

Middle Island Nature Reserve

Choiseul Sound

Report on a survey visit in December 2006 by representatives of the Royal Naval Bird Watching Society and Falklands Conservation

Introduction

Middle Island covers about 150ha (375 acres) and was owned by the Falkland Islands Company and heavily grazed by sheep for many years until 1988. Flocks were shipped there to be fattened before being sent onward to Stanley for slaughter. Several islands near Lively Island were bought by Falklands Conservation in 1994 and Middle Island was surveyed briefly by Sally Poncet before purchase. The island extends east to west about 2.9km and is about 1km at its widest central point. It reaches no more than 15m in height towards the northeastern point and on the central ridge. There is open mature Tussac along the southern and eastern coasts but considerable erosion on the northern coasts above the 10m high cliffs. The habitat is varied with large sand beaches and some dunes on the eastern coast, lush grasslands and areas of semi-permanent water with some interesting plants.



Middle Island: camp site on ridge at 51° 57.59'S 58° 28.28'W

51° 57.25'S 58° 29.12'W *Rock Shag colony, northern coast*; 51° 57.21'S 58° 28.63'W *King Shag colony*; 51° 57.44'S 58° 28.18'W *central ponds (north)*; 51° 57.48'S 58° 28.20'W *central ponds (south)*; 51° 57.40'S 58° 27.67'W *pond bed inundated by Prickly Burr*; 51° 57.64'S 58° 27.98'W *pond eastsoutheast of camp*.

In January 1997 a survey of the habitat, flowering plants and birds was made by Nick and Robin Woods. The records collected showed that it supported a fairly diverse flora, including several endemic species and that it was free of introduced predators (rats, mice or cats). Suggestions for management were made in the report to Falklands Conservation (R W and N C Woods 1997), which included setting up vegetation transects so that any changes over time without grazing pressure could be measured. Unfortunately none of the recommendations has been implemented, which means that there is no hard information on vegetation changes, only impressionistic notes.

Since a further ten years free of grazing animals has elapsed, it was felt that a return visit to resurvey the environment was necessary. This project was therefore developed from October 2006 between the three participants, who are all members of the Royal Naval Bird Watching Society. The visit was suggested to CPO Steve Copsey of the Joint Communications Unit and CPO Mark Cutts of the Supply Squadron at Mount Pleasant. They were very enthusiastic and saw their involvement as a way of showing other visiting RNBWS members that worthwhile birding projects could be carried out during their



Top Left: Landing Bay from campsite on day of arrival 617

Top Right: two days later, the same bay after northerly and westerly gales 821

Bottom Left: view east over northeastern point; sand with prolific growth of Bluegrass 636

Bottom Right: bad erosion of former Tussac fringe; view east from centre of northern coast 639

short time in the Falklands. Clearance for their participation was requested from and enthusiastically granted by Commander C G Moorey, Officer in Charge of the Royal Naval Detachment at Mount Pleasant. CPOs Copsey and Cutts negotiated for provisions and arranged for the Port Operations Troop, East Cove to take the party out on Friday 15 December and back on Monday 18 December on a Landing Craft.

Three tents were loaned by Falklands Conservation and most of the camping equipment, including stoves, fuel, utensils and rations were supplied from MOD at Mount Pleasant. Members supplied their own optical, photographic and record-making materials including outline maps.

The aims of the 2006 visit were:

- to list the flowering plants present, by identifying all species found and making an assessment of their abundance
- to list all bird species found and to count populations where possible, including the numbers and sizes of broods
- to record noticeable changes in vegetation cover since January 1997
- to compare results from 1997 with this survey.

Weather 15-18 December 2006

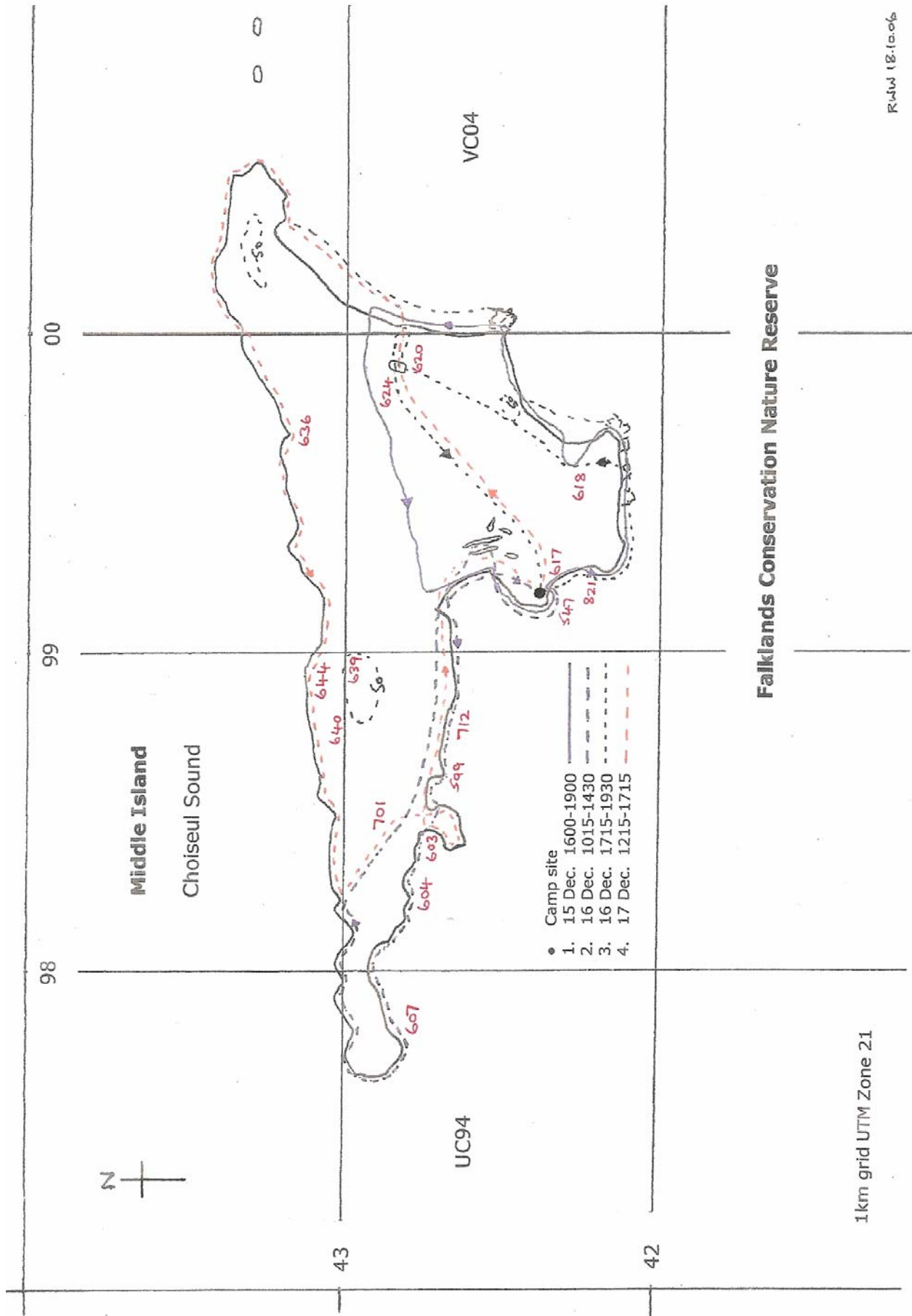
15 Dec. Flat calm early morning but gradually strengthening to a moderate breeze around midday and a strong, gusty northerly by evening; multi-layered cloud increased from the northwest; much dust and grass fragments were blowing by mid-evening.

16 Dec. Layered cloud early, with strong, gusty northerly; intermittent rain from 0930-1030 but wind continuing very strong, estimated about 30 knots, gusting 50 knots by midday; wind continued very strong to gale through evening.

17 Dec. Cloudy with gusting westerly gale from first light and rain showers; heavy breakers on beach below camp and walking difficult on wet rocks by shore; tent pegs pulled by gale, needed replacement by timbers from beach; wind backed to southwesterly then eased to a fresh westerly from midday with partial cloud cover; by evening, wind had disappeared and cloud cleared while temperature dropped quickly.

18 Dec. Slight rain very early, clearing to high cloud with strong sun, no swell and almost calm when Landing Craft arrived by 1000.

Comment: conditions were not ideal for surveying at all times, but there was sufficient daylight and dry weather to make a reasonable assessment of most areas.



Extent of the survey

The whole coastline was walked at least once and about one-third was surveyed more than once. It was not possible to cover all inland ground in detail due to lack of time and some very inclement weather.



Top Left: Fuegian Foxtail; Mark Cutts within the stand, showing its abundance and height 624

Top Right: dried out pond northeast of camp, inundated by Prickly Burr 620

Bottom Left: view east over ridge with dense Diddle-dee and scattered Woolly Ragwort, remnant Tussac on skyline 701

Bottom Right: peaty pond east of camp with bankside Pigvine and Bluegrass 618

Plants

Sixty-two species of flowering plants were recorded. They are listed here with brief notes on their status. Eight species recorded for the first time on Middle Island are in **bold**.

The 12 introduced species found in 2006 are marked **I** and endemics are marked **E**.

Acaena lucida Native Yarrow - common

Acaena magellanica Prickly Burr - very common, colonising decomposed Tussac peat ('black ground'), silt in damp areas and sand

I *Aira praecox* Early Hair-grass - widespread on peat

Alopecurus magellanicus Fuegian Foxtail - dominant in damp ground but only at one locality near the eastern coast.

I ***Alopecurus pratensis* Meadow Foxtail** - scarce, at one locality only

***Anagallis alternifolia* Pimpernel** - widespread, uncommon

Apium australe Wild Celery - widespread and very common on sand

Azorella filamentosa Wiry Azorella - uncommon at one location

Baccharis magellanica Christmas Bush - widespread and fairly common

I *Bellis perennis* European Daisy - widespread, numerous and co-dominant with *Leptinella scariosa* on several parts of the coastal slopes

Blechnum magellanicum Tall Fern - uncommon, restricted to dense Diddle-dee on western slopes

Blechnum penna-marina Small Fern - widespread and common on sand and peat

Callitriche antarctica Water starwort - uncommon, in very damp places

Caltha sagittata Arrow-leaved Marigold - uncommon but established in a few marshy areas

Carex trifida Sword-grass - widespread but uncommon on small islands in ponds, at pond margins and on coastal slopes with Tussac

I *Cerastium arvense* Field Mouse-ear - widespread with grasses, locally common

Chenopodium macrospermum Goosefoot - uncommon, but locally numerous on sandy beaches

Coronopus didymus Lesser Swine-cress - rare, few plants on peat

Crassula moschata Stonecrop - widespread and common on coastal rocks

Deschampsia flexuosa Wavy Hair-grass - uncommon, scattered through damp grassland

***Eleocharis melanostachys* Spike-rush** - rare, confined to one small pond margin

Elymus glaucescens Fuegian Couch - widespread, common on sandy areas

Empetrum rubrum Diddle-dee - dominant in places, especially on central slopes of the western peninsula

- Festuca contracta* Land-Tussac - widespread and common on inland sand
- Galium antarcticum* Antarctic Bedstraw - uncommon among grasses and Small fern
- Gamochaeta malvinensis* Falkland Cudweed - rare, a few seen on sand
- Gamochaeta spiciformis* Spiked Cudweed - rare, a few seen
- Gaultheria pumila* Mountainberry - widespread and fairly common
- Gunnera magellanica* Pigvine - widespread and numerous, especially in damp areas
- Hierochloe redolens* Cinnamon-grass - locally common and dominant in patches
- I** *Holcus lanatus* Yorkshire Fog - widespread and common on peaty grassland
- Isolepis cernua* Nodding Club-rush - widespread but only in wetter places; much grazed by geese
- Juncus scheuchzerioides* Native Rush - widespread and noted as colonising unstable black ground of decomposed Tussac peat
- Leptinella scariosa* Buttonweed - locally very numerous on coastal slopes of sand or peat and co-dominant with European Daisy in places
- E** ***Leucheria suaveolens* Vanilla Daisy** - rare; a few plants scattered through hummocky inland grasses
- Lilaeopsis macloviana* Lilaeopsis - uncommon; only in wet mud
- Luzula alopecurus* Native Wood-rush - widespread and common on sand and peat
- Luzuriaga marginata* Almond-flower - uncommon; only on grassland with Diddle-dee
- Mysiophyllum quitense* Water-milfoil - uncommon; only in wet mud at an ephemeral pond
- Olsynium filifolium* Pale Maiden - rare; few individual plants scattered through grassland
- Oxalis enneaphylla* Scurvygrass - uncommon; scattered plants in Diddle-dee and open grassland with Small Fern
- Phlebolobium maclovianum* Rock-cress - very rare; only one plant found in mixed hummocky grassland near Tussac
- Plantago barbata* Thrift Plantain - locally common, only on coastal slopes of extreme western point
- Poa alopecurus* Bluegrass - widespread on sand dunes inland and associated with coastal Tussac
- I** *Poa annua* Annual Meadow-grass - widespread but uncommon
- Poa flabellata* Tussac - widespread around coastal fringe, but only in good condition on some coastal cliffs and headlands; much evidence of former abundance and apparent destruction by fire
- Polygonum maritimum* Sea Knotgrass** - rare; only seen at one northern

coastal locality on beach stones

***Pratia repens* Berry-lobelia** - rare; a few populations in damp inland grassland

***Primula magellanica* Dusty Miller** - rare, but locally numerous towards centre of island

Rostkovia magellanica Short Rush - uncommon, only in muddy localities

Rubus geoides Falkland Strawberry - widespread but uncommon, with Diddle-dee and with grasses on sand

I *Rumex acetosella* Sheep's Sorrel - widespread, common among open Tussac and other grasses

I *Sagina procumbens* Procumbent Pearlwort - widespread but uncommon on damp slopes

Schizeilema ranunculus Buttercup-parsley - rare; only found in one area of beachside mud

Senecio candidans Sea Cabbage - widespread on sand beaches though only moderately numerous

E *Senecio littoralis* Woolly Ragwort - uncommon though widespread among Diddle-dee

E *Senecio vaginatus* Smooth Ragwort - widespread and common in a few places, mainly among Diddle-dee

I ***Senecio viscosus* Sticky Groundsel** - widespread and common, especially near penguin burrows

I *Senecio vulgaris* Groundsel - widespread but uncommon on peat

Stellaria debilis Stitchwort - uncommon or rare in open grassland

I *Urtica urens* Small Nettle - uncommon but locally numerous on sand

I *Vulpia bromoides* Squirreltail Fescue - widespread and fairly common

Comparison with 1997 plant survey

Due to further taxonomic work in South America and elsewhere, several species in this list have changed their status in the Falklands. *Coronopus didymus* Lesser Swine-cress is now considered to be a native, not introduced, while *Lilaeopsis macloviana* Lilaeopsis is not now considered a Falkland endemic as it has been found in southern South America. Similarly *Gnaphalium affine* Falkland Cudweed (reclassified as *Gamochaeta malvinensis*) has lost its Falkland endemic status. The scientific names of several of the species recorded have changed as noted in Broughton and McAdam (2005).

Year	Native species	Endemic species	Introduced species	Total species
1997	51	3	14	65
2006	51	3	11	62
Combined species recorded	59	4	16	75

Of the 65 species recorded in January 1997, only 52 were found in 2006. The 13 species not recognised were probably unrecorded for various reasons; three grasses were probably not yet flowering and were therefore overlooked; six species are very low growing and easily missed, especially where vigorous grasses have increased their cover; three introduced species are usually very local in distribution and may have become locally extinct. One species *Limosella australis* had possibly been extirpated from the only habitat where it was found in 1997. The first visit was about three weeks later in the summer season and the weather in spring and early summer had been noticeably dry, whereas there had been more rain up to December 2006. Some smaller herbaceous plants may not have been able to germinate or grow in spring 1996/97 but could have benefited from wetter conditions in late 2006. It was noticeable that there was more standing water in small pools than in January 1997.

The large pond hollow in which *Limosella australis*, *Spergularia marina* and *Lilaeopsis macloviana* were identified in 1997 was completely covered by dense *Acaena magellanica* up to at least 20cm tall and this particular pond basin was almost dry in December 2006. No other plants were found within this basin.

However, an additional ten species were identified for the first time. These included one introduced grass and an introduced weed of disturbed ground, Sticky Groundsel *Senecio viscosus*, which is often abundant on peat around the entrances to Magellanic Penguin burrows but was only recognised as present and widespread in the Falklands from about the year 2000.

Only 16 of the 75 flowering plant species so far recorded on Middle Island are non-native, a lower proportion of introduced species (21%) than often found on heavily grazed islands. This again shows the value of Middle Island as a nature reserve and provides support for its status to be formalised as a National Nature Reserve.



Top Left: Buttonweed and a little Sheep's Sorrel covering hard peat surface, south coast 604

Bottom Left: Decomposed Tussac peat on northern slope, hummock stabilised by Native Rush 640

Top Right: eroded peat by southern shore, some new Tussac and Wild Celery 599

Bottom Right: European Daisy, Prickly Burr and Swordgrass by southwestern shore 712

Birds

The following 31 species were recorded in December 2006. Of these, 22 species were definitely breeding and four were probably breeding, making a possible total of 26 breeding species. Five species were recorded either in passage offshore or scavenging at the King Shag colony.

Gentoo Penguin *Pygoscelis papua papua* - two on eastern sand beach with Magellanic Penguins

Magellanic Penguin *Spheniscus magellanicus* - widespread burrows in sand and peat, perhaps 500-600 pairs

Black-browed Albatross *Thalassarche melanophrys* - passing far offshore in very small numbers

Southern Giant Petrel *Macronectes giganteus* - passing offshore in small numbers

Rock Shag *Phalacrocorax magellanicus* - one colony on southeast-facing cliffs and at least three groups of 20+ on northwest-facing cliffs, total possibly 150 nests

King Shag *Phalacrocorax atriceps albiventer* - one large colony, up to 600 nests, on north-facing cliffs

Falkland Skua *Catharacta antarctica* - small colony on western ridge and another towards the eastern point; total up to 20 pairs; 9 nests seen with 2 eggs each

Dolphin Gull *Leucophaeus scoresbii* - up to 20 individuals around King Shag colony

Kelp Gull *Larus dominicanus* - about 25 individuals on coasts

Pale-faced Sheathbill *Chionis albus* - 24 birds in attendance at the King Shag colony

South American Tern *Sterna hirundinacea* - only one pair found, with a nest and one egg

Black-crowned Night Heron *Nycticorax nycticorax falklandicus* - 10+ on coasts, including immatures, but no definite evidence of breeding

Upland Goose *Chloephaga picta leucoptera* - 11 pairs recorded with a total of 46 goslings, in broods ranging from 1 to 9, average 4 goslings

Kelp Goose *Chloephaga hybrida malvinarum* - 20 pairs recorded with a total of 73 goslings, average 3.6, maximum 8 goslings per pair; one nest found with the female sitting on eggs and another containing goslings just hatched

Flightless Steamer Duck *Tachyeres brachypterus* - 18 pairs counted with a total of 64 ducklings, average 3.5 per pair, maximum 9 ducklings

Crested Duck *Lophonetta specularioides* - total 13 pairs spread around the coast, of which 7 pairs had between 2 and 5 ducklings, average 3; more than one group of 3 adults was seen with ducklings, a common arrangement in this species that is not yet understood

Speckled Teal *Anas flavirostris* - one pair on a small shallow, peaty pond with 3 ducklings

Chiloe Wigeon *Anas sibilatrix* - a single adult, apparently waiting off while its mate sat on a nest, but no nest could be found in the thick grasses

Magellanic Oystercatcher *Haematopus leucopodus* - 18 pairs were recorded, with 6 immatures, 2 large chicks and 3 nests with 1 or 2 eggs

Blackish Oystercatcher *Haematopus ater* - total of 6 pairs, with only 2 chicks and a nest with 1 egg

Two-banded Plover *Charadrius falklandicus* - a single female with one very small chick on the northern slopes of sand with grasses

Magellanic Snipe *Gallinago paraguayae magellanica* - at least 20 individuals were flushed and 1 large chick seen

Turkey Vulture *Cathartes aura jota* - up to 10 adults seen overhead

Short-eared Owl *Asio flammeus sanfordi* - a single adult flushed from long grasses towards the northeastern point on 16 Dec.; the following evening one seen hunting in same area and also overhead at our camp

Tussacbird *Cinclodes antarcticus antarcticus* - possibly up to 120 pairs, particularly numerous along the southern coastline; nestlings were being fed in some nest holes

Dark-faced Ground-tyrant *Muscisaxicola maclovianus maclovianus* - about 10 pairs recorded ; one nest found with 3 nestlings in a crack of a low cliff; mating was also observed

Falkland Grass Wren *Cistothorus platensis falklandicus* - at least 6 singing males recorded; adult seen carrying food for nestlings

Cobb's Wren *Troglodytes cobbi* - up to 5 noted, including one juvenile; seemed to be more numerous along the southern coastline of the western promontory

Falkland Thrush *Turdus falcklandii falcklandii* - total 15-25 recorded, including 2 juveniles

Black-throated Finch *Melanodera melanodera melanodera* - up to 20 males singing, across island; some juveniles seen

Long-tailed Meadowlark *Sturnella loyca falklandica* - 15-20 seen in open grassland, including 2 juveniles and some small family groups

Black-chinned Siskin *Carduelis barbata* - 15-20 counted on seeding grasses, including 4 groups with juveniles



Top Left: King Shag colony on eroded northern slopes 644

Bottom Left: Falkland Steamer Duck pair with 9 ducklings off southwestern coast 607

Top Right: Tussacbird hunting invertebrates on massive accumulation of dead kelp 603

Bottom Right: Kelp Goose pair with 8 goslings near camp site 547

Comparison with 1997 Bird survey

Year	Confirmed breeding	Probably breeding	Possible breeding species	Non-breeding species	Total species recorded
January 1997	21	8	29	6	35
December 2006	22	4	26	5	31
Combined species recorded	22	9	31	7	38

Seven of the species found in January 1997 were not recorded in December 2006 (Common Diving Petrel, Ruddy-headed Goose, Variable Hawk, Southern Caracara,

Peregrine Falcon, Brown-hooded Gull and Falkland Pipit). Of these, only the Ruddy-headed Goose and Falkland Pipit were confirmed or probable breeders in 1997. Three species were recorded in December 2006 that had not been seen in 1997. The two Gentoo Penguins were apparently only resting with Magellanic Penguins on a beach but the Speckled Teal was definitely breeding and the Chiloe Wigeon was probably breeding at one of the very small ponds set amongst lush grassland and Arrow-leaved Marigold with Spike-rush. A total of 38 species has now been recorded on or close to the island, of which it is likely that 31 species breed at least in some years if not annually.

Discussion

The eastern part of the island appeared to carry more dense grassland than in 1997. The Diddle-dee is dense and springy, the Prickly Burr is tall, with old crunchy stems below and the Bluegrass *Poa alopecurus* is in hefty tussocks covering large areas. Towards the northeastern point, this native grass dominated a wide strip of about 550m on pure sand and apparently provided a good habitat for a colony of breeding skuas.

The northern coastal strip of at least 2km from the western point and extending inland for up to 100m is badly eroded, showing mostly 'black ground' with patches of orange ash, where Tussac has been burnt out. Further inland as the ground rises slightly, Diddle-dee becomes dominant, with scattered yellow-flowered plants of the two endemic ragworts, Smooth *Senecio vaginatus* and Woolly *S. littoralis*.

There was more standing water in shallow peaty ponds than in January 1997, apart from the former largest pond at 51° 57.40'S 58° 27.67'W, which had almost dried out, probably because *Acaena magellanica* had dominated the area. Two more ponds were discovered about 400m east of our camp at 51° 57.64'S 58° 27.98'W. These supported the only population of *Eleocharis melanostachys* Spike-rush found, the breeding Speckled Teal and probably breeding Chiloe Wigeon.

The growth of Buttonweed *Leptinella scariosa* on coastal slopes of the western promontory and the apparent spread of Native Rush *Juncus scheuchzerioides* and Prickly Burr *Acaena magellanica* in mobile black decomposed Tussac peat, particularly along the ridge behind the northern coastline, suggests that these three species could be used as natural stabilising plants for other denuded sites that are prone to severe wind erosion. The spread of Fuegian Foxtail *Alopecurus magellanicus* was very marked in the eastern central part, from a few plants in 1997 to plants up to 1.5m tall dominating an area about 25m x 10m. Adjacent to this stand was a larger area dominated by Cinnamon Grass *Hierochloa redolens*. Amongst these grasses and the adjacent isolated large Tussac plants, the ground was extremely uneven and very difficult to walk through,

because between tussocks of grass and small fern there were dips and holes that were hidden until one was almost on top of them. In the western promontory, the Diddle-dee completely covered large areas of the slopes and ridge and again, this was difficult ground through which to walk because one had to step on top of the plants, not between them.

There were some newly germinated Tussac plants but large areas of denuded peat remained, particularly along the northern coast. The evidence of former destruction of Tussac by fire was much greater than had been noticed in 1997. Large circles of orange ash amongst the black decomposed peat were apparently the remnant burned out bases of Tussac plants. There were also many irregular pieces of contorted clinker, some with glassy patches, which would appear to have been formed in high temperature fires, many years ago.

Conclusions

The visit was brief but successful, though somewhat hampered by very strong winds and the inevitable blowing black dust on an island that has suffered severe vegetation loss and soil erosion over many years. Nevertheless, the majority of the plants and birds found in 1997 were rediscovered and an additional ten plant species were found. Of the birds, several unrecorded in 2006 were only visiting species in 1997 and another two waterfowl, both probably breeding, were seen for the first time.

These two visits have shown that several plant species are capable of stabilising eroded or bare ground; the Native Rush is successful on mobile black peat dust while Bluegrass and Prickly Burr colonise open sand. Buttonweed and Thrift Plantain together seem capable of providing low and tough vegetation cover to coastal peat slopes which formerly supported Tussac.

Middle Island is a valuable Nature Reserve for Falklands Conservation and we now have more records that show the gradual recovery of an overgrazed and severely eroded island following the removal of sheep. Further survey visits should be made at least every five years, if not more frequently.

The possible presence of breeding Diving Petrels was not investigated in 2006 due to lack of time and the weather. The low cliffs with Tussac along the most southerly shoreline need further examination.

Acknowledgements

To Port Operations, East Cove and the crew of the LCVP; to Helen Otley and Anna Shepherd for transport between Stanley and East Cove; to Falklands Conservation for approval of our planned visit and loaning tents; to Commander C. Moorey of the Supply Squadron for authorising the involvement of the naval personnel in this survey and to two other senior officers at Mount Pleasant, Lt Commander Paul Nash and Major Chris McGinley.

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