wrens were recorded. Although there were very few sections of shingle beach and virtually no washed up kelp, the shag roosts and colonies would provide a reliable food source for Cobb's wrens. However, the apparent absence of this species is not surprising, given the small size of the island and its distance from the nearest source population on Elephant Cays, nearly 30km to the east. A pair of striated caracaras occupied territory in the small clearing in the tussac above the gulch, and turkey vultures also appeared to roost and feed in the vicinity. One turkey vulture pellet contained what appeared to be rat fur, presumably from the adjacent mainland, but no burrowing petrel remains were found.

The shingle cove at the northwest end of the island appeared to be a favoured southern sea lion haulout beach. At least 60 individuals were present including a large male apparently holding territory. At least 40 more animals were hauled out on the rocks around this area and in the tussac.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
King Shag	Present	100	0
Rock Shag	Probable	30	10 – 20
Black-crowned Night Heron	Probable	3	1 – 3
Kelp Goose	Confirmed	8	4 – 6
Falkland Steamer Duck	Confirmed	8	4 – 6
Turkey Vulture	Probable	4	1 – 3
Striated Caracara	Confirmed	2	1
Blackish Oystercatcher	Probable	2	1 – 3
Dolphin Gull	Present	4	0
Kelp Gull	Present	6	0
Tussacbird	Confirmed	10	5 – 10
Grass Wren	Confirmed	1	1 – 3
Black-chinned Siskin	Probable	2	1 – 3
Snowy Sheathbill	Present	20	0
Southern Sea Lion	Probable	100	50 – 75

*Wildlife counts and breeding population estimates for Edgar Ridge Islet, 13 November 2009.*

### Survey effort

A 30 minute landing was made on the east coast and the area at the top of the gulch and across to the west side of the island was visited, but not the south end. The entire coastline was surveyed from the rowing dinghy, positioned about 10m offshore along the sheltered west and north shores, and a little further out along the more exposed south coast.

### Human activity

There was no sign of the island having been grazed in the past. Given its remoteness and difficulty of access it is unlikely that the islet was ever stocked.

### Invasive species

No invasive plants or mammals were found.

### Ecological value

The ecological value of this island is very high, being a pristine rodent-free and ungrazed tussac island.

## First Island

<b>Coordinates:</b>	51° 38.43'S, 60° 41.12'W
<b>Surface area:</b>	750 hectares
<b>Coastline perimeter:</b>	27 kilometres
<b>Owner:</b>	Alastair & Marlane Marsh
<b>Land designation:</b>	Private land
<b>Survey date:</b>	05 and 09 April 2010
<b>Rodent status:</b>	Rat-infested No evidence of mice



### Site description

First Island (locally known as First Passage) is the southernmost island in the Passage Islands chain. This chain, comprised of First, Second, Third and Fourth Islands, extends 22km northwest off the Dunnose Head coast on West Falklands. First Island lies 900m off the mainland and 3km south of Second Island. The passage between First and the mainland (East Passage) is deep and kelp-free and is fully exposed to the open sea with a tidal flow of 2-3 knots. The adjacent mainland coastline is sparsely vegetated steep cliff topped with grazed diddle-dee and whitegrass camp. Whale Passage (3km wide) separates First Island from rat-free Second Island.



*The old dwelling house on First Passage, 5 April 2009.*

The island is 8km long and varies in width from 2km at the south end to only a few metres at a narrow neck two-thirds of the way up the island. Numerous long vertical-sided gulches slice into the coastline along both its east and west coasts. The west coastline consists of spectacular 30-50m high cliffs with a maximum elevation of 70m at the north end summit. The east coast presents a gentler aspect with a rocky shoreline and occasional boulder beach along the southern half, increasing in ruggedness towards the north end where steep slopes and cliffs dominate the shoreline. A rocky promontory at the southeast corner extends 40m to seaward as intertidal rock platform at the north entrance to East Passage. The interior of the island is undulating, the land rising gently from the east coast shoreline to the western cliffs. There are three ponds towards the south end of the island; these may dry out in a dry summer. Kelp beds fringed the east coast, but there was no kelp offshore and much of the west coast was kelp-free.

## Vegetation

The island was grazed by sheep for over 100 years, resulting in major changes to vegetation and in particular to tussac. Patches of tussac peat erosion were common along the southern half of the east coast, and on-going wind scour and blowing soil was also noted on the west coast around the margins of one of the ponds. However, overall the coastal tussac fringe was recovering well. Three areas of denser tussac totalling approximately 50ha were noted; one at the southeast point, one at the neck and one near the north end. The latter two extended across the full width of the island and appeared to have been less impacted by sheep grazing than the southern areas. Scattered tussac was also present on steep coastal slopes and cliff ledges. Several long wide grassy valleys drained the island from west to east but otherwise the interior was covered in mostly diddle-dee, rock outcrops, clay patches and some patches of tall rush. Along the west coast cliff tops were sections of bare rock and clay, with balsam-bogs further inland. The plants listed below were some of those noted on the transect lines.

*Native plant species:* balsam-bog, bluegrass, diddle-dee, fire liverwort, goosefoot, lesser sea-spurrey, native boxwood, native rush, native stonecrop, shore meadow-grass, tall rush, tussac

*Introduced plant species:* gorse, heath groundsel, sheep's sorrel



*The shearing shed at the old settlement area, First Island, 5 April 2010.*

## Wildlife

The most diverse wildlife habitat was recorded along the southeast corner transect where low cliffs, a sheltered rocky foreshore, exposed boulder beach and intertidal rock platforms were backed by a hinterland of dense tussac. Several tussacbirds were seen here; it is likely that they were juveniles dispersing from nearby Second Island at the end of the breeding season. The coastal rock platform at the southeast point was a favoured loafing spot for birds with 32 Falkland steamer ducks, 92 kelp gulls and a flock of 17 Magellanic oystercatchers recorded. Falkland thrushes and black-chinned siskins were seen in the gorse and boxwood around the house and shearing shed, and large flocks of the latter species were heard calling from the east coast boxwood gullies.

There is a small southern rockhopper penguin colony on the west coast towards the south end of the island. It was unoccupied on the day of survey but on 2 November 2010, 247 pairs were counted (Al Baylis pers comm). Four rock shag colonies were



recorded: two near the north tip on the west coast, one just south of the rockhopper colony, one on the south point cliffs and one near the southeast point. Rock shag roosts were noted at regular intervals along both east and west cliff coastlines. Magellanic penguins were still present on the day of survey and their burrows scattered all along the east coast, extending some way inland in places. Two southern sea lion pups were seen with their mothers on an east coast boulder beach, although there was no indication that this was a breeding site. Historically, there is no record of seals breeding on this island (Hamilton 1934, Strange 1990).

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Gentoo Penguin	Present	1	n/a
Magellanic Penguin	Confirmed	6	n/a
Rock Shag	Confirmed	65	n/a
Black-crowned Night Heron	Probable	3	n/a
Upland Goose	Probable	37	n/a
Kelp Goose	Confirmed	14	n/a
Falkland Steamer Duck	Probable	48	n/a
Crested Duck	Probable	19	n/a
Turkey Vulture	Probable	8	n/a
Variable Hawk	Present	1	n/a
Striated Caracara	Probable	10	n/a
Magellanic Oystercatcher	Probable	25	n/a
Blackish Oystercatcher	Probable	6	n/a
Kelp Gull	Present	92	n/a
Brown-hooded Gull	Present	1	n/a
Tussacbird	Present	4	n/a
Dark-faced Ground-tyrant	Probable	8	n/a
Falkland Thrush	Probable	2	n/a
Southern Sea Lion	Present	18	n/a

*Combined wildlife counts for 2 transects on First Island, 5 and 9 April 2010.*

### Survey effort

On 5 April a 2km coastal transect was completed by one surveyor at the southeast point of the island, and on 9 April a 500m inland transect across the island was completed, starting at the west coast and ending on the beach below the shearing shed on the east coast. The entire coastline was viewed from close inshore

### Human activity

The island has been burnt and grazed by sheep in the past; the last animals were removed in the mid-1990s after more than 100 years of intermittent grazing. The Scott family lived there in the early 1900s (Roddy Napier pers comm), running sheep on both First and Second Islands, followed by Mr Wesel, a German émigré, who lived alone on First Passage from 1919 to 1928, with the help of a single man for the summer months only.

After Wesel died, the islands were purchased by John Hamilton and managed as part of Weddell Island Farm. Hamilton's policy was to restore over-grazed tussac areas on all the islands he bought, so it likely that he initiated the re-planting of tussac along the island's east coast from the neck south to the southeast point; old fences and remnant tussac bogs in straight lines are still visible on the eroding 'black ground'.

Hamilton was said to have wanted to spend his retirement on the island, and the settlement was in the process of being refurbished at the time of his death in 1940. The house and ancillary buildings, sheep dip, corral, fences and 2 remarkable iron

and timber foot bridges across gulches at the 'neck', date from this era. They are all in an advanced state of disrepair and unfit for service or habitation. The last full time resident was the late Tony Felton who spent a year alone on the island during the Second World War and reportedly loved every minute of it.

On disbandment of the Hamilton Estate in 1987, Passage Islands were bought by Ali and Marlane Marsh of Shallow Harbour. They stocked First Passage with sheep for several years until the mid-1990s and built the woolshed at the landing beach below the old settlement. There are currently no livestock on the island and the owners do not intend to re-stock.

In 2006, a French yacht *Moustique* was wrecked in one of the deep gulches just north of the timber bridge, her skipper having been lost at sea off the coast of Argentina; debris from the wreck was still visible in 2009.

### **Invasive species**

Rats sign (burrows, tracks and droppings) was abundant along most coastlines, and particularly in the east coast tussac and around Magellanic penguin burrows. Droppings were also seen at the top of several gulches along the west coast cliffs. No sign of mice was seen. The only invasive plant species recorded was gorse: several bushes were growing in the settlement and nearby paddocks.

### **Ecological value**

The island's restoration potential is very high, given its recovering tussac vegetation, ungrazed status and proximity to rodent-free Second Passage. As long as the island remains ungrazed, the areas of tussac and eroding sandy soil and tussac peat should eventually recover and stabilise. The island was listed as high priority for rat eradication by Derek Brown (2001). A rat eradication operation is planned for September 2011. Restoring the island to its original rat-free status will greatly enhance the island's conservation value and provide opportunity for recolonisation of tussacbirds and possibly Cobb's wrens, common diving petrels and thin-billed prions which breed on nearby Second, Third and Fourth Islands.



*The settlement on First Island in 1937 (photo courtesy of Ali and Marlane Marsh).*

## Flat Wolfe Island

<b>Coordinates:</b>	52° 00.77'S, 59° 40.36'W
<b>Surface area:</b>	3.9 hectares
<b>Coastline perimeter:</b>	1.2 kilometres
<b>Owner:</b>	Raymond & Nancy Poole
<b>Land designation:</b>	Private land
<b>Survey date:</b>	24 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

Flat Wolfe is a low, flat-topped tussac island in the Wolfe Islands group lying in the northern approaches to Ruggles Bay on the east side of Falkland Sound. The nearest mainland coast is 1.1km to the east. The island is aligned roughly southwest-northeast, and is 650m long and no more than 50m wide. It is less than 150m from the north tip of rat-free Wolfe Island, from which it is separated by a shallow reef and dense kelp. Maximum elevation is no more than 5m. Most of the island's coastline is boulder beach with occasional stretches of shingle, much of it covered in kelp debris along the high tide line which, in places, reaches the edge of the tussac. At the south end, a shingle and boulder spit runs towards Wolfe Island and dries out for about 50m length at low water. No permanent freshwater bodies were found although the tussac peat was damp underfoot in places.



*Flat Wolfe viewed from the north end of Wolfe Island, 24 November 2009.*

### Vegetation

Tall dense tall tussac covered all but the southern end of the island. Soil on the south point was mostly a shallow layer of shellgrit covered by a 'lawn' of introduced plants (common orache, pineappleweed, shepherd's purse and goosegrass, dotted with groundsel, annual meadow-grass and procumbent pearlwort) and a scattering of tussac bogs; native yarrow, oval-leaved prickly-burr, wild celery and sea cabbage were also present. At the north tip of the island was a scattering of lesser swine-cress and common stork's-bill growing between the bogs just above the highwater mark.

*Native plant species:* lesser swine-cress, native yarrow, oval-leaved prickly-burr, sea cabbage, tussac, wild celery

*Introduced plant species:* annual meadow-grass, chickweed, common orache, common stork's-bill, goosegrass, groundsel, pineappleweed, procumbent pearlwort, shepherd's purse

## Wildlife

The island abounded with small birds: tussacbirds and Cobb's wrens were seen along the entire coastline but were most numerous along the south end beaches where the 'lawn' area also attracted black-throated finches, black-chinned siskins, Falkland thrushes and tussacbirds. The intertidal areas appeared to provide good foraging for two-banded plovers and white-rumped sandpipers. Brown-hooded gulls, dolphin gulls, kelp gulls and South American terns were present and a large group of the latter were calling noisily from the coast of nearby Wolfe Island. No sign of burrowing petrels was seen in the tussac, and no remains were found in the vicinity of the resident pair of striated caracaras.



*South end of Flat Wolfe Island with large numbers of Cobb's wrens and tussacbirds, 24 November 2009.*

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Rock Shag	Present	8	0
Kelp Goose	Confirmed	4	3
Falkland Steamer Duck	Confirmed	8	4
Crested Duck	Probable	16	6 – 8
Striated Caracara	Confirmed	2	1
Magellanic Oystercatcher	Confirmed	11	3 – 6
Blackish Oystercatcher	Probable	1	1 – 2
Two-banded Plover	Present	40	0
White-rumped Sandpiper	Present	40	0
Dolphin Gull	Present	1	0
Kelp Gull	Present	15	0
Brown-hooded Gull	Present	6	0
South American Tern	Present	4	0
Tussacbird	Confirmed	32	15 – 20
Cobb's Wren	Confirmed	15	10 – 15
Falkland Thrush	Probable	4	4 – 6
Black-throated Finch	Confirmed	5	2 – 5
Black-chinned Siskin	Probable	3	4 – 8
Southern Sea Lion	Present	4	0

*Wildlife counts and breeding population estimates for Flat Wolfe Island, 24 November 2009.*



**Survey effort**

The entire coastline was surveyed, but no inland transect was done.

**Human activity**

Cattle skulls were found at the south end indicating that the island had been stocked in the past.



*Cattle skulls on the 'lawn' at the south end of Flat Wolfe Island,  
24 November 2009.*

**Invasive species**

No invasive plant or animals were found.

**Ecological value**

Flat Wolfe Island is of very high ecological value, being covered in a continuous canopy of ungrazed tussac, free of rodents and having a large population of passerines, most notably Cobb's wrens and tussacbirds.



*Common orache, Flat Wolfe Island, 24 November 2009.*

## Flores Harbour Island

<b>Coordinates:</b>	52° 13.71'S, 59° 35.47'W
<b>Surface area:</b>	26 hectares
<b>Coastline perimeter:</b>	2.3 kilometres
<b>Owner:</b>	Falkland Islands Company
<b>Land designation:</b>	None
<b>Survey date:</b>	28 November 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice Rat eradication May 2011



### Site description

Flores Harbour Island lies in Flores Harbour on the east side of Eagle Passage and 600m off the Lafonia mainland coast. Scattered kelp extends up to 50m offshore, but the pass across to the mainland is mostly kelp-free.



*The lake on Flores Harbour Island with a pair of black-necked swans in the dock beds, 28 November 2009.*

The island has an irregular, gently curved coastline with a small bay on the southwest coast, another on the northeast coast and a third on the southeast coast. The island's most striking feature is a shallow oval-shaped lake which, when full, occupies about 6ha of the island's interior; it is dammed to seaward on the west coast by a 50m long boulder beach storm ridge. On the east side of the lake is a small pond, also separated from the sea by a boulder beach. Both the lake and pond may dry out completely during dry summers, but on the day of survey the former was about 200m wide and the pond 50m wide. The east coast shoreline is mostly gently sloping shingle and rounded boulders with occasional sections of flat stones, sand and shellgrit. The more exposed northwest-facing coast is mostly rounded boulders along the top of the shoreline and intertidal bedrock with one short section of low cliff. The southwest-facing coast is predominantly medium sloping boulder beach, except

at the westernmost point where there are 2m high cliffs above a bedrock shoreline. Large accumulations of beached kelp and timber debris were found in the cove on the southwest coast.

### Vegetation

The island's 21ha of vegetated land was covered in mostly open tussac. There was also an unusually varied mix of introduced grasses and annuals. The tussac had recovered well from past grazing although in many places the bogs were widely spaced and the ground between colonised by diddle-dee and other associated species including small-fern and native wood-rush mixed with sheep's sorrel and wavy hair-grass. Patches of berry-lobelia, Falkland strawberry, pigvine and sword-grass were common on the northern side of the lake, and wild celery and dock sp. (probably curled dock) were particularly abundant around the lake. The latter had colonised the entire perimeter of the lake; flower stems were over one metre tall and created a remarkable reed bed type habitat. Stinging nettles mixed with wild celery over knee height covered most of the lake's eastern shore. Along the south and east beach shoreline, common orache and sheep's sorrel formed a short sward between scattered tussac bogs and beach shingle and boulders. A few patches of sea knot-grass were found at the top of the boulder ridge that separates the lake from the small cove on the southwest coast.



*The west coast boulder beach on Flores Harbour Island, ideal Cobb's wren habitat, 28 November 2009.*

*Native plant species:* Antarctic bedstraw, berry-lobelia, diddle-dee, emerald-bog, Falkland strawberry, fire liverwort, Fuegian fescue, hook-sedge, lilaeopsis, mountainberry, native rush, native wood-rush, native yarrow, pigvine, prickly-burr, sea knot-grass, small-fern, stitchwort, sword-grass, thrift plantain, tussac, wavy hair-grass, wild celery, wiry azorella

*Introduced plant species:* annual meadow-grass, chickweed, common orache, dock sp., daisy, goosegrass, groundsel, heath groundsel, pineappleweed, procumbent pearlwort, sheep's sorrel, shepherd's purse, smooth-stalked meadow-grass, stinging nettle



## Wildlife

The island was most notable for the abundance of wildfowl gathered on the lake. Over 200 speckled teal were resting and feeding here, with upland geese, brown-hooded gulls, South American terns and black-crowned night herons. A pair of black-necked swans was possibly nesting in the dock beds on the west side of the lake; turkey vultures roosted on the small island and nested in the dock. Passerines were numerous: a small flock of black-chinned siskins, a few black-throated finches, a pair of long-tailed meadowlarks and the occasional tussacbird were all feeding on the short sward around the lake, and grass wrens called from the dock stalks along the lake margin. Although several tussacbirds were seen, this species is unlikely to breed successfully on the island due to the presence of rats, although pairs may attempt to nest. No Falkland thrushes or dark-faced ground-tyrants were seen, nor any Cobb's wrens. Magellanic oystercatchers nested on the greens on the south and east coasts. Two Magellanic penguins were seen and their burrows were most abundant in the tussac along the northwest-facing coast.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	2	50 – 150
Rock Shag	Present	33	0
Black-crowned Night Heron	Probable	10	3 – 8
Upland Goose	Confirmed	34	10 – 20
Ruddy-headed Goose	Confirmed	11	2 – 5
Kelp Goose	Confirmed	13	5 – 10
Black-necked Swan	Probable	2	1
Speckled Teal	Present	233	0
Silver Teal	Present	2	0
Falkland Steamer Duck	Confirmed	71	6 – 12
Crested Duck	Confirmed	16	5 – 10
Turkey Vulture	Confirmed	18	10 – 15
Magellanic Oystercatcher	Confirmed	23	6 – 10
Blackish Oystercatcher	Confirmed	9	4 – 6
Dolphin Gull	Present	10	0
Kelp Gull	Present	30	0
Brown-hooded Gull	Present	20	0
South American Tern	Present	26	0
Tussacbird	Present	7	0
Grass Wren	Confirmed	2	4 – 8
Black-throated Finch	Confirmed	5	5 – 10
Long-tailed Meadowlark	Probable	2	1 – 5
Black-chinned Siskin	Probable	16	5 – 15
Snowy Sheathbill	Present	3	0
Southern Sea Lion	Present	2	0

*Wildlife counts and breeding population estimates for Flores Harbour Island, 28 November 2009.*

## Survey effort

The entire coastline was surveyed (2.3km) and an inland transect of 1.3km completed from north to south across the island and around the eastern edge of the lake. Survey conditions were mostly favourable except along the exposed northwest coast where wind and waves made it difficult to hear birds singing inland.

## Human activity

The island was regularly stocked with cattle and horses for many years. The last livestock were taken off in the 1980s.

### **Invasive species**

Rat sign (fresh droppings and burrows) was very common and typical of Norway rats. Most activity was noted at the top of the beach in the southwest coast cove and around the margins of the lake where droppings, tracks in vegetation and burrows were seen. Although not usually considered to be an invasive plant species, curled dock (to be confirmed) had colonised the lake margin, creating favourable breeding habitat for several species of birds. No mouse sign was found.



*Short sward of common orache and pineappleweed in scattered tussac, east coast of Flores Harbour Island, 28 November 2009.*

### **Ecological value**

With tussac recovering well from past grazing and a unique wetlands habitat around the central lake, Flores Harbour Island has very high ecological value, despite the presence of rats. The rat eradication operation conducted in May 2011 is expected to greatly enhance its ecological value, particularly given the proximity of source populations for tussacbirds and Cobb's wrens on nearby Mid Island and Speedwell Island.



*Turkey vulture chick on nest in the dock beds, Flores Harbour Island, 28 November 2009.*

## George Island

<b>Coordinates:</b>	52° 21.00'S, 59° 46.50'W
<b>Surface area:</b>	2400 hectares
<b>Coastline perimeter:</b>	42 kilometres
<b>Owner:</b>	Christopher & Lindsay May
<b>Land designation:</b>	Private land Important Bird Area
<b>Survey date:</b>	3 May 2010
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

George Island is part of the Speedwell Island group, which includes Speedwell Island to the north, Barren Island to the south and a number of tussac islands, all lying on the west side of Eagle Passage. George, Barren and Speedwell are stocked with sheep and cattle. Past burning has destroyed much of the original coastal tussac and resulted in erosion of the underlying tussac peat, exposing areas of bare rock and clay. The current owners have begun a programme of habitat restoration: two areas of eroding tussac peat have been fenced off and tussac is being replanted to provide both wildlife habitat and controlled grazing for livestock.



*Shoreline surveyed on George Island, Knob Island in the background, 3 May 2010.*

The area surveyed was a 1.7km section of coastline at the north end of the island's east coast, adjacent to Knob Island. The coast here is mostly boulder beach with sections of shingle on the point just opposite the island. There are intermittent stretches of intertidal rock platform below the boulder beaches. The latter were covered in quantities of kelp debris with holdfasts and small boulders thrown up well above the high tide mark. The coastal slopes above the beach are level and topped with some remnant tussac peat banks, brick-red stones and clay patches indicating severe burning in the past.

### Vegetation

The vegetation along the 1.7km section of surveyed coastline was grazed year-round by sheep, and was mostly either diddle-dee or a short sward dominated by smooth-stalked meadow-grass and sheep's sorrel. A few areas of shallow tussac peat and some peat banks were all that remained of the original tussac vegetation that once



fringed the coastline. Salt-tolerant species including native stonecrop, thrift plantain, *lilaeopsis*, Skottsberg's buttercup and lesser sea-spurrey grew along the top of the beach among the small rounded boulders. The rocks at the top of the beach on the point north of Knob Island were covered in yellow lichen, indicating a high level of nutrient input from wildlife at some point in the past.



*A midden of seal bones exposed in eroding tussac peat, George Island, 3 May 2010.*

*Native plant species:* diddle-dee, emerald-bog, lesser sea-spurrey, lesser swine-cress, *lilaeopsis*, Fuegian fescue, native rush, native stonecrop, sea cabbage, Skottsberg's buttercup, thrift plantain, wiry azorella

*Introduced plant species:* goosegrass, groundsel, procumbent pearlwort, sheep's sorrel, shepherd's purse, smooth-stalked meadow-grass

### **Wildlife**

Tussacbirds were the most abundant species seen along the transect line. They were foraging in the kelp debris along the top of the beach and at any one time at least half a dozen were present. A total of 9 steamer duck pairs were distributed regularly along the coast and a group of 30 were gathered in one area. Only 2 pairs of kelp geese were seen. Ten Falkland thrushes and several black-throated finches were recorded, but only one dark-faced ground-tyrant. Cobb's wrens were present but at a surprisingly low density along the 1.7km of coastline surveyed. Only 3 birds were seen, including a probable breeding pair; they were within about 50m of each other in one of the two areas encountered that had Magellanic penguin burrows in remnant tussac peat banks. Given the lack of vegetation cover along this barren coastline, it is likely that burrows and crevices in the peat banks are the only shelter and nesting sites available for this species which appears to thrive best in areas with a coastal tussac fringe. This is shown quite clearly by comparing the density of Cobb's wrens on nearby Knob Island (10 birds/km) with that on the grazed George Island coastline (0.5 birds/km).

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Probable	0	n/a
Rock Shag	Present	23	n/a
Upland Goose	Probable	13	n/a
Kelp Goose	Probable	8	n/a
Falkland Steamer Duck	Probable	48	n/a
Crested Duck	Probable	17	n/a
Magellanic Oystercatcher	Probable	10	n/a
Blackish Oystercatcher	Probable	1	n/a
Kelp Gull	Present	9	n/a
Tussacbird	Confirmed	74	n/a
Dark-faced Ground-tyrant	Probable	1	n/a
Cobb's Wren	Confirmed	3	n/a
Falkland Thrush	Probable	10	n/a
Black-throated Finch	Probable	4	n/a

*Wildlife counts from coastal transect on George Island, 3 May 2010.*

### Survey effort

One surveyor completed a 1.7km coastal transect in good conditions, with a light dry northerly wind. The counts and breeding status records in the above table apply only to the transect line on the day of survey and not to the entire island.

### Human activity

This section of coastline is currently grazed year-round by sheep. In the past it has been severely burnt. In an area of remnant tussac peat was a small heap of very old seal bones embedded in the compacted peat.

### Invasive species

No invasive plants or animals were recorded.

### Ecological value

George Island is of high ecological value due to its rodent-free status, the variety of habitats encountered across the island and the abundance of endemic bird species and nesting southern giant petrels. Recovery of coastal tussac habitat by replanting tussac and erecting fences to prevent over-grazing by livestock would further enhance its value. The island is included in the Speedwell Island Group Important Bird Area FK16.



*Cobb's wren on peat bank above the beach, George Island, 3 May 2010.*

## Halfway Cove Island

<b>Coordinates:</b>	52° 12.49'S, 59° 41.22'W
<b>Surface area:</b>	7.7 hectares
<b>Coastline perimeter:</b>	1.1 kilometres
<b>Owner:</b>	Christopher and Lindsay May
<b>Land designation:</b>	Private land Important Bird Area
<b>Survey date:</b>	28 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

This small un-named tussac island lies 200m off the east coast of Speedwell Island on the north side of Halfway Cove. A 50m long boulder and shingle spit extends off the west corner of the island in the direction of Speedwell Island, with kelp all the way across the shallow passage; at very low tides, it is possible to wade across. A boulder and shingle beach covered in kelp debris runs around the southwest facing coast while the remaining shoreline is level intertidal rock platform backed by 1-3m high cliffs. No sources of permanent freshwater were seen but seeps were abundant along the low rock banks on the south coast.



*Diddle-dee heath area on Halfway Cove Island; Speedwell settlement in the background, 28 November 2009.*

### Vegetation

The island was mostly covered in tussac, with a central diddle-dee heath interior of just over 1 hectare. The tussac has been used for winter grazing for sheep in recent years; bogs showed no sign of damage and there was new growth of wavy hair-grass on the inland diddle-dee heath. Mountainberry, sheep's sorrel, wavy hair-grass and native rush with a scattering of small-fern, field mouse-ear and native wood-rush were common amongst the diddle-dee. Along the north coast were small areas of coastal greens of shortly cropped annual meadow-grass, smooth-stalked meadow-grass with some Yorkshire fog, sheep's sorrel and daisies. At the pens and adjoining race on the west point was a dense stand of Fuegian couch mixed with wavy hair-grass, common orache, chickweed, shepherd's purse and pineappleweed.

*Native plant species:* diddle-dee, field mouse-ear, fire liverwort, Fuegian couch, mountainberry, native rush, native wood-rush, small-fern, tussac, wavy hair-grass, wild celery

*Introduced plant species:* annual meadow-grass, chickweed, common orache, daisy, pineappleweed, procumbent pearlwort, shepherd's purse, smooth-stalked meadow-grass, Yorkshire fog

## Wildlife

Passerines were abundant on the inland diddle-dee heath and tussac margin: black-throated finches (with fledglings), tussacbirds and a Falkland thrush were seen, and a long-tailed meadowlark and at least three male grass wrens were calling. A striated caracara was present on territory on the low coastal cliffs at the north end. One family each of kelp geese and Falkland steamer ducks, and two of crested ducks were recorded. A black-crowned night heron, several blackish oystercatchers and tussacbirds with fledglings were feeding in the intertidal area. Only two Cobb's wrens were seen, both on the beach at the west end of the island; this may be due to the small size of the island and the comparatively short length (350m) of boulder beach and kelp debris shoreline. No upland geese were seen but a male ruddy-headed goose was on territory and four silver teal flew over. Magellanic penguins nested in small numbers, mostly in the east coast tussac. Southern sea lions have been known to breed on the island (Christopher May pers comm) but only one bull was present on the day of survey.



*Halfway Cove Island viewed from Speedwell Island, 200m distant, 28 November 2009.*

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	2	5 – 20
Black-crowned Night Heron	Present	1	0
Ruddy-headed Goose	Confirmed	1	1 – 2
Kelp Goose	Confirmed	8	3 – 5
Falkland Steamer Duck	Confirmed	4	2
Silver Teal	Present	4	0
Crested Duck	Confirmed	18	4 – 6
Turkey Vulture	Present	1	0
Striated Caracara	Confirmed	1	1
Magellanic Oystercatcher	Probable	2	1 – 3
Kelp Gull	Present	4	0
Tussacbird	Confirmed	20	5 – 15
Grass Wren	Confirmed	4	4 – 6
Cobb's Wren	Confirmed	2	2 – 4
Falkland Thrush	Probable	3	3 – 5
Black-throated Finch	Confirmed	6	2 – 5
Long-tailed Meadowlark	Confirmed	1	1 – 3
Black-chinned Siskin	Present	1	0
Southern Sea Lion	Present	1	0

*Wildlife counts and breeding population estimates for Halfway Cove Island, 28 November 2009.*



**Survey effort**

The entire coastline (1.1km) was surveyed, and a 450m transect completed from the pens at the west point inland to the central area of diddle-dee heath. Weather conditions were ideal with a light westerly and intermittent sunshine.

**Human activity**

The island has been stocked with a small flock of rams for a few weeks each winter since about 2005, and a set of sheep pens and a manguera erected at the west point. In the past, the island was also grazed by bullock (Christopher May pers comm), which may have contributed to the opening up of the tussac in the centre of the island and an increase in the area of diddle-dee heath.



*Pens and race at the west corner of Halfway Cove Island, 28 November 2009.*

**Invasive species**

No invasive species were found.

**Ecological value**

This island's ecological value is very high due to its rat-free status and healthy tussac stands, combined with a shoreline that includes ideal Cobb's wren habitat and a diddle-dee heath interior and coastal greens that provide excellent foraging habitat for passerines. The island is included in the Speedwell Island Group Important Bird Area FK16.



## Knob Island (George Island)

<b>Coordinates:</b>	52° 19.155'S, 59° 41.504'W
<b>Surface area:</b>	0.5 hectares
<b>Coastline perimeter:</b>	0.3 kilometres
<b>Owner:</b>	Christopher & Lindsay May
<b>Land designation:</b>	Private land Important Bird Area
<b>Survey date:</b>	3 May 2010
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

This small tussac island lies 300m off George Island, approximately 2km south of Strike Off Point on the island's east coast. It is roughly oval-shaped, flat-topped and no more than 5m elevation. About 100m due south of the island is a large low reef that remains dry at high water. Kelp beds surround the island and reef, and also extend north across to the George Island shore. Most of the coastline is rounded boulder beach, with a section of bedrock and 10m wide intertidal rock platform on the east coast. At the west end of the island the boulder beach extends west as a spit about 30m long at low water.



*Knob Island viewed from the coast of George Island, 3 May 2010.*

### Vegetation

The island was entirely covered in tall tussac, with bogs over 2.5m tall in the centre and relatively widely spaced. The depth of tussac peat varied, with bogs on the south side of the island growing in a shallow layer about 40cm deep over the top of boulders. No other plant species were recorded.

*Native plant species:* tussac

*Introduced plant species:* none

### Wildlife

For its small size, Knob Island had an exceptional abundance of tussacbirds and Cobb's wrens, the latter being seen at regular intervals around the entire coastline and at very high density in comparison with the adjacent coastline on George Island. The reef and kelp beds provided foraging and resting areas for flocks of dolphin gulls,

kelp gulls and brown-hooded gulls. Crested ducks, Falkland steamer ducks and Magellanic oystercatchers were also present and probably breed in small numbers. No Magellanic penguin burrows were seen. Five southern sea lions were asleep in a frequently used haul out area in the tussac.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Rock Shag	Present	200	n/a
Falkland Steamer Duck	Probable	10	n/a
Crested Duck	Probable	5	n/a
Magellanic Oystercatcher	Probable	6	n/a
Dolphin Gull	Present	3	n/a
Kelp Gull	Present	4	n/a
Brown-hooded Gull	Present	13	n/a
Tussacbird	Confirmed	21	n/a
Cobb's Wren	Confirmed	5	n/a
Falkland Thrush	Probable	2	n/a
Snowy Sheathbill	Present	1	n/a
Southern Sea Lion	Present	5	n/a

*Wildlife counts from coastal transect on Knob Island, 3 May 2010.*

### Survey effort

One surveyor completed a coastal transect of the entire 300m long coastline, in favourable conditions with a light northerly wind and warm sunny conditions. No population estimates were made as the survey period was outside the breeding season.

### Human activity

The island does not appear to have been stocked, although it is not unlikely that it would have been occasionally used for fattening beef.

### Invasive species

No invasive plants or animals were found.

### Ecological value

Being a rodent-free island with a dense stand of tussac that has probably never been grazed, the island is considered to have a very high ecological value. It is part of the Speedwell Island Group Important Bird Area FK16.



*Cobb's wren on Knob Island, 3 May 2010.*

## Knob Island (Port Stephens)

<b>Coordinates:</b>	52° 07.85'S, 60° 47.10'W
<b>Surface area:</b>	4 hectares
<b>Coastline perimeter:</b>	1 kilometre
<b>Owner:</b>	Peter & Ann Robertson
<b>Land designation:</b>	Private land
<b>Survey date:</b>	25 October 2009
<b>Rodent status:</b>	Rat-free; no evidence of mice



### Site description

This oval-shaped tussac island is about 280m long and less than 200m wide, and rises to a central rocky ridge line 25m above sea level. It lies in the centre of the sheltered waters of Port Stephens, 900m northwest of Knoll Island and 350m north of Knoblet Island.



*Distinctive orange lichen on the summit of Knob Island, 25 October 2009.*

There was virtually no kelp around the island, except for a small sparse patch at the south end. The shoreline was gently sloping bedrock, no more than 2-3m wide at low water with barnacles and small mussels at the lower edge. The widest area (at the southwest corner) dried out to a 10m wide level rock platform. At highest spring tides, the sea comes right up to the tussac leaving very little shoreline exposed. There were no boulders or accumulations of kelp along the coast, and no permanent freshwater sources or significant seepage areas.

### Vegetation

Tussac covered the entire island in a dense continuous canopy, apart from the rocky point at the north end. The tallest bogs were 2-2.5m high on deep peat, closely spaced but with well marked tracks formed by the repeated passage of Magellanic penguins between bogs on the lower slopes. No introduced plant species were found and there was no sign that the island had been burnt. A distinctive rock outcrop runs from north to south down the summit of the island. It was covered in bright orange lichens, indicative of nitrogen enrichment, possibly from roosting turkey vultures and striated caracaras.

*Native plant species list:* tussac, water-starwort, wild celery  
*Introduced plant species:* none

### Wildlife

Magellanic penguin sign (claw marks on trampled mud slopes in tussac above the beach) were seen at regular intervals along the east and south coasts. Two recently visited burrows were recorded, but no birds seen or heard. Burrows appeared to be most numerous along the lower slopes of the east coast and up to about 20m above sea level. King shags, rocks shags and 3 sheathbills were in the roost at the conspicuous rocky point at the north end.

Tussacbirds were seen regularly along the coast and also inland. Two old nest entrances were found in the tussac peat bank on the east coast a few metres above the beach. At least 6 grass wrens were heard singing at any one time. No Cobb's wrens were seen despite the absence of rats and a healthy cover of tall dense tussac. The island's small size, bedrock shoreline and absence of boulder, shingle or sand beaches or any accumulations of kelp together with a narrow intertidal zone may make it unsuitable for Cobb's wrens.

Turkey vultures roost on the island and probably breed although no nests were found. A single pair of striated caracaras was seen at the north end of the summit outcrop on territory. Further surveys may also reveal the presence of grey-backed storm-petrels as fresh remains of this species were found on nearby Knoblet Island.

One adult male sea lion was seen close inshore, and one female was asleep in the tussac. There is no indication that they breed here.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	2	10 – 50
Rock Shag	Present	8	0
King Shag	Present	6	0
Kelp Goose	Probable	2	1
Falkland Steamer Duck	Confirmed	8	5
Crested Duck	Probable	2	1
Turkey Vulture	Probable	3	1 – 3
Striated Caracara	Confirmed	2	1
Blackish Oystercatcher	Probable	2	1
Tussacbird	Confirmed	11	5 – 10
Grass Wren	Confirmed	6	5 – 8
Snowy Sheathbill	Present	3	0
Southern Sea Lion	Present	2	0

*Wildlife counts and breeding population estimates for Knob Island, 25 October 2009.*

### Survey effort

A total of 3 hours was spent on the island surveying the entire coastline and completing a 400m inland transect. Weather conditions were blustery with hail squalls, so depending on how much shelter was available, observations were at times limited by the wind, making it difficult to hear birds in the tussac.

### Human activity

There was no sign of the island having been grazed, although 2 beef were placed here in the 1950s (Peter Robertson pers comm). Potato plants were seen growing here in the 1980s (Diane Towersey pers comm) and Peter Robertson confirmed that in the past, a 'potato patch' was cultivated at the north end of the island by Port



Stephens residents. No potato plants were seen on the day of survey, although it may have been too early in the season for them to have sprouted

#### **Invasive species**

No signs of rats or mice were seen.

#### **Ecological value**

The ecological value of this island is high, as it is an ungrazed tussac island with no rodents. Of significance is the fact that rats have not invaded by swimming the 900m of kelp-free waters that separate it from rat-infested Knoll Island.



*Narrow bedrock intertidal foreshore on Knob Island, Knoblet Island in the background, 25 October 2009.*



## Knoblet Island

<b>Coordinates:</b>	52° 08.11'S, 60° 42.32'W
<b>Surface area:</b>	1.3 hectares
<b>Coastline perimeter:</b>	0.5 kilometres
<b>Owner:</b>	Peter & Ann Robertson
<b>Land designation:</b>	Private land
<b>Survey date:</b>	6 November 2009
<b>Rodent status:</b>	Rat-free; no evidence of mice



### Site description

This un-named island lies 350m south of Knob Island and 850m west of Knoll Island in Port Stephens. A conspicuous unvegetated 5m high rock lies 100m west of the island. It has a steeply sloping shoreline and at high tides the sea reaches the tussac edge. The intertidal zone is steeply sloping bedrock fringed with a thin band of scattered kelp. The slope is gentler on the north and west coasts, creating a 10-20m wide intertidal shelf. Knoblet Island is notable for its 3 distinctive summits which form an attractive interior of rock outcrops amid dense tussac.



Knoblet Island, Indian Village in the background, 6 November 2009.

### Vegetation

The island was covered in dense tall tussac growing in a thick layer of tussac peat which did not appear to have ever been burnt. An area of sandy peat soil with a variety of native species and also several introduced plants, including Yorkshire fog and dozens of prickly sow-thistles, was found below the northernmost rock outcrop. The rocks were covered in a luxuriant growth of orange lichens, *Ramalina* sp. and a mix of emerald-bog, native wood-rush and Fuegian fescue.

*Native plant species:* coastal nassauvia, diddle-dee, emerald-bog, lesser swine-cress, Fuegian fescue, mountainberry, native wood-rush, native yarrow, oval-leaved prickly-burr, tussac, water-starwort, wild celery

*Introduced plant species:* goosegrass, groundsel, heath groundsel, prickly sow-thistle, procumbent pearlwort, sheep's sorrel, smooth-stalked meadow-grass, Yorkshire fog

## Wildlife

One pair of striated caracaras was nesting on the southern outcrop. Fresh remains (feathers and a leg) of grey-backed storm-petrels were found nearby in dense tussac which was ideal breeding habitat for this species. No turkey vultures were seen but numerous pellets indicate they may roost here. Tussacbirds were numerous and one grass wren was heard singing. No Cobb's wrens were seen. Their absence may be due to lack of suitable foraging habitat along the shoreline.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Rock Shag	Present	14	0
Kelp Goose	Confirmed	4	2
Falkland Steamer Duck	Confirmed	3	2
Crested Duck	Probable	2	1
Striated Caracara	Confirmed	2	1
Blackish Oystercatcher	Confirmed	2	1
Magellanic Penguin	Confirmed	2	10 – 50
Grey-backed Storm-petrel	Uncertain	1	Unknown
Tussacbird	Confirmed	8	5 – 10
Dark-faced Ground-tyrant	Probable	1	1 – 3
Falkland Grass Wren	Confirmed	2	1 – 3
Falkland Thrush	Probable	2	1

*Wildlife counts and breeding population estimates for Knoblet Island, 6 November 2009.*

## Survey effort

Two and a half hours were spent ashore. The entire coast was surveyed and the area around the summit rock outcrops was searched for burrowing petrels.

## Human activity

There was no indication that the island had ever been grazed.

## Invasive species

No rat or mouse sign was found and there were no invasive plants.

## Ecological value

The island has a very high ecological value as an ungrazed and rodent-free tussac island. Its population of tussacbirds presents a reliable source population for nearby Knoll Island, following rat eradication.



*Distinctive lichen-covered outcrops on Knoblet Island, 6 November 2009.*

## Knoll Island

<b>Coordinates:</b>	58° 08.51'S, 60° 46.25'W
<b>Surface area:</b>	106 hectares
<b>Coastline perimeter:</b>	4.3 kilometres
<b>Owner:</b>	Peter & Ann Robertson
<b>Land designation:</b>	Private land
<b>Survey date:</b>	24 & 26 Oct, 7 November 2009
<b>Rodent status:</b>	Rat-free; no evidence of mice Rat eradication July 2010



### Site description

Knoll Island is located in the centre of the enclosed waters of Port Stephens. It is roughly circular in outline with a maximum elevation of 50m above sea level. The coastal slopes on the east, north and west sides of the island are mostly of gentle gradient, while the south coast has a 3-5m high cliff shoreline which rises steeply to the southern peak. The skyline is topped with peaks of conspicuous rock outcrops, giving the island a very distinctive silhouette from all directions.

The nearest mainland point is 730m to the west on the south shore of Port Stephens at Indian Village. The closest island is rat-free Knoblet Island, 730m to the northwest. Rat-free Knob Island is 830m to the northwest.



*North coast of Knoll Island, Porvenir anchored off the corral, 7 November 2009.*

Most of the coast is bedrock which forms a narrow intertidal rock platform, with the exception of a 100m stretch of flat rocks in front of the corral on the east coast. The tidal range in Port Stephens is 3m at springs and on the highest tides, the sea comes right up to the edge of the tussock. There was very little kelp washed up along the shoreline and kelp beds around the island were sparse. Freshwater was relatively scarce, and the only stream of any consequence drained the broad valley behind the corral. It appeared to be permanent although flow may reduce significantly in the



summer months. There was a smaller stream 500m south of the corral, and seepage banks drained the coast between the two streams.

### **Vegetation**

The number and diversity of native plant species recorded, and the abundance of Falkland rock-cress, give the island a high botanical value. Continuous stands of dense tussac covered the north tip and south coast slopes of the island, extending nearly to the summits in places with bogs up to 2.5m high on a deep layer of tussac peat. Discontinuous stands of tall tussac bogs interspersed with areas of soft tussac peat soil fringed the remaining coastlines and showed signs of past over-grazing. The inland boundary of tussac was fringed with wavy hair-grass and bluegrass, merging with the island's diddle-dee interior. In total, tussac covered over 60% of the island (72ha). There were two areas where soil erosion had resulted in extensive areas of bare peat and soil creep. Both were on the east coast; one was in the valley behind the corral and the other at the top end of a valley situated 500m to the south. Sheep's sorrel and patches of smooth-stalked meadow-grass colonised areas of bare tussac peat, with a sparse scattering of tussac bogs in places. Localised areas of eroding tussac peat, mostly in the form of wind-blown peat banks, appeared to have stabilised.



*Falkland rock-cress on Knoll Island, 7 November 2009.*

The interior was mostly diddle-dee heath with several large areas of bluegrass meadows. Exposed burnt clay patches on the east coast indicated severe burning at some point in the distant past. Fire combined with grazing has resulted in significant changes to the vegetation, with large areas of diddle-dee and introduced grasses replacing bluegrass and tussac. Those areas that were inaccessible to livestock had unusual assemblages of plants, particularly at the north end's summit outcrops. Here there was a mix of bluegrass meadow species which included field mouse-ear, scurvy-grass, wild celery, Falkland strawberry and dozens of Falkland rock-cress plants growing amongst bluegrass in the sheltered overhangs and crevices around the lichen-covered outcrops.

The vegetation around the corral was a mix of sheep's sorrel, smooth-stalked meadow-grass and diddle-dee. Diddle-dee also covered the area between the corral and the north end tussac. Prickly-burr patches were abundant along the east coast, in both diddle-dee and, unusually, in tussac peat soil with sheep's sorrel - possibly an indication of on-going recovery from soil creep. A small patch of unidentified cudweed was found on the west coast, and a single patch of sword-grass on the east coast by the south stream. Coastal nassauvia and wild celery were found on the steep rock ledges of the south coast summit.

On 31 December 2010, just over a year after this survey was done, lightning struck Knoll Island, causing fires to burn deep in the tussac peat and burning most of the island's vegetation including the areas of Falkland rock-cress and bluegrass.

*Native plant species:* balsam-bog, bluegrass, buttonweed, coastal nassauvia, christmas-bush, cudweed sp., diddle-dee, emerald-bog, Falkland rock-cress, Falkland strawberry, field mouse-ear, fire liverwort, Fuegian fescue, lesser swine-cress, lilaeopsis, mountainberry, native rush, native stonecrop, native wood-rush, native yarrow, oval-leaved prickly-burr, pigvine, prickly-burr, scurvygrass, small-fern, sword-grass, tall-fern, tussac, water-starwort, wavy hair-grass, wild celery

*Introduced plant species:* annual meadow-grass, chickweed, groundsel, heath groundsel, procumbent pearlwort, sheep's sorrel, smooth-stalked meadow-grass



*The interior of Knoll Island, with diddle-dee heath and tussac scattered on bare tussac peat, Knob Island in the background, 7 November 2009.*

### **Wildlife**

The northern end of the island, with its distinctive rock outcrops emerging from dense tussac, appeared to be excellent habitat for passerines. A pair of crested caracaras was holding territory on the lower western outcrop where a nest site was found (possibly being built). Turkey vulture pellets were found on the rock outcrop adjacent, and two birds were seen in the area, although overall this species was not common.

Magellanic penguin burrows were abundant, many of them occupied, and this north point appeared to be their main breeding area as few burrows were seen elsewhere. A pair was present on the steep tussac slopes along the south coast, and no doubt there are others here and there but not in high numbers; no burrows were seen inland in the diddle-dee. A single adult striated caracara was seen at the south end carrying nesting material. Black-crowned night herons roost and probably nest under the rock overhangs along the south coast. Rock shags were present on the south coast cliffs; the birds were in the early stages of breeding and although there was no sign of nest building, this appeared to be a probable breeding site.



Grass wrens were common, singing in the dense tussac on the south, west and north coasts. However, most passerines were seen in the valley behind the corral: Falkland thrushes, long-tailed meadowlarks, black-chinned siskins and a male black-throated finch. Dark-faced ground-tyrants were numerous around the inland outcrops where they probably nested, and also along the south coast. One tussacbird was seen on the beach at the corral, probably a visitor from nearby rat-free Knob or Knoblet Islands. No Cobb's wrens were seen.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	10	100 – 300
Rock Shag	Confirmed	45	20 – 30
Black-crowned Night Heron	Probable	6	3 – 5
Upland Goose	Confirmed	13	10 – 15
Ruddy-headed Goose	Confirmed	7	3 – 5
Kelp Goose	Confirmed	16	10 – 15
Falkland Steamer Duck	Confirmed	29	15 – 20
Crested Duck	Confirmed	17	6 – 10
Turkey Vulture	Probable	7	1 – 3
Striated Caracara	Confirmed	1	1
Crested Caracara	Confirmed	1	1
Magellanic Oystercatcher	Confirmed	11	5 – 8
Blackish Oystercatcher	Confirmed	6	3 – 5
Tussacbird	Present	1	0
Dark-faced Ground-tyrant	Probable	10	5 – 10
Falkland Grass Wren	Confirmed	13	10 – 15
Falkland Thrush	Probable	2	2 – 5
Black-throated Finch	Probable	1	1 – 3
Long-tailed Meadowlark	Probable	5	2 – 5
Black-chinned Siskin	Probable	7	5 – 10
Southern Sea Lion	Present	3	0

*Wildlife counts and breeding population estimates for Knoll Island, 24 - 26 October 2009.*

### Survey effort

A landing was made on 24 October when a 1.6km coastal transect was completed from the corral north around to a point midway along the west coast, followed by a 1.2km inland transect across the centre of the island and returning to the corral. On 26 October, a landing was made to survey the inland tussac boundary and southern summit slopes, followed by a 1.1km coastal transect from the corral south to the start of the south coast cliffs. This transect was continued by boat for 1.5km around to west coast, with the boat positioned close inshore. Coverage of the last 500m was incomplete due to an increasing onshore wind. A third survey was carried out on 7 November when the inland area around the north end outcrops was examined.

### Human activity

All livestock were removed at least 20 years ago, after decades of winter grazing by cattle and horses and occasionally sheep. Horses were swum over from the nearest mainland point at Indian Village, 750m away. The corral and manguera on the east coast were used for handling both cattle and horses (Peter Robertson pers comm)

### Invasive species

Rat sign was found around the entire coastline, but was most abundant on the east coast; droppings, nest material, burrows and feeding stations with limpet shells were found under rock ledges near the seepage areas between the corral and the stream in the south bay. Some droppings were also found at the north tip rock outcrops and in tussac on the west coast. Very little sign was seen in the interior bluegrass and

diddle-dee areas. Overall, rats appeared to be most common in areas with freshwater and around Magellanic penguin burrows. No mouse sign was found

Rat eradication was considered a high priority for this island. In July 2010, the island was baited with 1,030kg of Pestoff (active ingredient 20ppm brodifacoum), applied at 9.7kg/ha (Poncet 2010). The island will be checked for rat sign in 2012 to confirm the success of the operation in eradicating rats.

### **Ecological value**

The island is of high ecological value, being an ungrazed tussac island situated near rat-free Knob and Knoblet Islands. In terms of restoration potential, the island is ranked as very high due to its varied wildlife and botanical habitats, its proximity to two rat-free islands (Knob and Knoblet Islands, 750m distant) and landowner support for rat eradication. The population of breeding tussacbirds and possibly also grey-backed storm-petrels on the two adjacent rat-free islets are potential sources of colonising birds for Knoll Island (one tussacbird was seen on Knoll Island during the surveys).



*Grass wren in tussac, Knoll Island, 24 October 2009.*

## Ladrillo Island

<b>Coordinates:</b>	52° 12.22'S, 59° 38.21'W
<b>Surface area:</b>	2.6 hectares
<b>Coastline perimeter:</b>	0.7 kilometres
<b>Owner:</b>	Falklands Landholdings
<b>Land designation:</b>	None
<b>Survey date:</b>	28 November 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice



### Site description

Ladrillo Island is situated in Eagle Passage, about 400m off the Lafonia coast on mainland East Falklands. The 350m passage between the island and the mainland is strewn with thick kelp, and the island surrounded by kelp beds. A shingle spit runs from the east point of the island towards the mainland and at very low tide dries for at least 200m from the island and at least 100m from the mainland, with the deepest section no more than 1m deep. There were no permanent freshwater bodies on the island but water trickled from seeps down the south coast rock banks on to the rock platform below.



*Ladrillo Island, viewed from the spit extending across to the mainland, 28 November 2009.*

### Vegetation

The island was completely covered in tussac but many of the bogs were grey-yellow as a result of cattle grazing the island in the winter of 2009. In places, the ground between the bogs had been completely opened up and the peat trampled. The east end tussac was the most affected, and numerous dock sp. plants had colonised the ground between the bogs. However, young tussac leaves 40-60cm long were plentiful and it is likely that the tussac canopy will recover in most places. A small patch of native stonecrop was growing on the south coast at one of the many freshwater seeps.

*Native plant species:* lesser swine-cress, native stonecrop, tussac

*Introduced plant species:* annual meadow-grass, dock sp.

## Wildlife

The only passerines seen were two tussacbirds feeding on the south coast beach. Two kelp geese pairs, one with eggs and the other with young, a pair of crested duck with young and an empty upland goose nest were recorded. Turkey vultures roosted in the centre of the island, and probably breed. There were no striated caracaras. Rock shags were roosting on the pens and fence at the east end of the island. Nearby, on the wreck of the *Belville* was a colony of king shags with about 20 occupied nests. A sheathbill and several kelp gulls, brown-hooded gulls and dolphin gulls were in the vicinity. Southern sea lions have been recorded breeding on the island in the past (Strange 1990).

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	1	10 – 30
Rock Shag	Present	30	0
King Shag	Present	1	0
Black-crowned Night Heron	Probable	2	1 – 2
Upland Goose	Confirmed	1	1 – 3
Kelp Goose	Confirmed	7	3 – 5
Falkland Steamer Duck	Probable	6	2 – 3
Crested Duck	Confirmed	4	2
Turkey Vulture	Probable	5	2 – 3
Magellanic Oystercatcher	Probable	5	2 – 3
Blackish Oystercatcher	Confirmed	2	1
White-rumped Sandpiper	Present	1	0
Falkland Skua	Present	1	0
Dolphin Gull	Present	2	0
Brown-hooded Gull	Present	2	0
Kelp Gull	Present	26	0
South American Tern	Present	20	0
Tussacbird	Present	2	0
Snowy Sheathbill	Present	1	0
Southern Sea Lion	Present	1	0

*Wildlife counts and breeding population estimates for Ladrillo Island, 28 November 2009.*

## Survey effort

A coastal survey was completed around the perimeter and a brief walk made through the interior.



*Dock sp. on tussac peat between over-grazed tussac bogs, Ladrillo Island, 28 November 2009.*



### **Human activity**

Cattle had grazed the island in the winter of 2009, leaving the tussock yellow and trampling the ground between the bogs. An 80m long fence of timber and rope ran around the east coast just above the high water mark, ending in rock-filled crates in the intertidal zone at both extremities. It was built to prevent cattle from leaving the island at low tide when much of the spit dries out and the passage to the mainland is shallow enough to walk across. The wreck of the *Belville* lies on the shoal waters at the spit, about 50m off the southeast coast of the island. This vessel was an ex-Norwegian pelagic sealing ship fitted out as a floating factory, and used during the first year of sealing at Port Albemarle in 1928 (Allan 2010). She was later used as a storage hulk, but came adrift while anchored at Speedwell Island in 1936, and ended up on Ladrillo Island (Roddy Napier pers comm). Evidence of past activities on the island might also be reflected in the name 'Ladrillo' which is Spanish for brick.

### **Invasive species**

Rat sign (fresh droppings, burrows and feeding stations) was abundant all round the shoreline. No evidence of mice was seen.

### **Ecological value**

The ecological value of the island is currently compromised by rats and high grazing pressure. Due to its close proximity to the mainland, the island is not suitable for rat eradication.



*The wreck of the Belville, Lafonia beyond,  
viewed from Ladrillo Island, 28 November 2009.*

## Letterbox Island

<b>Coordinates:</b>	51° 49.51'S, 61° 08.97'W
<b>Surface area:</b>	3 hectares
<b>Coastline perimeter:</b>	0.7 kilometres
<b>Owner:</b>	Falkland Islands Government
<b>Land designation:</b>	None
<b>Survey date:</b>	4 November 2009
<b>Rodent status:</b>	Rat eradication 2007 No evidence of mice



### Site description

Letterbox Island is a small 15m high circular knob entirely covered in tussac and situated in Sand Beach Harbour 750m off the west side of Weddell Island. Its exposed west coast faces New Island, some 12km to the northwest and has distinctive overhanging 15m high cliffs above a 10m wide intertidal bedrock platform. Elsewhere, the shoreline is mostly large rocks on bedrock, except for a 50m stretch of small boulders along the more sheltered and gentler sloping east coast. The intertidal zone dries to 10-20m wide with a low rocky point at the north tip where the kelp beds extend north up to 100m. There were a few damp seeps along the east coast, but no permanent sources of freshwater.



*Dark-faced ground-tyrant, Letterbox Island, 4 November 2009.*

### Vegetation

The vegetation was mostly dense tussac, with a small area of open tussac and introduced plants at the north end.

*Native plant species:* Antarctic buttercup, fire liverwort, tussac, water-starwort

*Introduced plant species:* annual meadow-grass, chickweed, heath groundsel, procumbent pearlwort, sheep's sorrel

### Wildlife

Magellanic penguin burrows were scattered throughout the tussac along the east coast, and there was a large rock and king shag roost on the west coast cliffs. This is a possible colony area as ledges with old nests were occupied by pairs of rock shags, although none showed any indication of breeding. A pair of blackish oystercatchers was defending territory at the north end and a pair of striated caracaras was also displaying territorial behaviour.

A group of black-chinned siskins (possibly a family), 5 dark-faced ground-tyrants and 5 grass wrens were seen. The latter were feeding under boulders on the east coast

boulder beach, in what was typical Cobb's wren foraging habitat. Given the distance of the nearest source populations of Cobb's wren and tussacbirds (on Beef and Coffin Islands, 12km to the northwest), natural recolonisation by dispersing individuals may take some time.

Southern sea lions were breeding on the island on 3 February 1995 when 4 bulls, 15 females and 24 pups were counted (Thompson et al 1995). On 28 January 1934, 720 pups were counted on 'Clump Island' (Hamilton 1939); from its position on the report's map, this is likely to have been Letterbox Island.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	2	20 – 30
Rock Shag	Confirmed	40	15 – 20
King Shag	Present	10	0
Black-crowned Night Heron	Present	1	0
Kelp Goose	Confirmed	2	2
Falkland Steamer Duck	Confirmed	4	3
Striated Caracara	Confirmed	2	1
Blackish Oystercatcher	Probable	1	1
Kelp Gull	Present	2	0
Dark-faced Ground-tyrant	Confirmed	5	2 – 3
Grass Wren	Confirmed	5	2 – 3
Black-chinned Siskin	Probable	5	1 – 2
Snowy Sheathbill	Present	1	0
Southern Sea Lion	Present	6	0

*Wildlife counts and breeding population estimates for Letterbox Island, 4 November 2009.*

### Survey effort

One hour was spent ashore. The entire coastline was surveyed and a brief inland transect undertaken. The search for rat sign was concentrated around the coast.

### Human activity

It is possible that the island was once stocked with cattle, as indicated by the small area of open tussac and introduced plant species seen at the north end of the island. However, given the island's small size, it is unlikely that it would have been stocked on a regular basis.

### Invasive species

Rat sign was seen on the island on 23 August 2007, when a rat eradication operation was carried out by hand broadcasting 24kg of Ditrac (active ingredient diphacinone). The 4 November 2009 check confirmed that rats were no longer present: no fresh sign was found in all areas searched, which included damp seeps and rock ledges on the east coast and around shag roosts. A few very dry droppings were found under a small rock overhang in the inland tussac but they are likely to pre-date the eradication operation.

### Ecological value

The ecological value of the island is high, being an ungrazed rat-free tussac island. It is potentially suitable for colonisation by Cobb's wrens and tussacbirds, although this process will probably be very slow due to the island's distance (12km) from the nearest source populations on Coffin Island near New Island.

## Lion Creek Island

<b>Coordinates:</b>	52° 17.20'S, 59° 29.31'W
<b>Surface area:</b>	8 hectares
<b>Coastline perimeter:</b>	1.2 kilometres
<b>Owner:</b>	Falklands Landholdings
<b>Land designation:</b>	None
<b>Survey date:</b>	29 November 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice



### Site description

Lion Creek Island lies 200m off the mainland Lafonia coast, with more or less continuous kelp across the passage. A shallow shingle spit marked by a dense kelp fringe extends from the east tip of the island across to the mainland. At very low tides it may uncover sufficiently to reduce the separation distance to less than 150m. A 400m long kelp-fringed reef extends off the west end of the island. The north and east coasts are mostly boulder with deep piles of kelp debris, while the south coast is a mix of boulder and bedrock, with intertidal rock platforms awash at the west end. There is no permanent freshwater on the island, although two shallow damp depressions in the centre probably fill in the winter. Exposed peat banks along both the north and south coasts, and brick-red stones on the beach are evidence of a severe fire many years ago.



*Boulder beach and kelp debris on east side of Lion Creek Island, 29 November 2009.*

### Vegetation

The island was fringed with scattered tussac bogs, while the interior was covered in about 4.5ha of diddle-dee heath with wavy hair-grass on the tussac margin. The diddle-dee may have colonised following severe burning in the past when much of the tussac and tussac peat would have been destroyed. More recent impacts on the vegetation have been caused by grazing. The tussac peat between the bogs at the east end of the island was covered in a short sward of grasses and introduced plants and bogs were sparsely distributed in places. Tussac peat reappeared about midway down the south coast where bogs were more closely spaced, with some plants up to 2.5m high towards the west end. At the east tip of the island was a bright green short sward of stinging nettles, common orache, annual meadow-grass and lesser swine-cress growing on shallow shellgrit and guano-enriched soil.



*Native plant species:* berry-lobelia, buttonweed, christmas-bush, diddle-dee, emerald-bog, Falkland strawberry, hook-sedge, lesser swine-cress, mountainberry, pigvine, prickly-burr, native wood-rush, native yarrow, scurvygrass, small-fern, small rush, wavy hair-grass, tussac, wild celery

*Introduced plant species:* annual meadow-grass, chickweed, common orache, groundsel, heath groundsel, procumbent pearlwort, sheep's sorrel, shepherd's purse, smooth-stalked meadow-grass, stinging nettle, Yorkshire fog



*The interior of Lion Creek Island, showing diddle-dee heath (left) and the margin of wavy hair-grass and tussac (right), 29 November 2009.*

## Wildlife

Magellanic penguins appeared to be abundant. No tussacbirds or grass wrens were seen, but at least one pair each of Falkland thrush, black-throated finch and long-tailed meadow-lark probably breed. The mix of diddle-dee heath and scattered tussac with a range of seed-bearing introduced species such as groundsel, heath groundsel and shepherd's purse, provides excellent foraging and shelter for passerines.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	11	30 – 80
Black-crowned Night Heron	Present	1	0
Upland Goose	Confirmed	9	3 – 5
Kelp Goose	Confirmed	8	4 – 6
Falkland Steamer Duck	Confirmed	13	6 – 8
Crested Duck	Confirmed	12	4 – 6
Blackish Oystercatcher	Confirmed	8	3 – 5
Kelp Gull	Present	2	0
Falkland Thrush	Probable	1	1 – 3
Black-throated Finch	Confirmed	2	1 – 2
Long-tailed Meadowlark	Probable	2	1
Southern Sea Lion	Present	2	0

*Wildlife counts and breeding population estimates for Lion Creek Island, 29 November 2009.*

### **Survey effort**

The entire coastline was surveyed (1.2km) and a 200m inland transect completed.

### **Human activity**

The island appears to have been heavily stocked in the past. Over-grazing and severe burning have vastly modified the interior tussac, with only an occasional dead bog remaining in the middle of the diddle-dee heath. Introduced plant species, probably brought in by cattle, were abundant, particularly along the east coast.



*Layer of burnt clay underlying band of tussac peat and grazed tussac bogs, south coast of Lion Creek Island, 29 November 2009.*

### **Invasive species**

Rat sign was found in most parts of the island and notably at the southeast corner along the high water mark in the shellgrit soil. No signs of mice were seen and no invasive plant species were found.

### **Ecological value**

Lion Creek Island's principal ecological value lies in the fact that it is currently ungrazed, and while the original tussac habitat has been significantly altered by grazing and fire, the resulting mix of introduced plant species appears to provide good foraging and nesting habitat for small passerines and upland geese. The island has no rat eradication potential as it is too close to the mainland.



*Rat burrows on the east point of Lion Creek Island, 29 November 2009.*



## Lion Creek Outer Island

<b>Coordinates:</b>	52° 17.14'S, 59° 30.36'W
<b>Surface area:</b>	12 hectares
<b>Coastline perimeter:</b>	1.5 kilometres
<b>Owner:</b>	Falkland Islands Company
<b>Land designation:</b>	None
<b>Survey date:</b>	29 November 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice Rat eradication May 2011



### Site description

This un-named tussac island lies on the east side of Eagle Passage, 700m west of Lion Creek Island and 1km south of Wine Bay Point. There are thinly scattered bands of kelp between the islands and across to the mainland. The north coast shoreline is a boulder and shingle beach covered in kelp debris and extending a short way around the northeast end of the island. At the northeast tip the beach tapers to form a 20m long boulder spit which covers at high water. On the south coast, 3-5m high cliffs run in a more or less straight line for 400m above a 20-30m wide rock platform, much of it orange lichen-covered, with rock pools exposed at low tide. On top of the cliff was a layer of tussac peat 1-2m deep. The southwest point extends seaward for about 50m as intertidal rocky platform, and for another 150m as a series of reefs awash at high tide and surrounded by thick kelp.



*Boulder spit at the northeast tip of Lion Creek Outer Island, 29 November 2009.*

### Vegetation

The island was covered in dense tussac which showed little sign of having been grazed. It has been stocked with cattle in the past and bones were found at the east tip. Bogs were up to 2.5m high, but access was relatively easy due to Magellanic penguin and sea lion paths weaving between the bogs. There was no indication that

the island had been burnt in recent times. Common orache and heath groundsel were found at the edge of tussac at the north east end of the island, and in one patch was mixed with water-starwort, chickweed and procumbent pearlwort.

*Native plant species:* fire liverwort, tussac, water-starwort

*Introduced plant species:* chickweed, common orache, heath groundsel, procumbent pearlwort



*Common orache growing in tussac, Lion Creek Outer Island, 29 November 2009.*

### Wildlife

Magellanic penguins were common and their burrows and access paths from the shoreline seen in all the areas surveyed, except the cliff section along the south coast. Around 200 Falkland steamer ducks were gathered on the outer reefs off the southwest point. A single adult striated caracara was seen on the north coast and probably breeding. Turkey vultures were more abundant here than on most other islands surveyed in the area. Kelp geese and Falkland steamer ducks pairs with young were numerous, being distributed regularly around the coast. Passerines were noticeably scarce. Only two single tussacbirds (one foraging on the north coast and the other on the south) and one grass wren singing in tussac on the east tip were seen. Several sea lions were hauled out on the rock platforms along the south coast, and in the tussac along the north coast. None were recorded breeding here on 10 February 1995 (Thompson et al 1995).

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	10	100 – 300
Kelp Goose	Confirmed	16	8 – 10
Falkland Steamer Duck	Confirmed	206	8 – 12
Crested Duck	Confirmed	11	3 – 5
Turkey Vulture	Confirmed	4	2 – 4
Striated Caracara	Probable	1	1
Magellanic Oystercatcher	Confirmed	2	1
Falkland Skua	Present	1	0
Kelp Gull	Present	12	0
South American Tern	Present	20	0
Tussacbird	Present	2	0
Grass Wren	Confirmed	1	1 – 3
Southern Sea Lion	Present	20	0

*Wildlife counts and breeding population estimates for Lion Creek Outer Island, 29 November 2009.*

### Survey effort

The entire 1.5km coastline was surveyed, and a 200m transect line walked inland through dense tussac at the southwest end of the island.



**Human activity**

The island was stocked with cattle in the past.

**Invasive species**

Signs of rats were common with fresh droppings and burrows seen around the entire coastline. No mouse sign was found.

**Ecological value**

The island's ecological value is high, being an ungrazed tussac island with an intact tussac canopy and no fire damage. It is 600m from the closest rat-infested island (Lion Creek Island) and the thinly scattered kelp across the passage between the two islands is unlikely to pose a high risk as a re-invasion 'bridge'. Tussacbirds already appear to be regular visitors, and the boulder beach habitat is ideal for Cobb's wrens. Thus the recolonisation potential for these 2 species following the May 2011 rat eradication operation is likely to be very high, given the close proximity of source populations on nearby Speedwell, George and Barren Islands.



*Female kelp goose and family of goslings, Lion Creek Outer Island, 29 November 2009.*

## Mid Island

<b>Coordinates:</b>	52° 14.30'S, 59° 37.85'W
<b>Surface area:</b>	8 hectares
<b>Coastline perimeter:</b>	1.2 kilometres
<b>Owner:</b>	Annie Gisby
<b>Land designation:</b>	Private wildlife sanctuary
<b>Survey date:</b>	29 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

As its name suggests, Mid Island lies in the middle of Eagle Passage to the east of George Island and just over 2km west of mainland Lafonia. It is roughly triangular in outline, flat-topped and no more than 15m high. The south coast is bordered by a 30m wide raised bedrock platform covered in orange lichen; at low tide another 10m of bedrock is exposed. A small gulch indents the coast at the southwest corner where 5m high cliffs rise above the platform. The cliffs continue partway along both east and west coasts, with the intertidal rock platform narrowing and becoming impassable at high tide on the west coast.



*Rock shag colony at the south coast gulch, Mid Island, 29 November 2009.*

In contrast, the northeast-facing shoreline is mostly boulder beach. A low point of rock and boulders extends off the north tip into shallow water for about 500m to the northwest in the direction of a small reef that is awash at low water and surrounded by very dense kelp beds. Kelp also fringes the entire island, and there was an abundance of washed up kelp debris in places. No permanent sources of freshwater were found but small seeps were trickling from the tussac down the coastal cliffs to form small pools on the rock platform.

## Vegetation

The island is entirely covered in tall dense tussac bogs up to 2.5m high in most parts, except along the southwest corner. Here, the bogs on the cliff edge are much lower, being 'wind-pruned' and with bare tussac peat visible. On the west coast, wind erosion has created a 10m wide strip of unvegetated bedrock that runs for about 150m along the cliff edge. On the north point boulder and shingle beach, wild celery and common orache were scattered amongst the orange lichen covered boulders at the top of the beach.

*Native plant species:* Andean pearlwort, tussac, wild celery

*Introduced plant species:* common orache



*Boulder beach shoreline on the northeast coast of Mid Island, 29 November 2009.*

## Wildlife

Black-chinned siskins, Cobb's wrens and tussacbirds were abundant; the first were seen flying over and feeding around most parts of the island; while Cobb's wrens and tussacbirds were common around all coasts including the cliff coastline and cliff top above the shag colony. However, no grass wrens, Falkland thrushes or dark-faced ground-tyrants were recorded. Over 100 pairs of rock shags were nesting on the south coast cliffs around the gulch, and there was a large roost area nearby at the southwest corner. Magellanic penguin access routes were seen regularly around most of the coast, indicating that burrows were distributed throughout most of the tussac all over the island. A pair of crested caracaras was on territory at the shag colony, with an unoccupied nest nearby. No striated caracaras were seen. At least one pair of turkey vultures appeared to be resident and probably breeding.

A search in the tussac at the top of the southwest coast cliffs where the habitat appeared to be suitable for burrowing petrels, revealed no definite evidence of shearwaters or other petrels. No fresh remains or recently visited burrows were



found, although paths in the tussac along the cliff top are similar to those made by sooty shearwaters returning to burrows. A number of burrow entrances the size of sooty shearwaters were seen, and while it is possible they were old Magellanic penguin burrows, this would need to be confirmed by more detailed surveys.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	3	50 – 150
Rock Shag	Confirmed	120	100 – 110
Kelp Goose	Confirmed	10	6 – 8
Falkland Steamer Duck	Probable	2	1 – 2
Crested Duck	Probable	11	3 – 5
Turkey Vulture	Probable	1	1 – 3
Crested Caracara	Confirmed	2	1
Magellanic Oystercatcher	Probable	1	1 – 3
Blackish Oystercatcher	Confirmed	4	2 – 3
Tussacbird	Confirmed	31	15 – 30
Grass Wren	Confirmed	1	1 – 3
Cobb's Wren	Confirmed	12	10 – 20
Black-chinned Siskin	Probable	6	2 – 4

*Wildlife counts and breeding population estimates for Mid Island, 29 November 2009.*

### Survey effort

The entire 1.2km coastline was surveyed. Sections of tussac above the southwest coast cliffs were inspected for signs of burrowing petrels.

### Human activity

There was no indication that the island had ever been grazed or burnt.

### Invasive species

No invasive plant or animal species were recorded.

### Ecological value

The island's ecological value is of the highest order, being an ungrazed unmodified rodent-free tussac island with very few introduced plant species. It is not part of the Speedwell Island Group Important Bird Area FK16 but on the basis of its abundant population of tussacbirds and Cobb's wrens, it would no doubt qualify for inclusion.



*Mottled plumaged tussacbird, Mid Island, 29 November 2009.*



## North Wedge Island

<b>Coordinates:</b>	52° 00.13'S, 59° 47.89'W
<b>Surface area:</b>	4.9 hectares
<b>Coastline perimeter:</b>	1 kilometre
<b>Owner:</b>	Falkland Islands Government
<b>Land designation:</b>	Important Bird Area
<b>Survey date:</b>	22 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

North Wedge Island lies 2.25km northeast of Wedge Island at the south entrance to Falkland Sound. It is aligned north-south and roughly elongate in shape, being 400m in length with a maximum width of about 180m at the south end and tapering to a 20m long shingle spit at the northern tip; the spit extends north (but probably remains covered at most tides) to a low rocky reef on which there was a 10m long deposit of white calcified seaweed. The land rises gently from north to south, reaching about 15m elevation above the south coast cliffs. Along the sheltered east side of the island the shoreline consists of rounded boulders covered in deep piles of rotting kelp, and a 5m wide intertidal zone. The beach ends towards the southern half of the island where 15m high cliffs begin, and the intertidal rock platform widens to 10-30m. The cliffs run around the southern coastline and partway up the west coast with a shoreline consisting of sections of 20-30m wide intertidal rock platform alternating with sections of boulder beach. The entire island is surrounded by extensive kelp banks. There were several freshwater seeps along the east coast of the island.



*North Wedge Island viewed from the east, 22 November 2009.*

### Vegetation

The island was covered in tussac with bogs 2.5-3m high. Tussac was densest at the south end, in comparison with sections along the east coast where the bogs were more widely spaced and the ground colonised by a scattering of wild celery, shepherd's purse and lesser swine-cress. The latter two species were also common at the north end boulder spit, where they grew on the bare shellgrit soil between low, widely spaced tussac bogs, a formation similar to that seen on nearby West Island. The tussac on the northern spit was growing on a mix of tussac peat and shellgrit, the latter having accumulated during years of use by resting Falkland steamer ducks.

*Native plant species:* lesser swine-cress, tussac, wild celery

*Introduced plant species:* shepherd's purse

## Wildlife

The island had a notable abundance of wildlife. The east coast boulder beach with its tussac fringe and piles of rotting kelp formed ideal habitat for tussacbirds and Cobb's wrens. Both species were seen regularly around the entire coastline. The Cobb's wren habitat along the east and north coast beaches was very similar to that on nearby Wedge Island and supported a similar density of Cobb's wrens. The only other passerines seen were the black-throated finch and Falkland thrush.



*Surveying the inland tussac on the west coast of North Wedge Island, 22 November 2009.*

At least 6 breeding pairs of Falkland steamer ducks were recorded and 8-10 pairs of kelp geese. Groups of non-breeding steamer ducks were also abundant, gathering in the intertidal zone at the north tip of the island. The spit area and offshore reefs were also a resting place for South American terns and non-breeding southern giant petrels, and a pair of blackish oystercatchers nested amongst the kelp debris on the point. Four pairs of striated caracara were present on territory, and one or two pairs of turkey vultures were probably nesting. There was a rock shag roost on a stretch of raised rock platform and 2-3m high cliffs on the west coast; a couple of birds on nests were also here but no large colonies were found.

An area of burrows and pathways through the dense tussac was found on the west coast towards at the south end of the island, in habitat reminiscent of burrowing petrel habitat on the Sea Lion Easterly group. The burrows did not appear to be those of Magellanic penguins (which were however present and breeding throughout much of the tussac including that along the top of the south coast cliffs) and were too small for shearwaters. However, there was little evidence of recent burrowing petrel activity - no freshly dug soil or distinctive petrel smell in the burrow entrances and while it is possible that thin-billed prions could be present, no remains, either fresh or old, were found in the areas frequented by striated caracaras. One large male sea lion was seen on the south coast apparently holding territory although there were no

females nearby. The 1995 sea lion survey recorded a breeding colony on the island with a total of 44 animals including 3 males, 14 females and 26 pups on 9 February (Thompson et al 1995). In an aerial survey on 8 February 1990, Strange (1990) noted 2 small breeding groups “situated on foreshore at base of cliff edge” with a total of 3 bulls, 27 females and 28 pups. Hamilton (1939) recorded 201 pups on 18 February 1936.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	8	50 – 150
Southern Giant Petrel	Present	2	0
Rock Shag	Confirmed	25	2-3
Black-crowned Night Heron	Probable	1	1 – 2
Kelp Goose	Confirmed	18	8 – 10
Falkland Steamer Duck	Confirmed	41	6 – 10
Crested Duck	Confirmed	5	3 – 5
Turkey Vulture	Probable	1	1 – 2
Striated Caracara	Confirmed	4	4
Magellanic Oystercatcher	Probable	4	2 – 3
Blackish Oystercatcher	Confirmed	4	2 – 4
Kelp Gull	Present	2	0
South American Tern	Present	2	0
Tussacbird	Confirmed	32	15 – 20
Cobb's Wren	Confirmed	8	6 – 10
Falkland Thrush	Probable	5	3 – 5
Black-throated Finch	Probable	1	1 – 3
Southern Elephant Seal	Present	2	0
Southern Sea Lion	Present	2	0

*Wildlife counts and breeding population estimates for North Wedge Island, 22 November 2009.*

### Survey effort

The entire coastline was surveyed by two surveyors and an inland transect of 400m completed in tussac, mostly along the south cliff edge.

### Human activity

There was no indication that the island had been recently grazed although it may have been stocked with cattle in the past. Over-grazing from the era may have caused the openings in the tussac at the landing beach and along the east coast. There was little marine debris on the shoreline apart from several small pieces of driftwood.

### Invasive species

No invasive plants or mammals were found.

### Ecological value

The island is of extremely high ecological value as an ungrazed tussac island with no invasive species and an abundant population of Cobb's wrens and tussacbirds. It is included in the Elephant Cays Group Important Bird Area FK05, but referred to incorrectly as 'Wedge Islet' (Falklands Conservation 2006).



## Peat Island

<b>Coordinates:</b>	52° 10.92'S, 60° 28.78'W
<b>Surface area:</b>	4.9 hectares
<b>Coastline perimeter:</b>	1 kilometre
<b>Owner:</b>	Pam Berntsen
<b>Land designation:</b>	Private land
<b>Survey date:</b>	11 November 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice



### Site description

Peat Island (or Jack's Island) lies on the west side of Port Albemarle at the entrance to North West Arm. It is 400m from the closest shore of mainland West Falkland. Scattered kelp extends from both coasts but there is a 300m kelp free channel in the centre. The island is roughly oval in shape, with a maximum length and width of 800m and 450m. It reaches a maximum elevation of about 25m at the south end where the coastline is mostly low cliff and narrow rock platform. From here, the land slopes gently down to a 600m long shingle and boulder beach which runs around the west and north coasts. At its southern extremity the beach ends at a small low bluff that overlooks a short section of boulder beach covered in kelp, timber and a variety of plastic flotsam. The coast to the south is mostly low cliff up to 5m high above a narrow intertidal rock platform. The latter runs along the south coast and midway up the east coast, becoming narrower until the cliffs drop vertically into the water along a 250m section of the east coast. Intertidal rock platform fringes the northern half of the east coast, drying out over 2-10m at low tide.



*Tussac-fringed boulder and shingle beach, north coast of Peat Island, 11 November 2009.*

Dense kelp beds surround most of the island. On the day of survey there were large amounts of kelp washed up on all the beaches and rocky foreshores. Two small ponds in a damp valley at the northwest corner may indicate a permanent source of freshwater, although the ponds are likely to dry out in the summer.



## Vegetation

Tussac covered most of the island with the exception of the west and north coasts where there were several large areas of bluegrass meadow and diddle-dee heath, some of which extended up to 200m inland. Patches were also found in the scattered tussac that fringed the coastline of the southern half of the island. An extensive carpet of prickly-burr surrounded the two small ponds at the northwest corner.

Along the north coast, tussac bogs were tall and dense, growing right to the high water mark, with deep piles of kelp debris washed up along the tussac edge. Passages between bogs appeared to be kept open by Magellanic penguins. The remainder of the island's tussac however, had been extensively modified by past fires and grazing, resulting in large areas of scattered dead tussac bogs at the southeast corner and along the margins of the bluegrass and diddle-dee. Severe burning at some point in the past had created numerous deep depressions in the tussac peat across the entire island and these are clearly visible on satellite images as circular 'pockmarks'. The depressions had been re-colonised by tussac and occasionally small-fern. A layer of red ash was exposed in the peat along the edge of the west coast tussac where there were several small patches of bare clay colonised by diddle-dee heath species, native yarrow and emerald-bog.



*Pair of kelp geese on the bluegrass meadow and diddle-dee heath, east coast of Peat Island, 11 November 2009.*

*Native plant species:* bluegrass, buttonweed, christmas-bush, diddle-dee, emerald-bog, field mouse-ear, fire liverwort, mountainberry, native stonecrop, native wood-rush, native yarrow, pigvine, prickly-burr, sea cabbage, shore meadow-grass, small-fern, sword-grass, tussac, water-starwort, wild celery

*Introduced plant species:* annual meadow-grass, groundsel, heath groundsel, sheep's sorrel, Yorkshire fog

## Wildlife

Despite the diversity of habitat, passerines were relatively scarce, except for grass wrens which were heard calling throughout all tussac areas. A few black-chinned siskins and black-throated finches and a single long-tailed meadowlark were seen in the area of bluegrass at the northwest corner. A pair of dark-faced ground-tyrants was present on the southwest facing boulder beach and one Falkland thrush was seen in tussac at the southeast corner of the island. No striated caracaras were recorded. Several Magellanic penguins were present and burrows appeared to be restricted to tussac areas. Kelp geese and Falkland steamer duck pairs were distributed at regular intervals around the entire coastline, and there were several

rock shag roosts on the east coast. A few southern sea lions were resting on the rocks along the east coast but there was little sign of them hauling out regularly in the tussac. The island is a known breeding site, with 6 bulls, 12 females and 16 pups recorded on 6 February 1995 (Thompson et al 1995) and 246 pups on 14 February 1934 (Hamilton 1939).

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	10	100 – 250
Rock Shag	Present	63	0
Upland Goose	Confirmed	11	6 – 10
Ruddy-headed Goose	Probable	3	1 – 3
Kelp Goose	Confirmed	17	11 – 15
Falkland Steamer Duck	Confirmed	12	7 – 10
Crested Duck	Probable	12	3 – 5
Turkey Vulture	Probable	8	5 – 10
Magellanic Oystercatcher	Confirmed	8	3 – 5
Blackish Oystercatcher	Confirmed	6	3 – 5
Kelp Gull	Present	5	0
Dark-faced Ground-tyrant	Probable	2	1 – 3
Grass Wren	Confirmed	11	10 – 20
Falkland Thrush	Probable	1	1 – 10
Black-throated Finch	Probable	2	1 – 10
Long-tailed Meadowlark	Probable	3	1 – 10
Black-chinned Siskin	Probable	2	1 – 20
Southern Sea Lion	Present	10	0

*Wildlife counts and breeding population estimates for Peat Island, 11 November 2009.*

### Survey effort

Nearly all of the 2.4km of coastline was surveyed. Two inland transects were completed: one from north to south across the bluegrass and diddle-dee heath mosaic at the northwest end meadow (550m); the other from southwest to northeast through the dense tussac across the centre of the island (500m). Lack of time prevented a detailed botanical survey of the bluegrass area and many more plant species are present than recorded.

### Human activity

Peat Island is also known as Jack's Island, after Jack Cusack who built a shanty at the northwest end and lived there for 3 years in the early 1930s. The remains of a fence were still visible in this area, and a single lichen-covered post stood upright in the vicinity of the small ponds. John Allan describes how Cusack's efforts at farming were thwarted by rats that killed the chickens and destroyed the vegetable gardens. After Cusack left, the farm pigs ran wild and were still present in the 1950s, when up to 11 could be seen at any one time (Allan 2010). There was no evidence of them on the island during the survey, and it is believed that they were all shot (Peter Robertson pers comm). Quantities of flotsam were found on the southwest coast boulder beach, including a large piece of ship's timber, and a complete Mk3 Zodiac (sadly in tatters).

### Invasive species

Rats appeared to be exceptionally abundant on the island; two live adult animals were seen on the beach during the survey and tentatively identified as *Rattus norvegicus*. Rat sign (burrows and feeding stations) was seen along all sections of the coast and also in the interior particularly along the boundary between dense tussac and more open vegetation. Areas of highest activity appeared to be at the top of the kelp line along the entire 600m of shingle and boulder beach and also around

the south coast where rats had been digging in the kelp piles along the high tide line. Burrows and fresh rat droppings were also plentiful in these areas.



*Looking south across the bluegrass and diddle-dee heath mosaic at the northwest corner of Peat Island, Arch Islands in the background, 11 November 2009.*

### **Ecological value**

Peat Island has a high ecological value due to its large area of bluegrass meadow and diddle-dee heathland. The variety of coastal habitats which include low cliff and rock platform and kelp-covered boulder and shingle beaches backed by dense tussac, also enhance its value. In the absence of rats, the island would no doubt be a stronghold for Cobb's wrens. However, the separation distance of 400m from the mainland is an insufficient barrier to rat re-invasions, and for this reason a rat eradication operation could not be justified.



*Rat burrows along the strand line, west coast of Peat Island, 11 November 2009.*



## Pitt Island

<b>Coordinates:</b>	51° 48.35'S, 61° 03. 65'W
<b>Surface area:</b>	42 hectares
<b>Coastline perimeter:</b>	4 kilometres
<b>Owner:</b>	Annie Gisby
<b>Land designation:</b>	Private wildlife sanctuary
<b>Survey date:</b>	29 October 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice Rat eradication October 2009



### Site description

Pitt Island lies in the sheltered waters of Quaker Harbour. The closest land is Weddell Island 550m to the east; Quaker Island to the west is over 1km distant. It is about 1.5km long and 500m wide at its widest point and is aligned roughly northeast-southwest. The interior is gently undulating with a maximum elevation of 20m. A narrow fringe of kelp surrounds most of the coastline but does not extend across to adjacent islands. The southeast, south and west coastlines are mostly rock slabs with a 100m long section of steep 10m high cliffs at the southwest end. The northeast part of the island presents a gentler aspect with small sections of sand and white quartz gravel beaches and a level intertidal rock platform. The latter extends north as a low 300m long intertidal reef ending in a low rock islet. A small low rock lies 50m off the east coast. There were a number of freshwater seeps along the east coast, although it is likely these dry out in the summer.



*Sand and quartz gravel beach, north end of Pitt Island, 31 October 2009.*

### Vegetation

Tussac fringed most of the coastline and covered just over half of the island (23ha). The width of the fringe and density of tussac bogs varied considerably as a result of past grazing by sheep: bogs were sparsely scattered along the southern half of the island, while the northern half had denser tussac, particularly at the north tip where there was a continuous canopy and bogs were up to 2.5m high. Along the inland margin of tussac and diddle-dee, wavy hair-grass and sheep's sorrel were abundant between the bogs.

Diddle-dee heath covered most of the interior of the island, which appeared to have been severely burnt many years ago. The south end was the most species-rich, with a scattering of almond-flower, scurvygrass and Falkland strawberry. There were a



few small eroded clay patches at the southwest tip but they did not appear to be spreading. Patches of native stonecrop and annual meadow-grass were found on the reef off the north tip of the island, and sea cabbage and wild celery were scattered between the tussac along the north end sand beaches.

*Native plants species:* almond-flower, Andean pearlwort, Antarctic buttercup, berry-lobelia, bluegrass, christmas-bush, diddle-dee, emerald-bog, Falkland strawberry, filmy-fern sp., fire liverwort, Fuegian fescue, mountainberry, native stonecrop, prickly-burr, scurvygrass, sea cabbage, small-fern, sword-grass, tall-fern, tussac, water-starwort, wavy hair-grass, wild celery

*Introduced plant species:* annual meadow-grass, common storks-bill, heath groundsel, procumbent pearlwort, sheep's sorrel, smooth-stalked meadow-grass

## Wildlife

Very few passerines other than dark-faced ground-tyrants were seen during the 3 days spent on the island. Nesting upland geese, Falkland steamer ducks, crested ducks, blackish oystercatchers and kelp geese however, were abundant. Most of the upland geese goslings were less than a week old, while all remaining species were still on eggs. A short-eared owl and 3 Magellanic snipe were sighted, and there were 2 pairs of nesting striated caracaras. A rock shag colony at the south end of the island was occupied but those birds present were not displaying breeding behaviour. An adult bull sea lion and 10 females were hauled out on the beach at the north end. Hamilton (1939) recorded 4,087 pups on 28 January 1934. Thompson et al (1995) recorded breeding seals on nearby Hill Island and the Quaker Pass shore of Weddell Island on 3 February 1995, but none on Pitt Island.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	20	100 – 300
Rock Shag	Probable	25	10 – 15
King Shag	Present	20	0
Black-crowned Night Heron	Probable	5	1 – 3
Upland Goose	Confirmed	22	20 – 30
Ruddy-headed Goose	Confirmed	1	1 – 5
Kelp Goose	Confirmed	37	10 – 15
Falkland Steamer Duck	Confirmed	18	15 – 20
Crested Duck	Confirmed	33	10 – 15
Turkey Vulture	Probable	10	1 – 3
Striated Caracara	Confirmed	4	2
Magellanic Oystercatcher	Confirmed	9	3 – 5
Blackish Oystercatcher	Confirmed	12	7 – 10
Magellanic Snipe	Probable	3	3 – 5
Falkland Skua	Probable	3	3 – 5
Kelp Gull	Present	6	0
Short-eared Owl	Present	1	1
Dark-faced Ground-tyrant	Confirmed	11	5 – 10
Grass Wren	Confirmed	3	3 – 5
Falkland Thrush	Confirmed	1	3 – 5
Black-throated Finch	Probable	1	1 – 5
Long-tailed Meadowlark	Probable	2	3 – 5
Southern Sea Lion	Present	17	0

*Wildlife counts and breeding population estimates for Pitt Island, 29 October 2009.*

## Survey effort

Surveying took place the day before the start of the rat eradication operation on 30 and 31 October. Eight surveyors walked the entire coastline and completed 2 inland

transects. Conditions for surveying were ideal with light winds and no rain. Anecdotal observations were also made during the course of baiting.

### **Human activity**

The island was formerly stocked with sheep under the management of Weddell Island Farm but has been ungrazed since 1977 (Tony Felton pers comm). A set of pens and a 'manguera' were located midway along the east coast, and a sheep's skull also provided evidence of past grazing. Beached debris (lengths of timber, tree trunks, netting and plastic items) was abundant along several short stretches of the exposed west coast, particularly at the north end.



*Set of sheep pens on the east coast of Pitt Island, 30 October 2009.*

### **Invasive species**

Rat sign (burrows, droppings and feeding stations) was seen in numerous places around the coast, and a live rat was also seen. No evidence of mice was found. The island was baited for rats on 30-31 October 2009, when 424kg of diphacinone bait were hand-broadcast over the entire island (Poncet 2009). No fresh rat sign was found during a post-baiting check on 1 November 2010. Final confirmation of the rat status of this island will be made in 2012.

### **Ecological value**

Despite the presence of rats, the island has a moderate ecological value, being ungrazed and with a healthy tussac fringe and diddle-dee interior. The diversity of habitats is such that should the rat eradication be successful, the island's ecological value will be greatly increased and the number of small passerines in particular should increase. However, colonisation by tussacbirds and Cobb's wrens is unlikely to occur in the immediate future, due to the distance (15km northwest) of the nearest source populations for these two species which are on Coffin and Beef Islands off New Island.



*Southern sea lions on the north end sand beach, Pitt Island, 30 October 2009.*

## Saddle Island

<b>Coordinates:</b>	51° 38.39'S, 61° 14.38'W
<b>Surface area:</b>	35 hectares
<b>Coastline perimeter:</b>	3 kilometres
<b>Owner:</b>	Falklands Conservation
<b>Land designation:</b>	Private Nature Reserve Important Bird Area
<b>Survey date:</b>	2 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

Saddle Island lies 1.2km northeast of the north tip of New Island. Most of the island's coastline is cliff, but there is a small (50m long) sand beach on the south coast and two high steep-sided gulches either side of a cliff promontory on the north coast. Two shallow freshwater ponds surrounded by dense tussac were found in the interior; they have been reported to dry out during the summer months (Strange 1989, Woods 2009b). The island rises to over 200m elevation and has a distinctive saddle silhouette when viewed from the south. For further details, refer to Strange (1989), Falklands Conservation (2006) and Woods (2009a).



*Sand beach at the south coast landing site on Saddle Island, 2 November 2009.*

### Vegetation

Dense dark green tussac covered the entire island except for a narrow strip of bare ground along the cliff tops on the southwest coast. Here the tussac was wind-pruned and the peat eroded to expose a 1-2m high peat bank, and a strip of bare rock 10-50m wide at the edge of the cliff. This allowed easy access from the landing beach for 300m along the cliff top. Elsewhere tussac formed a continuous canopy and small patches of false ladle-leaved buttercup, native rush and water-starwort were found in small clearings in the tussac along the drainage line leading down to the lower pond.

*Native plant species:* false ladle-leaved buttercup, native rush tussac, water-starwort, tussac

*Introduced plant species:* none

### Wildlife

The south coast of boulder and sand beach provides ideal habitat for Cobb's Wrens, in contrast to the remainder of the island which is mostly exposed steep cliff. However, Cobb's Wrens were not especially abundant on the day of survey – only 7 individuals in total were seen or heard in all areas walked. Passerines were abundant, with 6 species recorded: grass wrens were calling from the tussac over all areas walked; Falkland thrushes were feeding on the beach and in the inland tussac; black-throated finches and dark-faced ground-tyrants were seen along the southwest cliff edge area, and tussacbirds were abundant in all habitats. Fresh remains of thin-billed prions were scattered on the open ground along the top of the southwest cliffs, close to two striated caracara nest sites. Numerous prion burrows were visible in the exposed peat bank and burrows were widespread in the tussac. A male crested duck holding territory was on the upper pond and a pair of striated caracaras was present at the lower pond.

A small group of sea lions was hauled out on the rocky point at the west end of the landing beach, in company with 12 juvenile striated caracaras feeding on a sea lion carcass. One adult male sea lion was asleep in the tussac above the beach. The 1995 sea lion surveyed recorded one adult bull on this beach but no breeding population (Thompson et al 1995). Strange (1990) stated that the island "formerly held medium sized breeding group"; 4 pups were recorded on 31 January 1934 (Hamilton 1939).

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Thin-billed Prion	Confirmed	100s	n/a
Rock Shag	Present	4	n/a
Black-crowned Night Heron	Probable	3	n/a
Upland Goose	Present	4	n/a
Kelp Goose	Confirmed	2	n/a
Falkland Steamer Duck	Confirmed	4	n/a
Crested Duck	Confirmed	3	n/a
Turkey Vulture	Confirmed	5	n/a
Striated Caracara	Confirmed	24	n/a
Blackish Oystercatcher	Probable	2	n/a
Kelp Gull	Present	4	n/a
Tussacbird	Confirmed	15	n/a
Dark-faced Ground-tyrant	Confirmed	4	n/a
Grass Wren	Confirmed	3	n/a
Cobb's Wren	Confirmed	7	n/a
Falkland Thrush	Probable	5	n/a
Black-throated Finch	Confirmed	8	n/a
Southern Sea Lion	Present	7	n/a

*Wildlife counts for transects on Saddle Island, 2 November 2009.*

### Survey effort

The main purpose of the visit was to assess the population of Cobb's wrens and their habitat and to introduce trainee surveyors to a rat-free pristine tussac island. A 400m coastal transect was completed along the landing beach and southwest cliff tops. A 300m inland transect was also completed in dense tussac. These transects only covered a small area of the island, and so were not sufficient for estimating pairs of



breeding birds. Every effort was made to avoid opening up paths in the tussac in order to avoid exposing prion burrows to the risk of predation by striated caracaras.

#### **Human activity**

The island was grazed by cattle up until 1972 (Falklands Conservation 2006). On the day of survey, there were no signs of grazing impacts, the tussac having made a complete recovery.

#### **Invasive species**

None were found.

#### **Ecological value**

The ecological value of Saddle Island is extremely high, being a rodent-free tussac island with a large thin-billed prion population and many Cobb's wrens and tussacbirds. It is included in the New Island Group Important Bird Area (FK11).



*Survey team heading back to the landing beach from the southwest coast cliff top, Saddle Island, 2 November 2009.*

## Screeches Point Island

<b>Coordinates:</b>	52° 11.74'S, 60° 40.00'W
<b>Surface area:</b>	1 hectare
<b>Coastline perimeter:</b>	0.4 kilometres
<b>Owner:</b>	Pam Bernstein
<b>Land designation:</b>	Private land
<b>Survey date:</b>	8 November 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice



### Site description

This un-named tussac island lies 75m off Screeches Point at the entrance to Kit's Creek at the east end of Port Stephens. A 20m long white sand beach runs down the east side, while the remainder of the coast consists mostly of 2-3m high cliff above an intertidal rock platform. Kelp surrounds the island and extends across the 50m wide shallow pass between the island and Screeches Point.

### Vegetation

The island was entirely covered in tussac. Bogs were 2-2.5m high and passages between them were kept open by sea lions and possibly Magellanic penguins.

*Native plant species:* emerald-bog, tussac

*Introduced plant species:* procumbent pearlwort



*The shallow, kelp-strewn passage between Screeches Point (in background) and Screeches Point Island, 8 November 2009.*

## Wildlife

Very few birds were seen, possibly due to the windy weather. Paths in the dense tussac on the west coast indicated that Magellanic penguins may breed here although no burrows were encountered. Several southern sea lions and a single South American fur seal were hauled out on the sand beach.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Probable	0	5 – 20
Rock Shag	Present	2	0
Kelp Goose	Confirmed	2	1
Falkland Steamer Duck	Confirmed	2	2
Striated Caracara	Probable	1	1
Blackish Oystercatcher	Confirmed	2	1
Southern Sea Lion	Present	4	0
South American Fur Seal	Present	1	0

*Wildlife counts and breeding population estimates, Screeches Point Island, 8 November 2009.*

## Survey effort

Most of the coastline was surveyed, with short detours through tussac on the south coast where the high tide had covered the rock platform. Survey conditions were not favourable due to high winds and sleet squalls.

## Human activity

There was no sign that the island had been grazed in the past. Beached debris including piles of rotting kelp, a length of rope and some timbers, were washed up on the boulder beach at the northeast point of the island.

## Invasive species

Fresh rat droppings and numerous burrows and feeding stations were abundant, particularly on the exposed west coast where there were many limpet shells washed up along the shoreline. No mouse sign was found.

## Ecological value

The island is of medium ecological value as an ungrazed rat-infested tussac island, but its proximity to the rat-infested mainland rules out any rat eradication operation.



*Limpet shells in rat 'midden' or feeding station, Screeches Point Island, 8 November 2009.*



## Speedwell Island

<b>Coordinates:</b>	52° 10.00'S, 59° 43.00'W
<b>Surface area:</b>	5150 hectares
<b>Coastline perimeter:</b>	88 kilometres
<b>Owner:</b>	Christopher & Lindsay May
<b>Land designation:</b>	Private land Important Bird Area
<b>Survey date:</b>	26 November 2009
<b>Rodent status:</b>	Rat-free, mouse-free



### Site description

Speedwell Island is the second largest rat-free island in the Falkland Islands. It lies on the west side of Eagle Passage off East Lafonia at the south entrance to Falkland Sound. Maximum elevation is 50m on Peat Bog Ridge in the centre of the island. The closest rat-infested land is at Black Point on Lafonia, nearly 3km to the east. White sandy beaches run along both the east and west coasts, with numerous stretches of boulder and low cliff beaches in between. There are extensive kelp beds offshore and deep piles of rotting kelp and dried kelp holdfasts are strewn along the shoreline. Along the west coast are many shallow freshwater ponds, dammed to seaward by storm beach boulder slopes. There are also a smaller number of similar ponds on the east coast. Most of them dry out in the summer months.



*White sand beaches and sandgrass covered dunes, east coast of Speedwell Island, 26 November 2009.*

### Vegetation

The vegetation on Speedwell Island is composed of a mosaic of whitegrass, diddle-dee and coastal greens, with extensive areas of sandgrass (marram) along most of the west coast and extending inland into diddle-dee heath. The sandgrass was planted in the 1960s by farm manager Terry Clifton. It has successfully stabilised much of the eroding west coast sand beach coastline, colonising areas of unstable sand and former tussac ground. The remainder of the west coast however, has eroded to bare clay and stone with a scattering of salt- and wind-tolerant species such as thrift plantain, emerald-bog, and native stonecrop. The list below is of species recorded on the coastal transects only.

*Native plant species:* Antarctic buttercup, buttonweed, emerald-bog, lilaeopsis, native stonecrop, sea cabbage, short rush, thrift plantain, wiry azurella

*Introduced plant species:* annual meadow-grass, sandgrass, smooth-stalked meadow-grass, sheep's sorrel



## Wildlife

More than 40 bird species have been recorded on Speedwell Island (Falklands Conservation 2006). There are several gentoo penguin and southern giant petrel colonies. Southern sea lions and elephant seals haul out on the island. The former breeds on Halfway Cove Island close off the east coast of Speedwell, and at the south end of the island in Speedwell Pass. Birds seen on the day of survey included Magellanic snipe, two-banded plover, rufous-chested dotterel, black-throated finch, upland goose and ruddy-headed goose which were abundant on the inland diddle-dee and whitegrass areas and on the coastal greens. Dark-faced ground-tyrants were plentiful around the settlement area but none recorded on the west coast transects. Grass wrens were seen in the sandgrass on the east coast and on inland whitegrass. Tussacbirds were abundant, being most numerous along the coast. Cobb's wrens were regularly but sparsely distributed along the coastline. In the absence of tall grasses and tussac, their preferred habitat appeared to be those sections of coastline with large quantities of piled-up kelp and timber debris, and crevices in peat banks and rock overhangs.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	28	n/a
Southern Giant Petrel	Present	1	n/a
Rock Shag	Confirmed	18	n/a
Black-crowned Night Heron	Probable	1	n/a
Upland Goose	Confirmed	72	n/a
Ruddy-headed Goose	Confirmed	17	n/a
Kelp Goose	Confirmed	24	n/a
Falkland Steamer Duck	Confirmed	24	n/a
Speckled Teal	Confirmed	6	n/a
Crested Duck	Confirmed	49	n/a
Turkey Vulture	Present	1	n/a
Striated Caracara	Present	1	n/a
Magellanic Oystercatcher	Confirmed	52	n/a
Blackish Oystercatcher	Confirmed	8	n/a
Two-banded Plover	Confirmed	15	n/a
White-rumped Sandpiper	Present	5	n/a
Falkland Skua	Confirmed	8	n/a
Kelp Gull	Present	20	n/a
South American Tern	Present	2	n/a
Tussacbird	Confirmed	57	n/a
Grass Wren	Confirmed	2	n/a
Cobb's Wren	Confirmed	8	n/a
Black-throated Finch	Probable	1	n/a
Long-tailed Meadowlark	Probable	2	n/a
Southern Elephant Seal	Present	2	n/a
Southern Sea Lion	Present	1	n/a
Antarctic Fur Seal	Present	1	n/a

*Wildlife counts for 3.5km of coastal transects on Speedwell Island, 26 November 2009.*

## Survey effort

A 2.2km coastal transect was completed along a section of the west coast to the south of Old Settlement Point, and a 1.3km transect along the east coast at Annie Island Point. The transects encompassed the broad shoreline habitats of sand, boulder and bedrock. Vegetation habitats included bare eroded ground, diddle-dee heath and sandgrass dunes, with all areas being grazed by sheep year-round. These transects are not expected to be representative of the entire island but may give an indication of the relative abundance of Cobb's wrens for these habitats, primarily for comparison with adjacent ungrazed tussac islands.

### Human activity

The island has been run as a sheep farm for over 120 years and at the time of survey carried 30 cattle and 3200 sheep. The native vegetation has been significantly modified by grazing and the introduction of non-native grasses particularly sandgrass, but the most damaging changes probably occurred in the early days of sealing when large tracts of coastal tussac were burnt. These fires caused major and irrevocable changes to habitat, with large inland and coastal areas now denuded of vegetation.



*Former tussac ground, eroded to bare clay after severe burning in the early 1800s, west coast of Speedwell Island, 26 November 2009.*

### Invasive species

No evidence of rats or mice was found on the coastal transects. The only known record of rodents on the island dates from August 2009 when a pregnant female mouse arrived in air-freighted goods from Stanley. A number of young were born, before all of the mice were trapped. The shed was regularly checked and no further sign of mice seen (Christopher May pers comm)

### Ecological value

Speedwell Island is of the highest ecological value, being the second largest rodent-free island in the Falklands. It is part of the Speedwell Island Group Important Bird Area FK16.



*A pair of Magellanic penguins at their burrow entrance in an eroding clay bank, west coast of Speedwell Island, 26 November 2009.*

## Ten Shilling Bay East and West Islands

<b>Coordinates:</b>	52° 11.80'S, 60° 45.00'W
<b>Surface area:</b>	37 & 49 hectares
<b>Coastline perimeter:</b>	3.3 kilometres
<b>Owner:</b>	Peter & Ann Robertson
<b>Land designation:</b>	Private land
<b>Survey date:</b>	09 November 2009
<b>Rodent status:</b>	Rat-infested No evidence of mice



### Site description

The Ten Shilling Bay Islands are a pair of tussac islands that border the south side of Ten Shilling Bay on the west side of the entrance to Port Stephens. They lie about 400m south of mainland West Falklands; however a 'stepping stone' reef off the west island's northern coast narrows this separation distance to 330m, and there are also discontinuous kelp patches in the passage.



*Ten Shilling Bay West Island (left), joined to Ten Shilling Bay East Island (right) by an isthmus of large boulders awash at high water, 9 November 2009.*

Ten Shilling Bay East Island (49ha) is remarkable for its sheer cliffs and 70m high offshore stack (Stephens Bluff) that dominate its south coast. Reefs, breakers and kelp beds extend out to a 20m high rock islet 400m off its east coast, and kelp patches also continue across the east entrance to Ten Shilling Bay. On the west coast, a 300m long rock and boulder isthmus runs across to Ten Shilling Bay West Island, partially drying at low water to create a network of wave-beaten intertidal pools. The east island rises gently from its sheltered northeast coastline to terminate in sheer cliffs on the exposed south side. At the north end is a 300m long low tussac-covered peninsula, less than 100m wide at its narrowest point, and curving east to enclose a sheltered cove with a 250m long sandy beach. The remainder of the north coast shoreline consists of rock platform below steep 2-5m high tussac



banks and a relatively narrow (5-10m wide) intertidal zone. The west side of the north point is mostly storm beach with rounded boulders. About 200m south of the intertidal isthmus that connects the east island to the west, the shoreline becomes steeper as it rises to meet the sheer south coast cliffs. The isthmus coastline was lined with large amounts of debris, including piles of rotting kelp, fishing buoys and nets, timber and plastics. No permanent freshwater bodies were seen, but there were many coastal seeps.

Ten Shilling Bay West Island (37ha) is of a similar topography to the east island; it has a low-lying sheltered north coast and sheer cliffs about 20m high on the south side. The island is divided roughly in half by a 100m wide unvegetated area of rock platform that is occasionally swept by storm surges and spray.



*Sheer cliffs of Stephens Bluff off Ten Shilling Bay East Island, 9 November 2009.*

### **Vegetation**

Most of Ten Shilling Bay East Island was covered in dense tussac on a deep layer of tussac peat. Bogs were 2.5-3m high in places and in those areas frequented by Magellanic penguins and southern sea lions, the passage between the bogs was fairly open. Near the summit and upper slopes of the island were areas of bluegrass meadow, the largest being about 3.5ha; wiry azurella, emerald-bog and wild celery were common here, with the occasional smooth Falkland daisy plant in flower. Diddle-dee and native wood-rush were co-dominant on the lower slopes, and scattered sword-grass plants grew along the lower margins of the meadow.

The boulder beach on the west coast had an unusual mix of shoreline vegetation composed of scattered plants of diddle-dee, native stonecrop and dock sp. Emerald-bog, oval-leaved prickly-burr and a few mountainberry plants were scattered along the tussac margin, with a mix of colonising species that included sheep's sorrel, lesser swine-cress, groundsel, procumbent pearlwort and annual meadow-grass.



Further south, at the start of the south coast cliffs, shore meadow-grass was growing on the exposed spray-drenched slopes. This habitat also appeared suitable for false plantain, but no plants were found despite a thorough search along the cliff edge to the summit of the island.

*Native plant species:* Antarctic pearlwort, balsam-bog, bluegrass, diddle-dee, emerald-bog, fire liverwort, lesser swine-cress, mountainberry, native rush, native stonecrop, native wood-rush, oval-leaved prickly-burr, sea cabbage, shore meadow-grass, smooth Falkland daisy, sword-grass, tussac, wild celery, wiry azurella

*Introduced plant species:* annual meadow-grass, dock sp., groundsel, procumbent pearlwort, sheep's sorrel



*Looking north from the summit of Ten Shilling Bay East Island, bluegrass meadow in foreground, sand beach anchorage in middle foreground, Port Stephens in background, 9 November 2009.*

### **Wildlife**

There were surprisingly few passerines recorded in the tussac and bluegrass meadow areas, with the exception of several grass wrens and a family of long-tailed meadowlarks. Dark-faced ground-tyrants were common along the cliff tops but no Falkland thrushes, black-throated finches or black-chinned siskins were seen. Although there was an abundance of suitable foraging and breeding habitat for Cobb's wrens and tussacbirds (ample tussac cover, boulder beaches and large piles of rotting kelp) neither species was present due to the presence of rats. The bluegrass meadow provided suitable foraging for ruddy-headed geese - 2 of the 3 pairs recorded were seen in the large bluegrass area near the summit.

Burrows found in the tussac peat along a 200m stretch of cliff top to the east of the summit may have been those of sooty shearwaters, but no bird remains were found to confirm this, and none of the burrows inspected displayed signs of recent occupation by shearwaters. It is possible that they may have been old disused Magellanic penguin burrows as these were numerous elsewhere on the island, wherever there was access to the sea. Rock shags and possibly king shags were suspected to nest on the south coast cliffs but it was not possible to see the colonies from the cliff top.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	1	100 – 500
Rock Shag	Probable	3	10s
Black-crowned Night Heron	Probable	4	2
Upland Goose	Confirmed	2	2 – 4
Ruddy-headed Goose	Probable	4	3 – 4
Kelp Goose	Confirmed	29	15 – 20
Falkland Steamer Duck	Confirmed	15	10 – 15
Speckled Teal	Probable	5	1 – 2
Crested Duck	Probable	13	3 – 5
Turkey Vulture	Probable	11	3 – 5
Striated Caracara	Confirmed	1	1
Magellanic Oystercatcher	Present	1	1
Blackish Oystercatcher	Confirmed	6	3 – 5
Dolphin Gull	Present	25	0
Kelp Gull	Present	3	0
Dark-faced Ground-tyrant	Confirmed	7	10 – 15
Grass Wren	Confirmed	3	5 – 10
Long-tailed Meadowlark	Probable	4	2 – 4
Snowy Sheathbill	Present	2	0
Southern Elephant Seal	Present	2	0
Southern Sea Lion	Present	9	0

*Wildlife counts and breeding population estimates for Ten Shilling Bay East Island, 9 November 2009.*

### Survey effort

Coastal and inland transects were completed on Ten Shilling Bay East Island where a total coastline length of 3.3km was surveyed, of which 2.1km was along the coast, and the remainder in dense tussac and bluegrass along the top of the south coast cliffs. Several forays were made into the tussac and bluegrass at various points around the island.

### Human activity

The only record of livestock on the Ten Shilling Bay East Island dates from 1941 when 40 calves were landed. Few of them survived, the majority falling off cliffs or getting stuck in holes in the peat (Peter Robertson pers comm). There is no trace today of any past grazing on the island.

### Invasive species

Rats were present on the island, with rat sign (fresh droppings) found from the shoreline up to the summit. No sign of mice was seen.

### Ecological value

Ten Shilling Bay Islands are of high ecological value with an abundance of dense tussac, bluegrass meadow and varied shoreline habitat. The relative proximity of Bird Island (9km to the west-northwest) and its source populations of tussacbirds, Cobb's wrens and burrowing petrels is one of the reasons that the group has been flagged as a potential rat eradication site (Brown et al 2001). The cliff tussac terrain on the bluffs, stacks and exposed south coasts and the dense tussac interior would make hand broadcasting of bait extremely challenging. However, the most critical factor is the 330m separation distance between the group and the mainland. This is well within the swimming range of rats; therefore these islands are not suitable for an eradication operation.

## Wedge Island

<b>Coordinates:</b>	52° 01.00'S, 59° 49.68'W
<b>Surface area:</b>	12.4 hectares
<b>Coastline perimeter:</b>	1.4 kilometres
<b>Owner:</b>	Eddie Andersen
<b>Land designation:</b>	Private wildlife sanctuary Important Bird Area
<b>Survey date:</b>	23 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

Wedge Island lies at the southern entrance of Falkland Sound, 2km northeast of Calista Island and 2.2km southwest of North Wedge Island. The tiny tussac-covered islet that lies 400m north of Wedge Island is described separately (see Wedge Islet). Wedge Island is about 15m high and roughly oval in shape. It is surrounded by extensive kelp banks that extend north to encompass Wedge Islet. Most of the island's northeast shoreline is boulder and shingle, with large piles of washed up rotting kelp. The east and west coasts have low cliffs above a shoreline of bedrock and boulder beaches with a 10-20m wide wave-cut intertidal platform. The south coast has distinctive 15m high undercut cliffs above the rock platform that is 50m wide. Distinctive orange lichen covers the rock platform at the southwest corner. The island did not appear to have any permanent fresh water but several seeps were seen on the east coast.



*West coast of Wedge Island looking towards North Wedge Island,  
23 November 2009.*

### Vegetation

The island was entirely covered in tussac growing on a deep layer of tussac peat. Bogs reached 2.5-3m high in the interior. No introduced plant species were recorded, and the island appears to be unburnt and undamaged by grazing.

*Native plant species:* lesser swine-cress, tussac, water-starwort, wild celery  
*Introduced plant species:* none

## Wildlife

Cobb's wrens were abundant, with the highest density recorded along the northern boulder and shingle beaches, and tussacbirds were numerous on all coastlines. Small numbers of black-chinned siskins and Falkland thrushes were the only other passerines seen. There were several small colonies of nesting rock shags on the southwest coast cliffs. Five pairs of striated caracaras were recorded. Magellanic penguins were abundant at the north end of the island, with well-marked paths through the tussac. Similar paths were seen in tussac along the south end cliff edges where there appeared to be no penguin burrows. The paths may have been made by sooty shearwaters although there was no clear-cut evidence that this species nests on the island. Five juvenile southern elephant seals were moulting on the east coast beach.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	6	100 – 500
Rock Shag	Confirmed	43	5 – 20
Black-crowned Night Heron	Probable	5	3 – 5
Kelp Goose	Confirmed	17	7 – 10
Falkland Steamer Duck	Confirmed	21	8 – 12
Crested Duck	Probable	13	5 – 7
Striated Caracara	Confirmed	10	5
Blackish Oystercatcher	Confirmed	2	2 – 3
Kelp Gull	Present	8	0
South American Tern	Present	6	0
Tussacbird	Confirmed	43	15 – 25
Cobb's Wren	Confirmed	10	10 – 15
Falkland Thrush	Probable	4	4 – 6
Black-throated Finch	Confirmed	2	2 – 4
Black-chinned Siskin	Probable	2	2 – 5
Southern Elephant Seal	Present	5	0
Southern Sea Lion	Present	2	0

*Wildlife counts and breeding population estimates for Wedge Island, 23 November 2009.*

## Survey effort

The entire coastline was surveyed and a 500m inland transect was completed.

## Human activity

The island has been stocked with cattle in the past but there was very little sign of grazing damage.

## Invasive species

None were found.

## Ecological value

The island is of very high ecological value, being a rodent-free ungrazed tussac island with large numbers of breeding Cobb's wrens and tussacbirds and only one introduced plant species. Its designation as a private nature reserve where landings are not ordinarily permitted ensures its continued protection. It is included in the Elephant Cays Group Important Bird Area FK05.



## Wedge Islet

<b>Coordinates:</b>	52° 01.47'S, 59° 45.22'W
<b>Surface area:</b>	0.5 hectares
<b>Coastline perimeter:</b>	0.5 kilometres
<b>Owner:</b>	Falkland Islands Government
<b>Land designation:</b>	None
<b>Survey date:</b>	23 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

Wedge Islet is separated from nearby Wedge Island by a 400m wide kelp-covered passage with depths of approximately 3-5m. The islet is shown on sheet 25 of the D.O.S. 453 1961 survey as a rock reef, but it is more accurately represented as an island on Admiralty Chart 2559 (1987 edition). It is 200m long and less than 50m wide, with an elevation of less than 5m. It appears to have been formed by boulder and shingle deposited by wave action on a low rock reef. At the south end of the island is a 20m long pale bluish-coloured beach of shellgrit (mostly mussel shell fragments) and covered in kelp debris, bordered by a 20-30m wide wave-cut rock platform that dries out to about 100m at low tide. There is a 50m long boulder and shingle storm beach on the south-facing coast covered in large amounts of decomposing kelp and other seaweeds. The north-facing coastline is composed of alternating sections of bedrock and boulder with many intertidal rock pools in the wave-cut rock platform.



*Wedge Islet viewed from the north end of Wedge Island, 23 November 2009.*

### Vegetation

Most of the island was covered in tussac. Bog height and density depended on the soil depth: where tussac grew on small boulders and shingle, bogs were less than one metre high and scattered. Density and height increased on the thin layer of soil composed of fine mussel shellgrit and guano (possibly originating from steamer ducks), and was highest on the north side where the tussac had formed a layer of tussac peat. A single sea cabbage plant was found on the shellgrit beach, with lesser swine-cress and wild celery scattered between the bogs.

*Native plant species:* lesser swine-cress, sea cabbage, tussac, wild celery

*Introduced plant species:* none

## Wildlife

Despite the island's small size, it supported a diverse bird population which included a pair of nesting striated caracaras, kelp geese with young, several tussacbird families, with black-chinned siskins, a Falkland thrush and black-throated finch feeding in the tussac. However, no Cobb's wrens were present, despite suitable habitat (boulder and shingle beaches covered in flat stones and large piles of rotting kelp and backed by tussac) and a flourishing population of Cobb's wrens on nearby Wedge Island; possibly the island is too small to support this species. Both species of oystercatchers were present, with a pair of Magellanic oystercatchers nesting on the shellgrit beach. Six southern giant petrels were resting on the shoreline and a single bird seen in the tussac just above the high tide mark, possibly on a nest. The island appears to be frequently used as a resting area by large numbers of non-breeding Falkland steamer ducks.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Southern Giant Petrel	Probable	7	1
Rock Shag	Present	2	0
Black-crowned Night Heron	Present	1	0
Kelp Goose	Confirmed	3	2
Falkland Steamer Duck	Confirmed	98	1 – 3
Crested Duck	Probable	4	2
Striated Caracara	Confirmed	2	1
Magellanic Oystercatcher	Confirmed	4	2
Blackish Oystercatcher	Present	1	0
Kelp Gull	Present	10	0
South American Tern	Present	10	0
Tussacbird	Confirmed	18	5 – 10
Falkland Thrush	Probable	1	1
Black-throated Finch	Present	1	0
Black-chinned Siskin	Present	4	0
Southern Sea Lion	Present	1	0

*Wildlife counts and breeding population estimates for Wedge Islet, 23 November 2009.*

## Survey effort

The entire islet was surveyed.

## Human activity

Due to its small size, it is highly unlikely that this islet was ever stocked. Large sections of ship's wreckage were found amongst the tussac at the southwest end.



*Ship's wreckage in tussac at the southwest end of Wedge Islet, 23 November 2009.*

**Invasive species**

None were found.

**Ecological value**

The island is in a near pristine condition and is potentially a type example of the early stages of island formation and tussac colonisation. It not specifically listed as being part of the Elephant Cays Group Important Bird Area FK05. The oversight is probably due to the fact that the island is depicted as a low rock reef on the D.O.S. 453 map sheet 25 and therefore was not identified as a tussac island.



*Shellgrit beach at the southwest end of Wedge Islet, looking towards Wedge Island, 23 November 2009.*



## West Island

<b>Coordinates:</b>	51° 58.51'S, 59° 50.33'W
<b>Surface area:</b>	3.7 hectares
<b>Coastline perimeter:</b>	1.2 kilometres
<b>Owner:</b>	Falkland Islands Government
<b>Land designation:</b>	None
<b>Survey date:</b>	22 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

West Island lies on the western side of Falkland Sound, approximately 1.8km east of Carcass Bay off mainland West Falklands. The nearest rat-free island is North Wedge Island 4.5 km to the southeast. The island is bottle-shaped with the opening of the 'bottle' pointing northeast. It is low-lying, with a highest point of about 20m elevation towards the south end. The steeply shelving boulder beach shoreline of the northern half of both the east and west coasts corresponds with the 'neck' of the 'bottle'. Along some sections the boulders are piled up into storm ridges which level off to form level boulder beach above the high tide mark. Elsewhere, the high tide mark reaches the edge of the tussac. Most of this coastline was covered in deep piles of washed up kelp, both fresh and rotting. On the west side of the north tip of the island, the soil above the boulder beach was a mix of pinkish sandy shellgrit and bird guano, possibly deposited by Falkland steamer ducks over many years. This shellgrit deposit extended inland in places and was colonised by tussac.



*Fine shellgrit deposits on the west coast of West Island near the north tip, 22 November 2009.*

Towards the south end of the island around the base of the 'bottle', outcrops of bedrock interrupt the boulder beach sections, and the south point itself is mostly bedrock and intertidal rocks and rock pools fringed with bull kelp. Offshore, there were extensive kelp beds around most of the island. The more sheltered east coast shoreline was steep boulder beach with a narrow intertidal zone where high tide



reached the tussac edge. Damp peat was found in a large shallow depression in the centre of the south half of the island, but no permanent freshwater bodies were seen.

### **Vegetation**

The island was entirely covered dense tussac. At the south end were bogs over 2.5m high with clear passages covered with dry leaf litter beneath the canopy. In contrast, bogs at the north tip on the shallow deposits of bird guano and fine shellgrit were low and the ground between bogs was open with a scattering of lesser swine-cress, groundsel and discrete patches of buttonweed and thrift plantain.

*Native plant species:* buttonweed, lesser swine-cress, lilaeopsis, thrift plantain, tussac, water-starwort

*Introduced plant species:* groundsel



*Typical Cobb's wren habitat, east coast of West Island, 22 November 2009.*

### **Wildlife**

Cobb's wrens and tussacbirds were most abundant along the sheltered east coast. A few tussacbirds, black-chinned siskins and a black-throated finch were seen in the inland dense tussac areas at the south end, and one turkey vulture overhead. Magellanic penguin burrows appeared to be limited to the coastal fringe and none were seen in the south end tall tussac. Kelp geese were distributed regularly around the coastline, with females on nests with mostly 2 eggs. A group of 200 Falkland steamer ducks was on the southwest point, and it is likely that such groups come ashore on a regular basis, as the soil at the north end is largely composed of their shellgrit guano. There was no evidence of burrowing petrels in the dense tussac on top of cliffs at south end, this being habitat in which sign was found on Wedge and North Wedge Islands; no remains, old or fresh and no burrows were found.

Southern sea lions were hauled out in the dense tussac at the south end, towards the top of the island. Ten non-breeding sea lions were recorded on 7 February 1995 (Thompson et al 1995). Hamilton (1939) counted 77 pups on 18 February 1936.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	25	50 – 200
Rock Shag	Present	2	0
Kelp Goose	Confirmed	11	6 – 9
Falkland Steamer Duck	Confirmed	221	10 – 15
Crested Duck	Probable	4	2 – 4
Turkey Vulture	Present	1	0
Striated Caracara	Confirmed	3	2
Magellanic Oystercatcher	Confirmed	2	1
Blackish Oystercatcher	Confirmed	5	3 – 5
Kelp Gull	Present	5	0
South American Tern	Present	16	0
Tussacbird	Confirmed	30	10 – 15
Cobb's Wren	Confirmed	8	7 – 12
Black-throated Finch	Confirmed	3	2 – 5
Black-chinned Siskin	Probable	7	3 – 6
Southern Sea Lion	Present	7	0

*Wildlife counts and breeding population estimates for West Island, 22 November 2009.*

### Survey effort

The entire coastline (1.2km) was surveyed by two surveyors and walked along the centre of the island in dense tussac. One inland transect 200m long was completed and the north end tussac searched in detail. Strong westerly winds made surveying difficult on the exposed west coast, although conditions were reasonable between squalls and on the sheltered east coast and inland tussac.

### Human activity

The island has no record of having been stocked. The 163 ton schooner *Fortuna* went ashore on West Island on 19 May 1906, and broke up in a southerly gale before she could be refloated (Falkland Islands Journal 1978; 2005).

### Invasive species

There were no rats or mice on the island, and no invasive plant species.

### Ecological value

This island is of the highest ecological value, being free of rodents and having never been stocked. With its large populations of tussacbirds and Cobb's wrens, it merits inclusion in the Elephant Cays Group Important Bird Area.

## Wolfe Island

<b>Coordinates:</b>	52° 01.40'S, 59° 40.56'W
<b>Surface area:</b>	120 hectares
<b>Coastline perimeter:</b>	6 kilometres
<b>Owner:</b>	Raymond & Nancy Poole
<b>Land designation:</b>	Private land
<b>Survey date:</b>	25 November 2009
<b>Rodent status:</b>	Rat-free; mouse-free



### Site description

Wolfe Island is the largest island in the Wolfe Island group, and the closest to mainland East Falklands. It lies 1.5km west of the mainland and is flanked by 4 tussac islands, each less than 500m distant. Extensive kelp beds surround the islands, although there is a narrow channel of clear water in the kelp between the small tussac islet off the northwest point of East Wolfe and the southeast point of Wolfe Island. The west coastline is mostly medium to steeply shelving boulder beach with piles of rotting kelp and a small sand beach halfway down. The group's wildlife and habitat was first surveyed in November 2008 (Poncet 2008).



*Sandy cove on the west coast of Wolfe Island, 25 November 2009.*

### Vegetation

The island has virtually no tussac, having been severely burnt many years ago. This resulted in the entire west coastline being eroded to bare rock and clay. The vegetation in the interior and along the east coast was diddle-dee heath, and there was a sparse cover of ground-hugging salt-tolerant species such as thrift plantain, native stonecrop, goosefoot, lesser sea-spurrey, emerald-bog and several introduced species along the denuded west coast.

*Native plant species:* bluegrass, diddle-dee, christmas-bush, emerald-bog, Fuegian fescue, goosefoot, lesser sea-spurrey, lesser swine-cress, mountainberry, native rush, native wood-rush, native yarrow, oval-leaved prickly-burr, pigvine, prickly-burr,

sea knotgrass, small-fern, small rush, scurvygrass, thrift plantain, tussac, wavy hair-grass, wild celery

*Introduced plant species:* annual meadow-grass, common orache, common stork's-bill, goosegrass, groundsel, heath groundsel, pineappleweed, sheep's sorrel, smooth-stalked meadow-grass

### Wildlife

There was an abundance of wildlife on the island despite the scarcity of tussac. Magellanic penguins nested along most of the north and east coasts. Small groups of non-breeding kelp geese were gathered on the north coast in Wolfe Harbour where a large colony of South American terns nested on the north tip of the island. Kelp gulls appeared to be breeding on the point opposite Cay Wolfe although eggs had yet to be laid. Falkland steamer duck, kelp goose and crested duck families with recently hatched young were seen at regular intervals and Cobb's wrens, tussacbirds and blackish and Magellanic oystercatchers were numerous. A few white-rumped sandpipers were seen along the west coast, and Falkland thrushes, long-tailed meadowlarks, Magellanic snipe, two-banded plovers, Falkland skuas, black-chinned siskins and black-throated finches were present both on the coast and inland. No dark-faced ground-tyrants or striated caracaras were seen in the areas surveyed. No sea lions were seen.

SPECIES	Breeding status	Total number of individual adults & sub-adults counted	Estimated breeding population (pairs)
Magellanic Penguin	Confirmed	50	n/a
Black-crowned Night Heron	Present	1	n/a
Upland Goose	Confirmed	28	n/a
Ruddy-headed Goose	Probable	1	n/a
Kelp Goose	Confirmed	54	n/a
Falkland Steamer Duck	Confirmed	15	n/a
Crested Duck	Confirmed	33	n/a
Turkey Vulture	Present	2	n/a
Magellanic Oystercatcher	Confirmed	28	n/a
Blackish Oystercatcher	Confirmed	6	n/a
Two-banded Plover	Probable	13	n/a
White-rumped Sandpiper	Present	52	n/a
Magellanic Snipe	Confirmed	1	n/a
Falkland Skua	Probable	22	n/a
Kelp Gull	Probable	68	n/a
South American Tern	Present	2	n/a
Tussacbird	Confirmed	64	n/a
Cobb's Wren	Confirmed	13	n/a
Falkland Thrush	Probable	1	n/a
Black-throated Finch	Confirmed	8	n/a
Long-tailed Meadowlark	Probable	2	n/a
Black-chinned Siskin	Probable	2	n/a
Snowy Sheathbill	Present	1	n/a

*Wildlife counts for Wolfe Island, 25 November 2009.*

### Survey effort

A landing was made on the north coast in Wolfe Harbour and two coastal transects (660m on the east coast, 1.2km on the west coast) completed, as well as an inland transect (1.25km) from east to west midway down the island. Survey conditions were ideal (light westerly, no rain). The south coast was not visited. No breeding pair estimates were made due to incomplete survey coverage of the island.



**Human activity**

The island was grazed by sheep and cattle up until the 1980s when all stock was removed. A remarkable stone cairn (or 'standing-man') is a distinctive landmark on the west coast.

**Invasive species**

No rodents or invasive plant species were recorded.

**Ecological value**

Despite the long-lasting impacts of grazing and severe burning, Wolfe Island, like all 5 islands in the Wolfe Island group, is of the highest ecological value, being rodent-free and with numerous Cobb's wrens and tussacbirds. The greatest distance between islands is about 400m and some are as close as 150m; their proximity means that the group as a whole would be at risk if rats were accidentally introduced to one island.



*'Standing-man' on west coast of Wolfe Island, 25 November 2009.*

## APPENDIX 1 - PLANT LIST

Almond-flower	<i>Luzuriaga marginata</i>
Andean Pearlwort	<i>Colobanthus quitensis</i>
Annual Meadow-grass*	<i>Poa annua</i>
Antarctic Bedstraw	<i>Galium antarcticum</i>
Antarctic Buttercup	<i>Ranunculus bitermatus</i>
Balsam-bog	<i>Bolax gummifera</i>
Berry-lobelia	<i>Pratia repens</i>
Bluegrass	<i>Poa alopecurus</i> ssp. <i>alopecurus</i>
Buttonweed	<i>Leptinella scariosa</i>
Chickweed*	<i>Stellaria media</i>
Christmas-bush	<i>Baccharis magellanica</i>
Cinnamon-grass	<i>Hierochloa redolens</i>
Coastal Nassauvia	<i>Nassauvia gaudichaudii</i>
Common Orache*	<i>Atriplex prostrata</i>
Common Stork's-bill*	<i>Erodium cicutarium</i>
Common Violet	<i>Viola maculata</i>
Cudweed sp.	<i>Gamochaeta</i> sp.
Daisy*	<i>Bellis perennis</i>
Dock sp.*	<i>Rumex ?crispus</i>
Diddle-dee	<i>Empetrum rubrum</i>
Emerald-bog	<i>Colobanthus subulatus</i>
Falkland Rock-cress	<i>Phlebotobium maclovianum</i>
Falkland Strawberry	<i>Rubus geoides</i>
Field mouse-ear	<i>Cerastium arvense</i>
Fire Liverwort	<i>Marchantia berteriana</i>
Fuegian Couch	<i>Elymus magellanicus</i>
Fuegian Fescue	<i>Festuca magellanica</i>
Goosefoot	<i>Chenopodium macrospermum</i> ssp. <i>macrospermum</i>
Goosegrass*	<i>Aira praecox</i>
Gorse*	<i>Ulex europaeus</i>
Groundsel*	<i>Senecio vulgaris</i> ssp. <i>vulgaris</i>
Heath Groundsel*	<i>Senecio sylvaticus</i>
Hook-sedge	<i>Uncinia macloviana</i>
Lady's Slipper	<i>Calceolaria fothergillii</i>
Lesser Sea-spurrey	<i>Spergularia marina</i>
Lesser Swine-cress	<i>Coronopus didymus</i>
Lilaeopsis	<i>Lilaeopsis macloviana</i>
Mountainberry	<i>Gaultheria pumila</i>
Native Boxwood	<i>Veronica elliptica</i>
Native Calandrinia	<i>Calandrinia</i> cf. <i>axilliflora</i>
Native Rush	<i>Juncus scheuchzerioides</i>
Native Stonecrop	<i>Crassula moschata</i>
Native Wood-rush	<i>Luzula alopecurus</i>
Native Yarrow	<i>Acaena lucida</i>
Oval-leaved Prickly-burr	<i>Acaena ovalifolia</i>
Pigvine	<i>Gunnera magellanica</i>
Pineappleweed*	<i>Matricaria matricarioides</i>
Prickly-burr	<i>Acaena magellanica</i>
Prickly Sow-thistle*	<i>Sonchus asper</i>
Procumbent Pearlwort *	<i>Sagina procumbens</i>
Sandgrass*	<i>Ammophila maritima</i>
Scurvygrass	<i>Oxalis enneaphylla</i> ssp. <i>enneaphylla</i>
Sea Cabbage	<i>Senecio candidans</i>
Sea Knotgrass	<i>Polygonum maritimum</i>
Sheep's Sorrel*	<i>Rumex acetosella</i>
Shepherd's Purse*	<i>Capsella bursa-pastoris</i>
Shore Meadow-grass	<i>Poa robusta</i>
Short Rush	<i>Rostkovia magellanica</i>

Skottsberg's buttercup  
Small-fern  
Smooth Falkland Daisy  
Smooth-stalked Meadow-grass\*  
Stinging Nettle\*  
Stitchwort  
Sword-grass  
Tall-fern  
Tall Rush  
Thrift Plantain  
Tussac  
Vanilla Daisy  
Water-starwort  
Wavy Hair-grass  
Whitegrass  
Wild Celery  
Wiry Azorella  
Woolly Falkland Daisy  
Yorkshire Fog\*

*Ranunculus acaulis*  
*Blechnum penna-marina*  
*Senecio vaginatus*  
*Poa pratensis*  
*Urtica dioica*  
*Stellaria debilis*  
*Carex trifida*  
*Blechnum magellanicum*  
*Marsippospermum grandiflorum*  
*Plantago barbata* ssp. *monanthos*  
*Poa flabellata*  
*Leucheria suaveolens*  
*Callitriche antarctica*  
*Deschampsia flexuosa*  
*Cortaderia pilosa*  
*Apium australe*  
*Azorella filamentosa*  
*Senecio vaginatus*  
*Holcus lanatus*

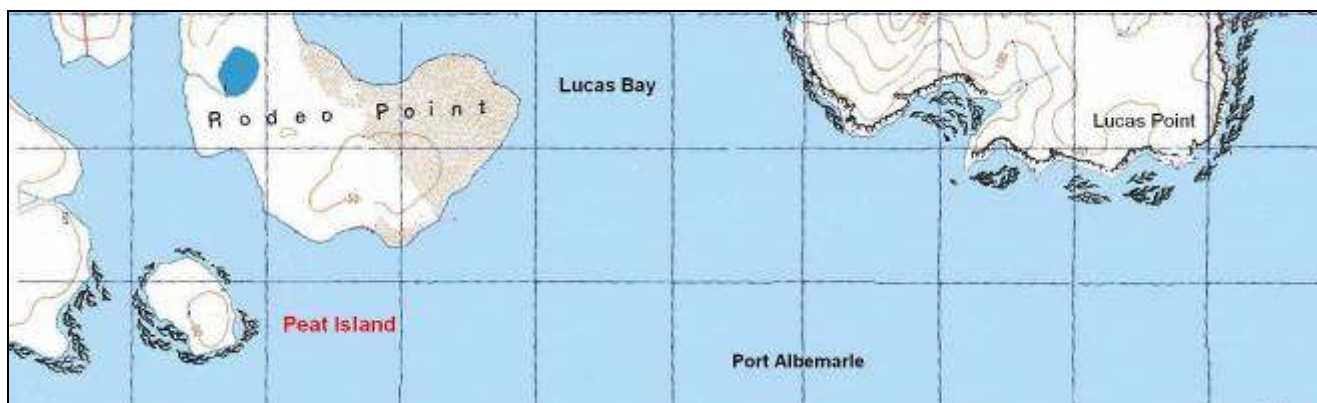
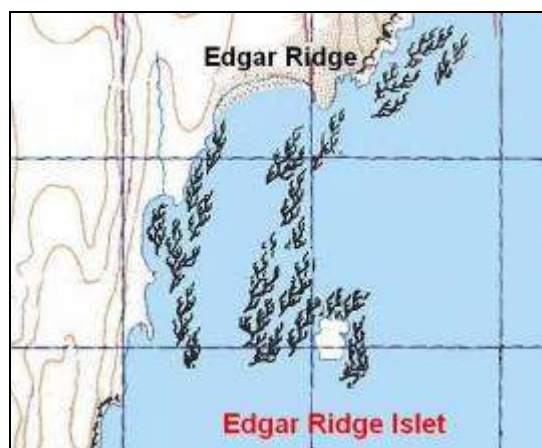
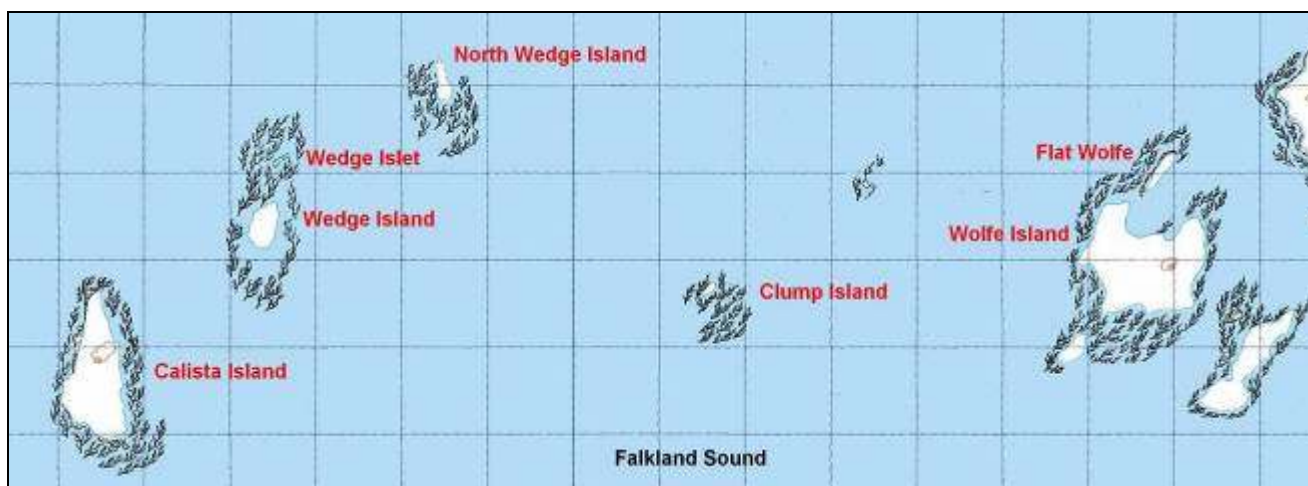




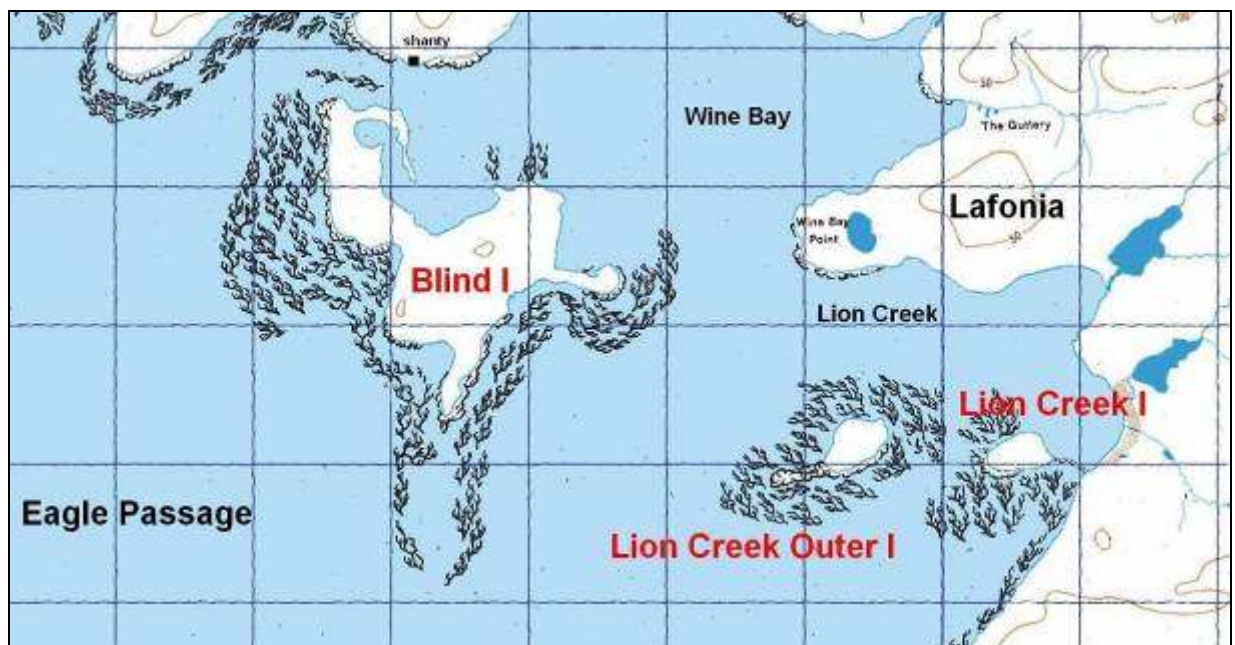
## APPENDIX 3 - MAPS

Scale is indicated by the blue grid squares which are 1 km square.  
Vertical grid line is aligned north-south.

### Islands surveyed in Falkland Sound



## Islands surveyed in Eagle Passage







### Islands surveyed in Queen Charlotte Bay

