Long Term monitoring fieldwork 2017 – 2018

Report to Government of South Georgia and South Sandwich Islands

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Summary

Long term monitoring plots were established in 2012/13 by GSGSSI at four different sites around South Georgia to monitor recovery of vegetation and burrowing petrels following removal of Norway rats and reindeer. These plots were re-surveyed in 2013/4, 2015/16 and 2017/18. This report summarises the fieldwork carried out in 2017/18 and presents some initial results.

Fieldworkers:
Sally Poncet (SP)
Carola Rackete (CR)
Kelvin Floyd (KF)
Ken Passfield (KP)

Sites:
Barff Peninsua: Sorling
Busen Peninsula: Carlita
Thatcher Peninsula: Maiviken/Brown Mountain/Hestesletten
Bay of Isles: Albatross Island

Fieldwork diary:
24 December: Brown Mountain veg plots (SP, CR, KF, KP)
25 December: Day off
26 December: Maiviken veg and white-chinned petrel plots (SP, CR, KF, KP)
27 December: Data entry and preparation for Sorling
28 December: Sorling veg plots and white-chinned petrel plots (KP, KF)
Carlita: veg plots and white-chinned petrel plots (SP, CR)
29 December: Sorling: prion transects (KP, KF)
Carlita: prion transects (SP, CR)
30 December: Sorling: veg plots (KP, KF)
Carlita: white-chinned petrel plots (SP, CR)
31 December: Wet weather – biosecurity on gear and data entry
1 January: Hestesletten prion transects (SP, CR, KP)
2 January: Reindeer shooting excursion to The Crutch (KP, KF, SP)
3 January: Data entry, report writing.

7 January: Albatross Island veg plots (KP)
8 January: Albatross Island white-chinned petrel plots (KP
9 January: Albatross Island prion transects and white-chinned petrel plots (SP, KP)
10 January: Albatross Island prion transects (SP, KP)

Total number of days fieldwork (Thatcher, Barff and Busen): 10
Note: Albatross Island fieldwork undertaken during the South Georgia Surveys Albatross and Prion Islands monitoring programme.

Methods
The same protocol was followed as in previous years. Two of the Thatcher vegetation plots were not sampled – Plot 4 (wet grassland) had been trashed by fur seals and no markers were visible; Plot 10 (fellfield/scree) was a mass of dandelions, no stakes were found and looking for them would have trampled all the vegetation making measurements impossible. On Albatross Island Plot 4 (tussac) was not sampled as a wandering albatross had built a nest right in the centre of it. Within plots, some of the stakes were hard to locate but all were found in the end apart from Thatcher plot 5 quadrat 5.

Results
Whilst some of the changes to South Georgia following reindeer and rat eradications are highly visible (eg. recovery of pipits, recovery of grasslands), it is not clear if any changes are reflected in the monitoring plots. So far, repeat photographs show the changes best, however a quick glance at the data from the plots appears to confirm some initial trends. It must be stressed that this is no more than a quick glance at the figures and that a proper statistical analysis is required.

Photo monitoring
Vegetation changes are clearly shown in some of the repeat photos and examples are given below:


Carlita in 2012, showing reindeer grazed coastal tussac (photo A Wolfhaardt)


Carlita in 2017, showing significant recovery of coastal tussac (Photo C Rackete)

Overgrazed moss banks at Sorling in 2012 (Photo A Wolfhaardt)

Recovering moss banks at Sorling in 2017 (photo K Floyd)

White-chinned petrels

Whilst carrying out the fieldwork it appeared that the total number of all burrows (ie both apparently active and apparently inactive) in each transect had not changed significantly since 2012 but there was a higher proportion of apparently occupied burrows, which might be a response to the cessation of rat predation. This appears to be borne out by the results, however Albatross Island also shows this increase which is puzzling it has always been rat-free.

	2012		2017	
Site	Total no. burrows	% apparently active	Total no. burrows	% apparently active
Thatcher	45	87	52	100
Busen	53	72	56	100
Barff	69	72	60	98
Albatross Is	80	84	97	93

Table 1: Total number and percentage of apparently active white-chinned burrows

Antarctic prion and diving petrel transects

No particular change in the number or distribution of burrows was noticed during fieldwork, but there did seem to be a higher proportion of occupied burrows which was confirmed by the data, although again, this increase is also apparent on Albatross Island. The methodology for the surveys requires a transect to be walked between 2 points up to 1km apart using GPS. Due to the difficulty of walking exactly the same track each time it is not surprising that there is no noticeable trend in overall numbers on the three mainland sites.

	2012		2017	
Site	Total no. burrows	% apparently active	Total no. burrows	% apparently active
Thatcher	99	18	26	35
Busen	48	29	58	91
Barff	337	70	308	85
Albatross Is	199	88	236	97

Table 2: Total number and percentage of apparently active Antarctic Prion and Common Diving-petrel burrows

Vegetation

The single most obvious change likely to show up in the vegetation quadrats is an increase in tussac cover in previously grazed areas. The data appears to show this with both the highest increases and the lowest decreases in tussac cover occurring at the Barff and Busen sites. There are also several factors other than grazing which may affect tussac cover, such as fur seal action, or albatrosses and giant petrels using tussac for nest building.

Site	No. quadrats with tussac	% of quadrats with tussac cover remaining the same since 2012	% of quadrats with increasing tussac cover since 2012	% of quadrats with decreasing tussac cover since 2012
Thatcher	15	47	27	27
Busen	30	53	30	17
Barff	30	43	50	7
Albatross Is.	10	20	20	60

Table 3: % of tussac quadrats with stable, increasing or decreasing tussac cover from 2012/13 to 2017/18

Recommendations

1. Albatross Island should be discontinued as a monitoring site for this programme. It was selected as a control as it had never been grazed or had rodents, however the climate in the Bay of Isles and resulting vegetation communities are very different to those in the central north coast where the other sites are located. The ground is much wetter and softer making it harder to carry out white-chinned petrel and prion surveys without collapsing burrows. The prion and diving petrel transects also use a different methodology to mainland sites ie they are only 40m long and are placed in areas that already have burrows. They do give an 'aspirational' number of burrows/metre in ideal habitat, but now this data has been collected they can be discontinued.
2. Carry out a full statistical analysis on data collected so far to see if any trends are emerging.