



Falkland Islands Seabird Monitoring Programme

Annual Report 2014/2015 (SMP22)

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Andrew Stanworth

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Summary

The Falkland Islands support seabird populations that are of global importance; both numerically, and in terms of conservation status. Accordingly, fluctuations in local populations impact the global conservation status of these species.

Currently the Falkland Islands Seabird Monitoring Programme (FISMP) monitors Gentoo Penguin (*Pygoscelis papua*) at 11 sites (16 colonies), Magellanic Penguin (*Spheniscus magellanicus*) at one site (one colony), and Southern Rockhopper Penguin (*Eudyptes c. chrysocome*) at five sites (13 colonies). Imperial Shag (*Phalacrocorax atriceps*) is monitored at three sites. King Penguin (*Aptenodytes patagonicus*) and Black-browed Albatross (*Thalassarche melanophris*) are monitored at single, but key, sites; in terms of population numbers. Southern Giant Petrel (*Macronectes giganteus*) is monitored at one site (three colonies). Additional count data have been contributed by landowners at two further sites.

During the 2014 season indications were of stable or increasing populations of those species monitored and of breeding success generally above the annual average.

Estimated numbers of Gentoo Penguin breeding pairs at monitored sites increased by 8.0 %. Given previous fluctuations in what has been an increasing population trend since 2003, there is currently no indication of any change in this situation. North-east colonies notably continued to reach new highs for breeding pair counts, with most other East Falkland colonies recovering partially from low breeding pair numbers in 2013. Steeple Jason colonies in the north-west both showed declines, with that at the House colony being the first notable decline in 10 years. Average estimated breeding success rose to take it just above the annual average. Regionally estimated breeding success increased in all areas, with only the House colony at Steeple Jason showing a marked decline; both colonies at Steeple Jason still appear to be following an overall declining trend in estimated breeding success.

The total breeding pair estimate of Southern Rockhopper Penguin for monitoring sites reached a new high since monitoring began in 2005. Estimated breeding populations at individual sites were considered generally to be stable/ increasing; with the exception of Steeple Jason where the estimated number of breeding pairs fell notably. The estimate of average breeding success was

higher than in recent seasons and well above the annual average.

Magellanic Penguin at Gypsy Cove remain broadly in three groupings, which appear to be associated with the extent of tussock habitat at the monitoring site. Occupancy rates for Gypsy Cove were the second highest recorded and well above previous seasonal averages.

Estimated numbers of pre-fledged King Penguin chicks rose to a new high for the Volunteer Green colony, continuing a strong positive trend.

Indications from the monitoring sites at Steeple Jason were of stable numbers at the largest breeding colony of Black-browed Albatross. This is mirrored in the count data provided for Penguin Point South, Dunbar. Breeding success at Steeple Jason was the highest on record.

There is still an apparent steady upward trend in the Steeple Jason population of Southern Giant Petrel, though a general downward trend in estimated breeding success also seems apparent. At Bleaker Island, chick counts give good indication that breeding pairs are stable/increasing at this site.

Contents

Summary	
Introduction	5
Materials and Methods	7
Gentoo Penguin	8
Southern Rockhopper Penguin	8
Magellanic Penguin	9
King Penguin	9
Imperial Shag	9
Black-browed Albatross and Southern Giant Petrel	9
Count methods	10
Results	12
Gentoo Penguin	12
Southern Rockhopper Penguin	16
Magellanic Penguin	19
King penguin	21
Imperial Shag	21
Black-browed Albatross	22
Southern Giant Petrel	26
Discussion	28
Acknowledgements	30
References	31
Appendix 1	32
Appendix 2	33
Appendix 3	34
Appendix 4	35
Appendix 5	36

Introduction

The Falkland Islands support seabird populations that are of global importance; both numerically, and in terms of conservation status. An estimated 67-70 % of the global population of Black-browed Albatross (*Thalassarche melanophris*) breeds in the Falkland Islands (ACAP 2010, BirdLife International 2012). This species is currently listed as 'Near Threatened' on the IUCN Red List (IUCN 2013). The Falklands are also home to approximately 36 % of the world's population of Southern Rockhopper Penguin (*Eudyptes c. chrysocome*) (Red Listed as 'Vulnerable') and approximately 34 % of the world's population of Gentoo Penguin (*Pygoscelis papua*) (Red Listed as 'Near Threatened'). Accordingly, fluctuations in local populations impact the global conservation status of these species.

Falklands Conservation initiated the Falkland Islands Seabird Monitoring Programme (FISMP) in 1989/90. Its initial purpose was to monitor the diet and population dynamics of Gentoo Penguin, Magellanic Penguin (*Spheniscus Magellanicus*), Southern Rockhopper Penguin, and Black-browed Albatross. Diet sampling was discontinued in 2003. Since then, population monitoring has continued on an annual basis with some changes taking place to the original format, such as the addition and loss of some monitoring sites and the addition of other species.

Currently the FISMP monitors Gentoo Penguin at 11 sites (16 colonies), Magellanic Penguin at one site (one colony), and Southern Rockhopper Penguin at five sites (13 colonies). King Penguin (*Aptenodytes patagonicus*) and Black-browed Albatross are monitored at single, but key, sites, in terms of population numbers. Since 2006, Southern Giant Petrel (*Macronectes giganteus*) has been monitored at one site (three colonies). Monitoring of Imperial Shag (*Phalacrocorax atriceps*) has been initiated recently at three sites.

In 2010, monitored colonies made up approximately 18 % of the Falklands' breeding population of Gentoo Penguin (estimated at 132,000 breeding pairs); approximately 2.6 % of the Falklands' breeding population of Southern Rockhopper Penguin (estimated to be 319,000 breeding pairs) (Baylis 2012) and approximately 0.5 % – 0.6 % of the total Falklands' breeding population of Black-browed Albatross (estimated to be between 475,500 and 535,000 breeding pairs) (Wolfaardt 2012). Based on 2005 figures (the last Island-wide Census for Southern Giant Petrel), the monitoring site for Southern Giant Petrel made up approximately 7.3 % of the total Falklands'

breeding population (Reid and Huin 2005). The only population estimate for Magellanic Penguin in the Falkland Islands is for 76,000 to 142,000 pairs (Woods and Woods 1997). As a very broad estimate, the current monitoring site is likely to represent less than one percent of this. There are no other significant King Penguin colonies within the Falkland Islands and the small numbers of individuals at other locations are not systematically monitored. The current monitoring site is likely to represent over 95 % of the breeding population.

The information gathered as a result of the FISMP has contributed to the identification of local, regional and global conservation priorities and provided information necessary for IUCN Red Listing of both Southern Rockhopper Penguins and Black-browed Albatross. The FISMP provides an important long-term data set on population trends and breeding success, which further contributes to other areas of research.

This report details monitoring results from the 2014/2015 breeding season as well as contributed current and historic data collected by landowners at Dunbar and Bleaker Island settlements.

Materials and Methods

Within this report, breeding seasons are referred to by the year in which they commenced, for example; 2014 describes the 2014/2015 season. 'Location' or 'site' refers to a named geographical area, such as a settlement or 'camp', and this may support more than one colony. For example, Volunteer has Gentoo Penguin colonies at Volunteer Green, Lagoon Sands and at Cow Bay; Race Point has Gentoo Penguin colonies at Rookery Sands and Fanning Harbour. 'Colony' refers to a group or groups (sub-colonies) of birds in close proximity, typically within 50-100 m of each other and/or with the same or proximate access from the sea. Monitoring locations are shown in **Figure 1**, exact grid references are provided in **Appendices 2 to 5**.

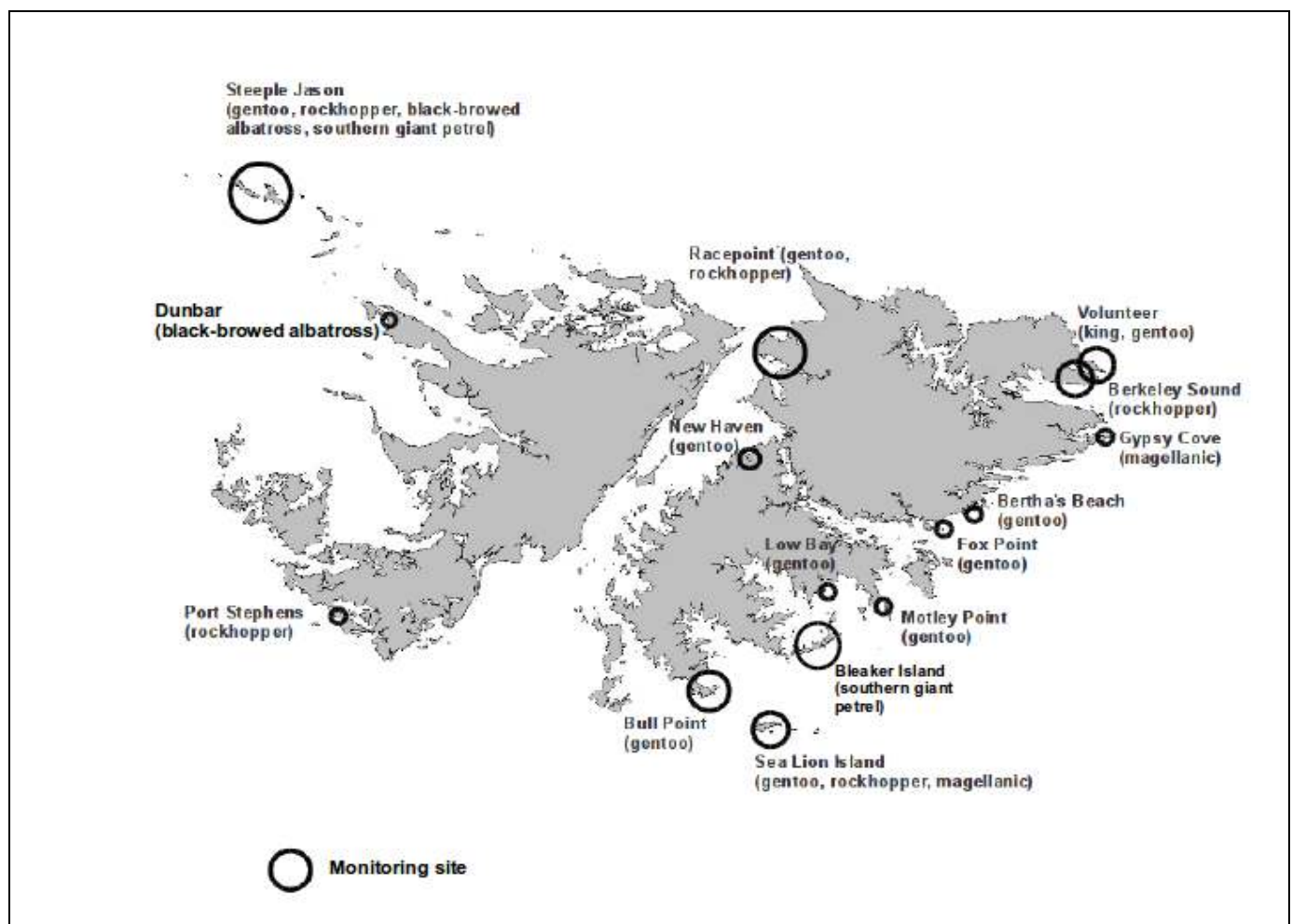


Figure 1: Map of monitoring locations.

In addition to those counts undertaken by Falklands Conservation (below), counts have also been undertaken at Dunbar (Black-browed Albatross) and Bleaker Island (Southern Giant Petrel) by the landowners. Any variation from the standard methodology is reported in the text.

Gentoo Penguin

Breeding pairs of Gentoo Penguins were counted during egg-laying, over the period 3-21 November 2014. The number of chicks was counted soon before fledging, during the period 3-21 January 2015, and used to estimate breeding success. The monitoring locations (colonies in brackets if more than one) were:

- Volunteer (Volunteer Green, Cow Bay and Lagoon Sands);
- Race Point (Fanning Harbour and Rookery Sands);
- Sea Lion Island;
- New Haven;
- Bull Point (Bull Point and Bull Roads);
- Motley Point;
- Low Bay;
- Bertha's Beach;
- Fox Point;
- Pleasant Roads; and
- Steeple Jason (House and Neck).

Southern Rockhopper Penguin

Southern Rockhopper Penguin breeding pair counts were performed from the commencement of egg-laying during the period 4 to 19 November 2014. Chick counts were carried out between 6 and 21 January 2015. The locations (colonies in brackets if more than one) were:

- Steeple Jason (North West Flat, North West Ridge, S5Tip and South East);
- Sea Lion Island (Rockhopper Point);
- Race Point (Fanning Head North and Fanning Head South);
- Berkeley Sound (Diamond Cove, Rugged Hill and Eagle Hill); and
- Port Stephens (Stephen's Peak).

Magellanic Penguin

Transects were carried out every 100 m (approximately) from Engineer Point to the Car Park at Gypsy Cove on 16 December 2014. Transects were 4 m wide, starting from the shore line, and running perpendicular to it, for a distance 40 m further than the last burrow found. Using a pole with torch attached, burrows within the transect were categorised as either 'occupied', 'unoccupied' or 'unknown' if it was not possible to determine occupancy. Burrow density was derived from each transect as number of burrows in the transect area from the start of the transect to as far as the last recorded burrow.

King Penguin

The only significant population of King Penguins within the Falkland Islands is found at Volunteer. This population has been monitored annually since the onset of the FISMP, with the first independent counts having been performed earlier, since 1980. A few individuals also breed at nearby Lagoon Sands. The breeding cycle of King Penguins extends over a year and consequently is not synchronised to summer breeding as with the other penguin species. The chosen unit of measure for King Penguin is pre-fledged chicks that have survived the winter. This is not a measure of the total number of chicks produced (as some will have perished over the winter), nor is it an exact indicator of the number of breeding pairs. Counts of pre-fledged chicks were performed on 20 November 2014.

Imperial Shag

Counts of Imperial Shag were conducted at Motley Point (16 November 2014), Berkeley Sound (19 November 2014) and Steeple Jason (4 November 2014) during Gentoo Penguin breeding pair counts. Due to the late breeding of Imperial Shag, numbers derived represent potential breeders rather than actual breeding pairs.

Black-browed Albatross and Southern Giant Petrel

Counts of Black-browed Albatross and Southern Giant Petrel breeding pairs at Steeple Jason were performed between 30 October and 6 November 2014, and in order to estimate breeding success, chicks from these colonies were counted between 18 and 19 March 2015. Three colonies of Southern Giant Petrel and five sub-colonies (distinct nodes from the main colony, or groups of breeding birds that are slightly separated from the main colony) of Black-browed Albatross are

monitored.

Counts of Black-browed Albatross chicks were made at Penguin Point South, Dunbar on 17 March 2015 by the landowner. Counts of Southern Giant Petrel chicks were made at Bleaker Island in February by the landowner.

Count Methods

Whenever possible the total counts were made of all breeding pairs/chicks at individual locations, whilst in the field, by paired observers (**Appendix 1**). The count units for estimated breeding pairs and estimated breeding success were 'apparently occupied nest' and 'pre-fledged chick', respectively. The decision to utilise photo counting was made on an individual colony/sub-colony basis, where it was felt that a paired tally count in the field would not provide a reliable estimate. This was generally due to the size of some colonies (e.g. Steeple Jason Neck). In some instances, for chick counting, large numbers of highly mobile chicks had merged sub-colonies over large areas. Here again, it was felt, that reliable estimates could not be derived and the decision was made to count the other various sub-colonies that had remained distinct. These counts still related to individual breeding pair numbers from the counts earlier in the season, and from this breeding success could be derived; in essence a sub-sampling technique. The various methods, or combination of methods, employed for each location/ colony are presented in **Appendices 2 to 5**.

Grid references of individual colonies (approximate centres) were taken where possible and are provided in **Appendices 2 to 5**.

Field Counts

Whenever possible, the number of 'apparently occupied nests' and 'pre-fledged chicks' were counted at least three times by two or more observers using tally counters in accordance with standard methods (Thompson and Riddy 1993). These counts (and those few of reduced replication) were subsequently averaged to give estimates of breeding pair and chick numbers. These counts are referred to as 'Tally Repeated'. Counts at Penguin Point South, Dunbar and Bleaker Island were single counts by a single observer. In some instances groups or count unit numbers were so small that it was felt the number of count units could confidently counted without error on a single occasion. These counts are referred to as 'Tally Agreed'. Breeding success is expressed as the number of chicks per breeding pair for species with two or more chicks and as a

percentage for those with one chick on graphs.

Photo Counts

The majority of photographs were taken using a GoPro HD Hero. The camera was pole mounted and held aloft from a vantage point to a height of approximately 5 m whilst a minimum of three photos were taken in 1920x1080 resolution in jpeg format giving a 127 ° field of view. Where colonies were too large to fit into a single photograph, markers or natural features were used to subdivide the colonies into sections that could be photographed. There was no evidence of disturbance in the colonies from using this technique. A number of other photos were taken using digital SLR cameras using the highest possible resolution images.

Photographs were down-loaded and were counted using ImageJ software. Counts were repeated a minimum of three times and the average taken. These are referred to in Tables as 'Photo Counts'.

Results

Gentoo Penguin

Breeding Pairs

There is a complete data set for the current annually monitored locations (excluding Pleasant Roads) for the last 12 seasons. The combined total of estimated breeding pairs for all these locations is shown in **Figure 2**. At the currently monitored sites, the total estimated number of pairs increased from 26,241 in the 2013 season to 28,330 in the 2014 season; 8.0 % overall.

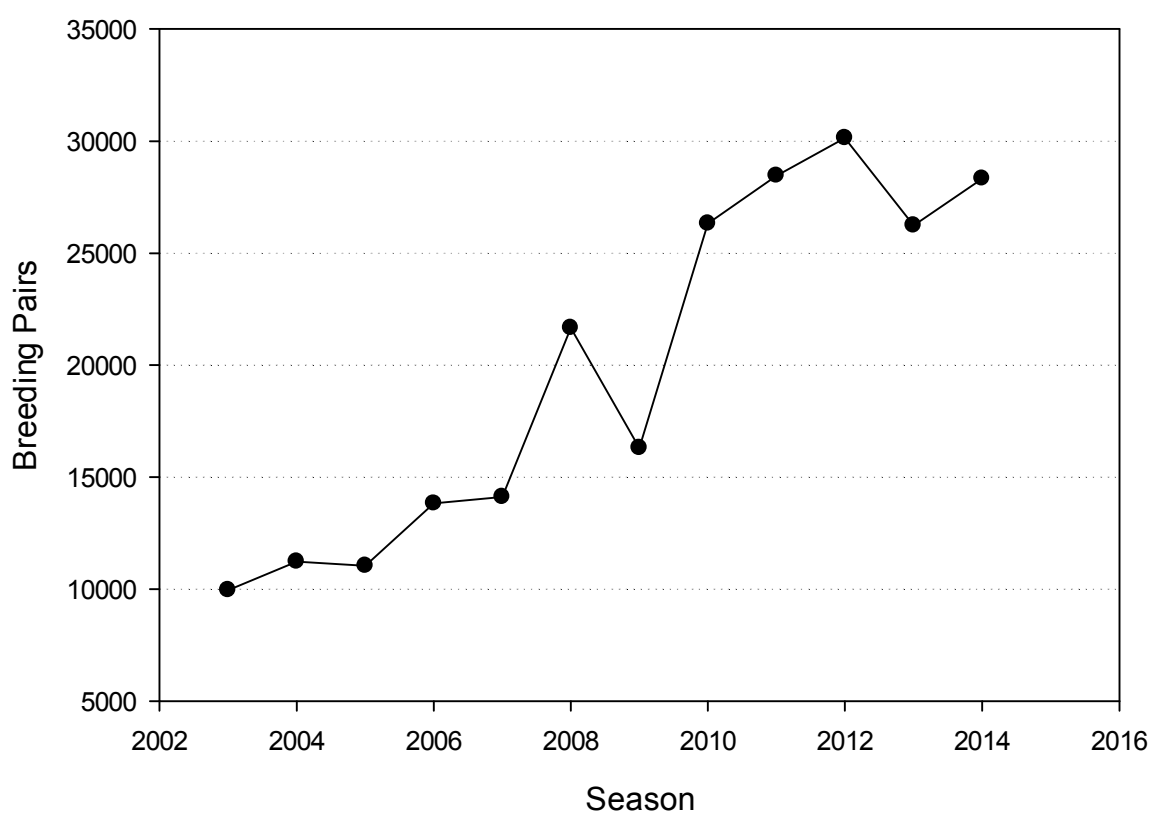


Figure 2: Seasonal changes in total estimated Gentoo Penguin breeding pairs from current annually monitored locations.

The estimated number of Gentoo Penguin breeding pairs increased at 13 of the 16 monitoring colonies (**Figures 3 to 7**). North-east colonies continued to achieve historic maxima (increase of 14.0 ± 8.6 % on 2013) whilst most other colonies recovered partially from the marked declines of the last season (south-east: increase of 23.4 ± 16.6 %, mid-east: increase of 54.8 ± 71.0 %; Falkland Sound: increase of 7.5 ± 11.2 %). Declines were evident at both Steeple Jason colonies (combined decrease of 12.5 ± 11.0 %) and for a fourth consecutive year at Rookery Sands.

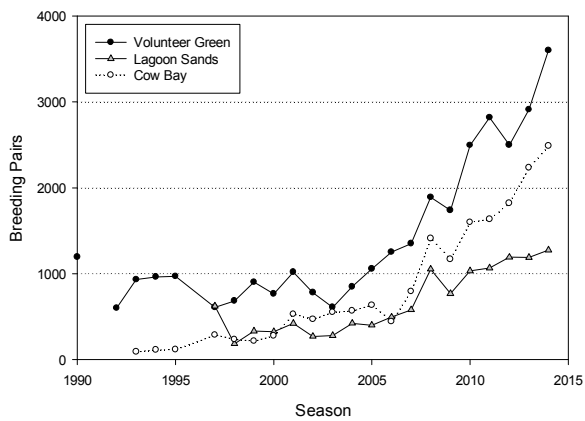


Figure 3: Seasonal changes in estimated Gentoo Penguin breeding pairs for locations in north-east Falkland.

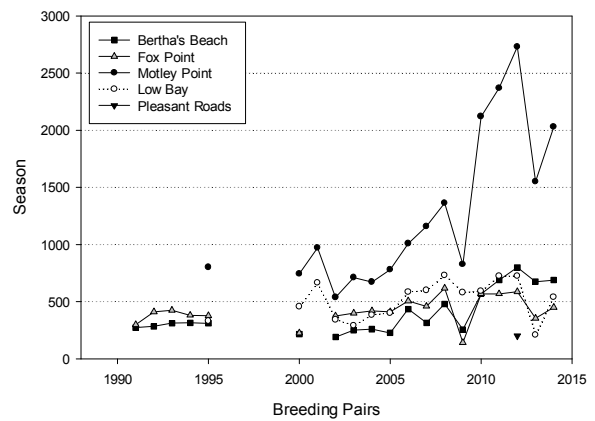


Figure 4: Seasonal changes in estimated Gentoo Penguin breeding pairs for locations in mid-east Falkland.

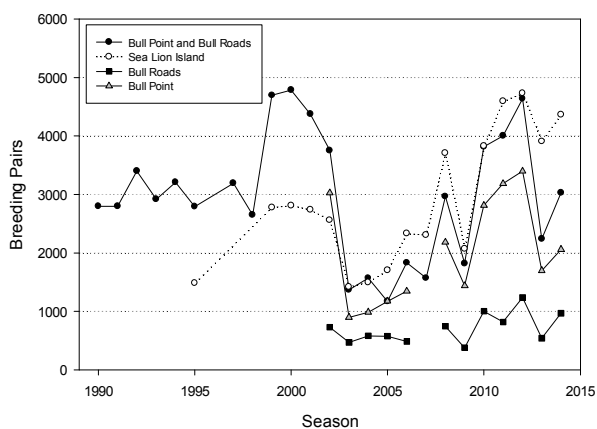


Figure 5: Seasonal changes in estimated Gentoo Penguin breeding pairs for locations in south-east Falkland.

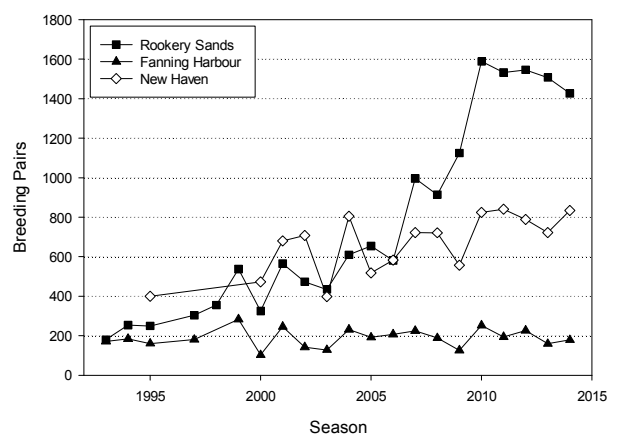


Figure 6: Seasonal changes in estimated Gentoo Penguin breeding pairs for locations on Falkland Sound.

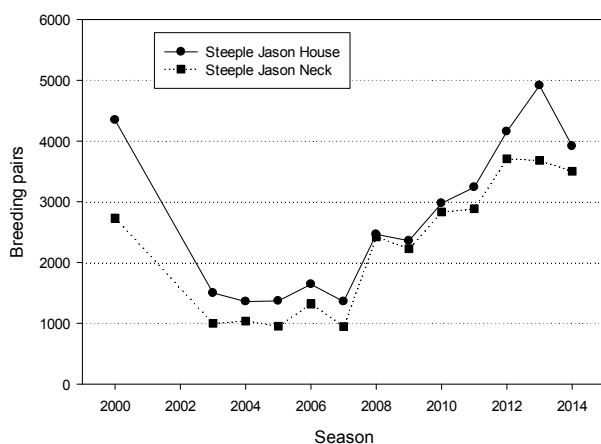


Figure 7: Seasonal changes in estimated Gentoo Penguin breeding pairs for locations on Steeple Jason.

Breeding Success

Average estimated breeding success rose from 0.84 chicks/pair in 2013 to 1.05 chicks/pair in 2014 taking it above just above the seasonal average (**Figure 8**).

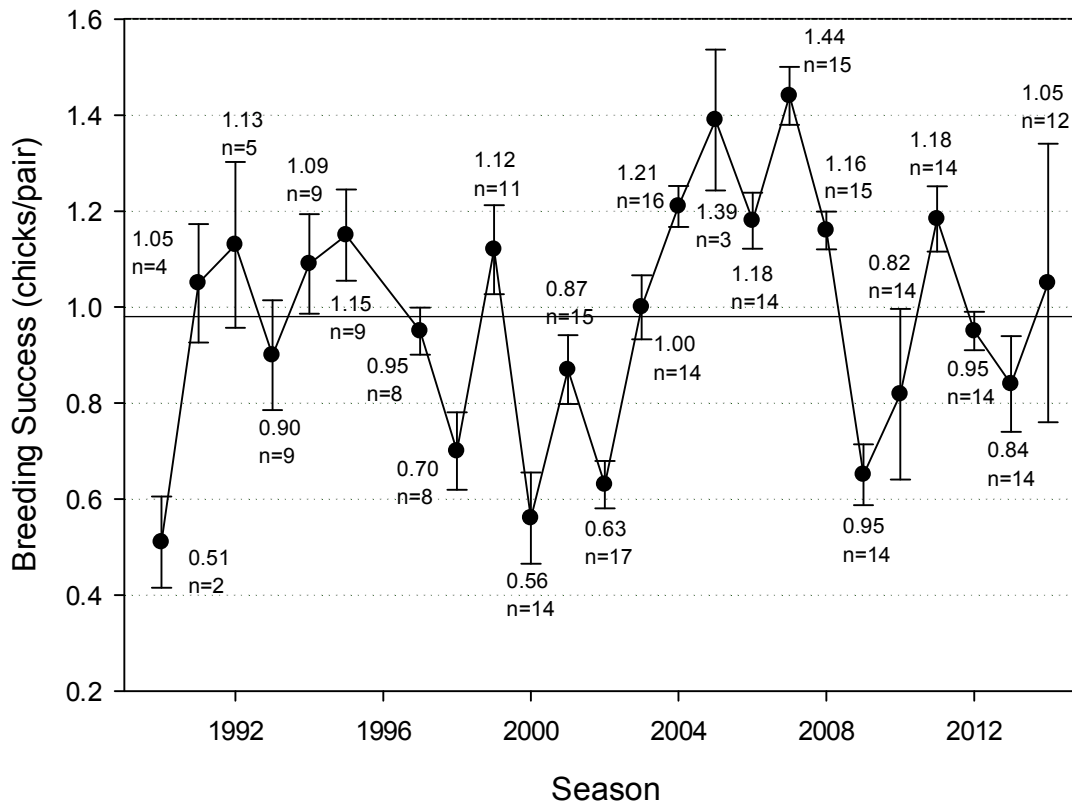


Figure 8: Seasonal changes in estimated Gentoo Penguin breeding success from current annually monitored sites (solid line – seasonal average). Standard Error bars show error about the overall mean by site means, and do not incorporate error about individual sites.

The range of breeding success between locations varied from a minimum of 0.37 ± 0.02 chicks/pair at Steeple Jason House to a maximum of 1.77 chicks/pair at Rookery Sands (**Figures 9 to 13**). Only the House colony at Steeple Jason exhibited a decrease in breeding success from the previous season (down 36.2 %). Here the maximum sub-colony success was 0.52 ± 0.03 chicks/pair with one sub-colony achieving less than 0.1 ± 0.05 chicks/pair. Increases in breeding success were most evident in south-east and mid-east colonies: up 137.6 ± 84.8 % and 44.3 ± 8.1 % respectively (Standard Error figures report error about the overall mean by site means, and do not incorporate error about individual sites).

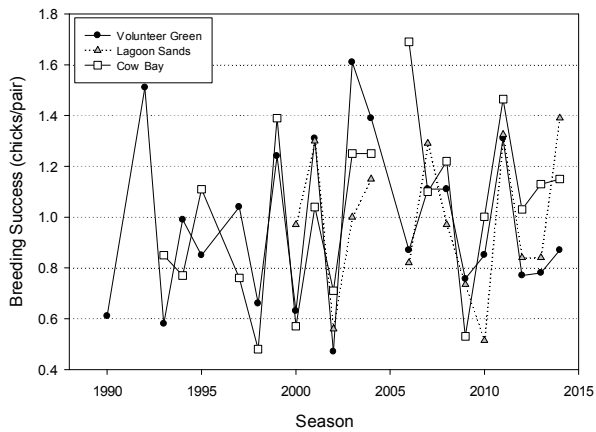


Figure 9: Seasonal changes in estimated Gentoo Penguin breeding success for locations in north-east Falkland.

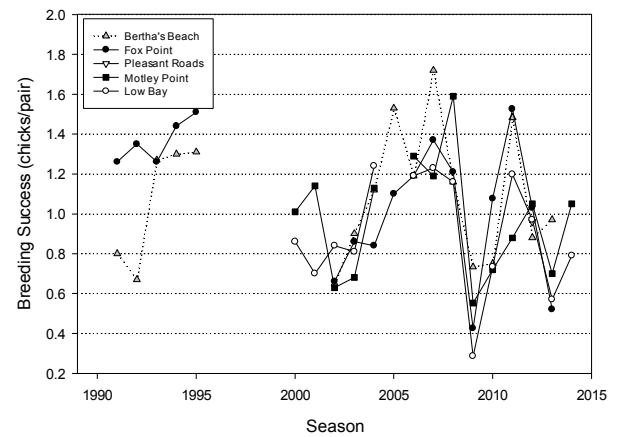


Figure 10: Seasonal changes in estimated Gentoo Penguin breeding success for locations in mid-east Falkland.

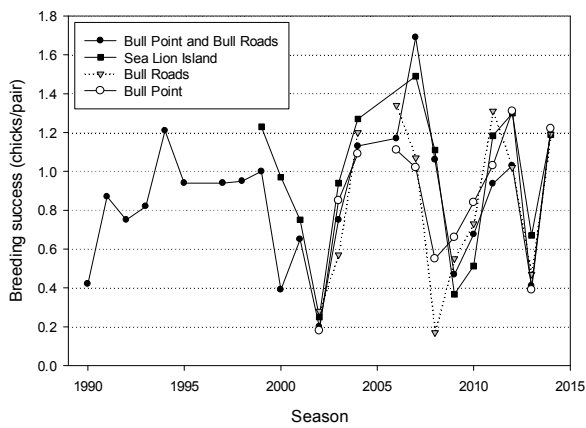


Figure 11: Seasonal changes in estimated Gentoo Penguin breeding success for locations in south-east Falkland.

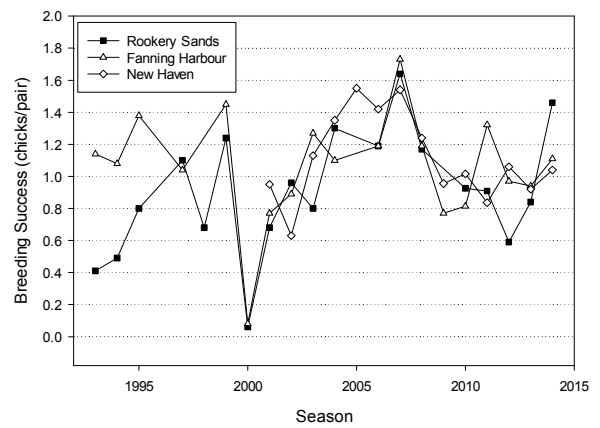


Figure 12: Seasonal changes in estimated Gentoo Penguin breeding success for locations on Falkland Sound.

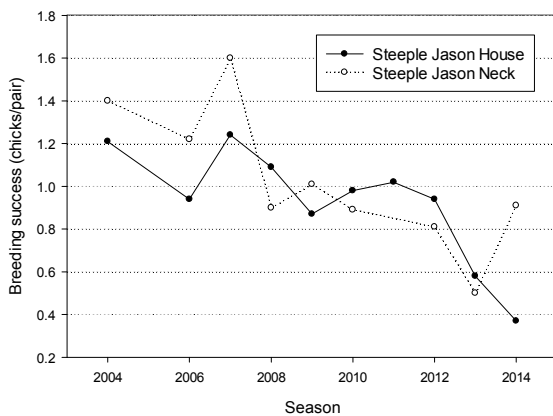


Figure 13: Seasonal changes in estimated Gentoo Penguin breeding success for locations on Steeple Jason.

Southern Rockhopper Penguin

Breeding Pairs

Five locations have been monitored yearly since 2005. At these sites, the combined total estimate of the number of breeding pairs increased from 5912 in the 2013 season to 6136 in the 2014 season, a 3.8 % increase (**Figure 14**), and the highest number recorded since monitoring began at these sites.

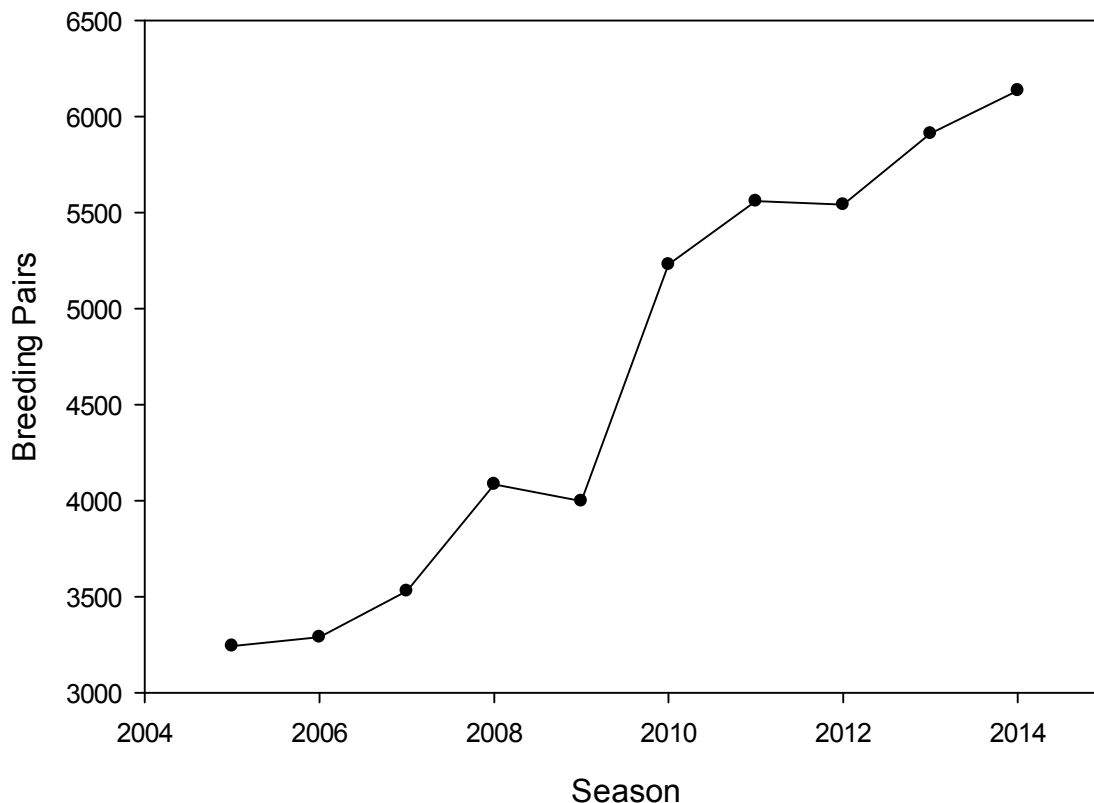


Figure 14: Seasonal changes in total estimated Southern Rockhopper Penguin breeding pairs from current annually monitored locations.

The estimated number of Southern Rockhopper Penguin breeding pairs increased at four of the five monitoring locations. Berkeley Sound estimated breeding pairs increased by 10.6 % on last season, whilst numbers at Port Stephens (Stephen's Peak), Race Point (Fanning Head) and Sea Lion Islands increased by 1.3 %, 19.1 % and 9.8 % respectively (**Figure 15**). At Steeple Jason (all sub-colonies combined, excluding the Neck at which monitoring ceased in 2012) estimated breeding pairs decreased markedly by 31.7 % (**Figure 16**).

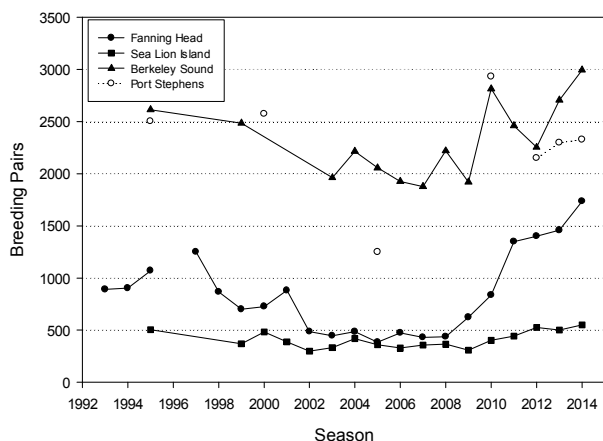


Figure 15: Seasonal changes in estimated Southern Rockhopper Penguin breeding pairs for locations in mainland East and West Falkland.

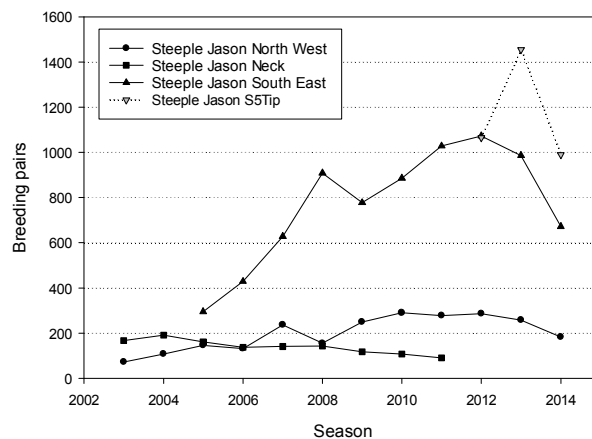


Figure 16: Seasonal changes in estimated Southern Rockhopper Penguin breeding pairs for locations on Steeple Jason.

Breeding Success

Average breeding success in Southern Rockhopper Penguin rose markedly from 0.48 ± 0.09 chicks/pair in 2013 to 0.82 ± 0.11 chicks/pair in 2014 (Standard Error figures report error about the overall mean by site means, and do not incorporate error about individual sites), the fifth highest estimate since monitoring began (**Figure 17**).

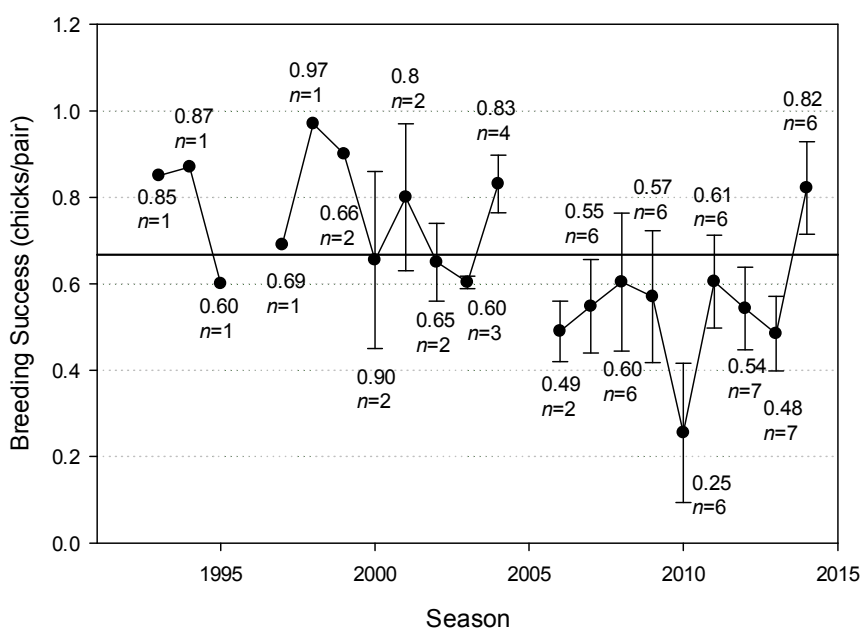


Figure 17: Seasonal changes in estimated Southern Rockhopper breeding success from current annually monitored sites (solid line – seasonal average). Standard Error bars show error about the overall mean by site means, and do not incorporate error about individual sites.

Berkeley Sound and Steeple Jason colonies had improved breeding success since the previous season (**Figures 18 and 19**). The range of breeding success between locations varied from a minimum of 0.57 ± 0.03 chicks/pair at Sea Lion Island to a maximum of 1.1 ± 0.05 chicks/pair at Rugged Hill West, Berkeley Sound.

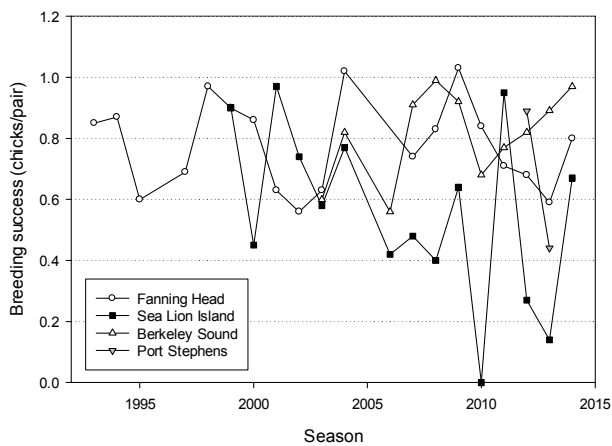


Figure 18: Seasonal changes in estimated Southern Rockhopper Penguin breeding success for locations in mainland East and West Falkland and Sea Lion Island.

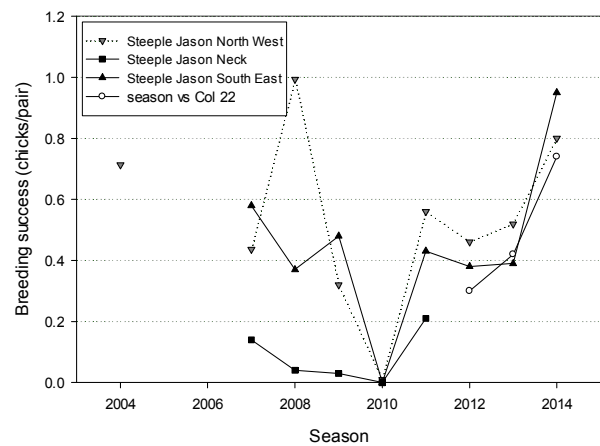


Figure 19: Seasonal changes in estimated Southern Rockhopper Penguin breeding success for locations on Steeple Jason.

Magellanic Penguin

The location and extents of transects and the estimated occupied burrow densities at Gypsy Cove are shown in **Figure 20**. Twenty nine transects were carried out between Engineer Point and the Car Park at Gypsy Cove, of which, just over half ($n=17$) contained Magellanic Penguin burrows, of which 15 (yellow, orange, dark orange and red coloured bars on **Figure 20**) contained occupied burrows.



Figure 20: Transect locations for the Magellanic Penguin survey at Gypsy Cove. Yellow (≥ 0 and $\leq 10,000$ breeding pairs/km²), light orange ($> 10,000$ and $\leq 20,000$ breeding pairs/km²), dark orange ($> 20,000$ and $\leq 30,000$ breeding pairs/km²) and red ($> 30,000$ breeding pairs/km²) lines show burrow densities between the shore and the furthest burrow from the shore; grey lines show the extent of each transect where no burrows are present.

Where burrows occurred, estimated densities ranged from 7,847 to 35,871 occupied burrows /km², with an average density of $8,431 \pm 2,819$ /km². Mean occupancy rate derived from transects using the current methodology for Gypsy Cove was 43.3 ± 7.5 % ($n=17$). Taking all burrows ($n=77$), as per surveys prior to 2012, gave an occupancy rate of 36.4 %, well above the seasonal average for

monitored sites (**Figure 21**).

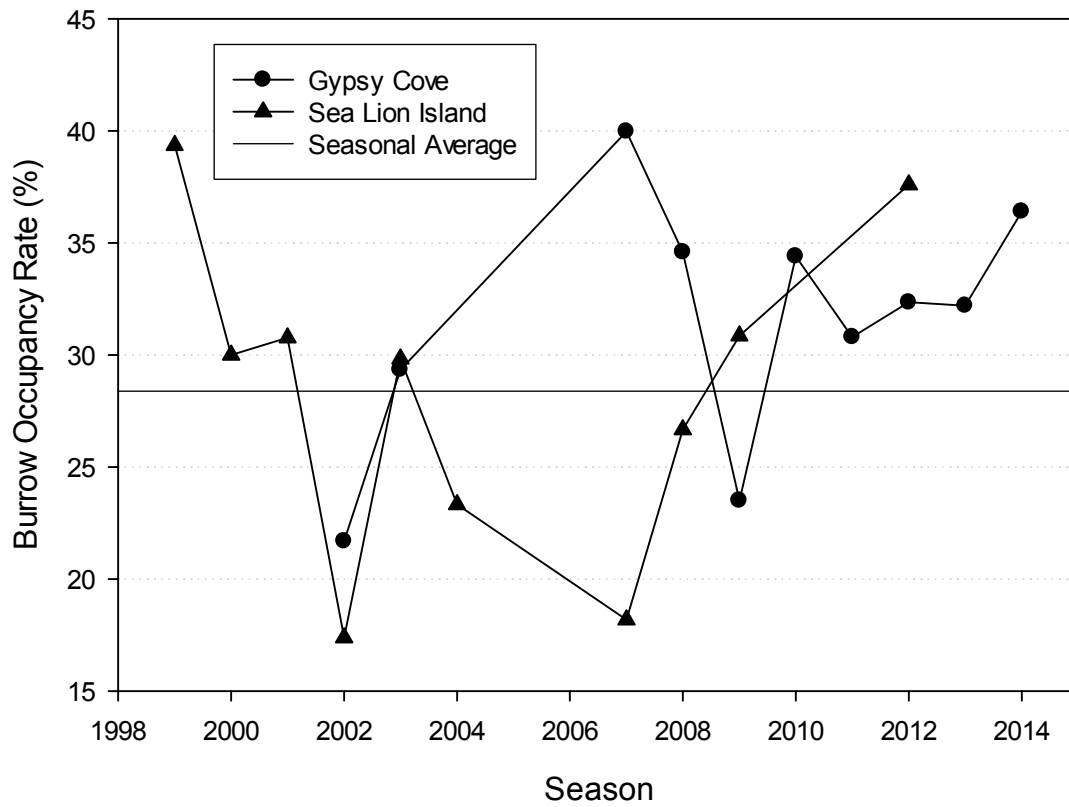


Figure 21: Seasonal changes in Magellanic Penguin burrow occupancy rate at Gypsy Cove and Sea Lion Island.

King Penguin

The number of pre-fledged chicks at Volunteer in the 2014 season was up 23.6 % on the 2013 season (**Figure 22**), taking it to the highest recorded estimate since monitoring began.

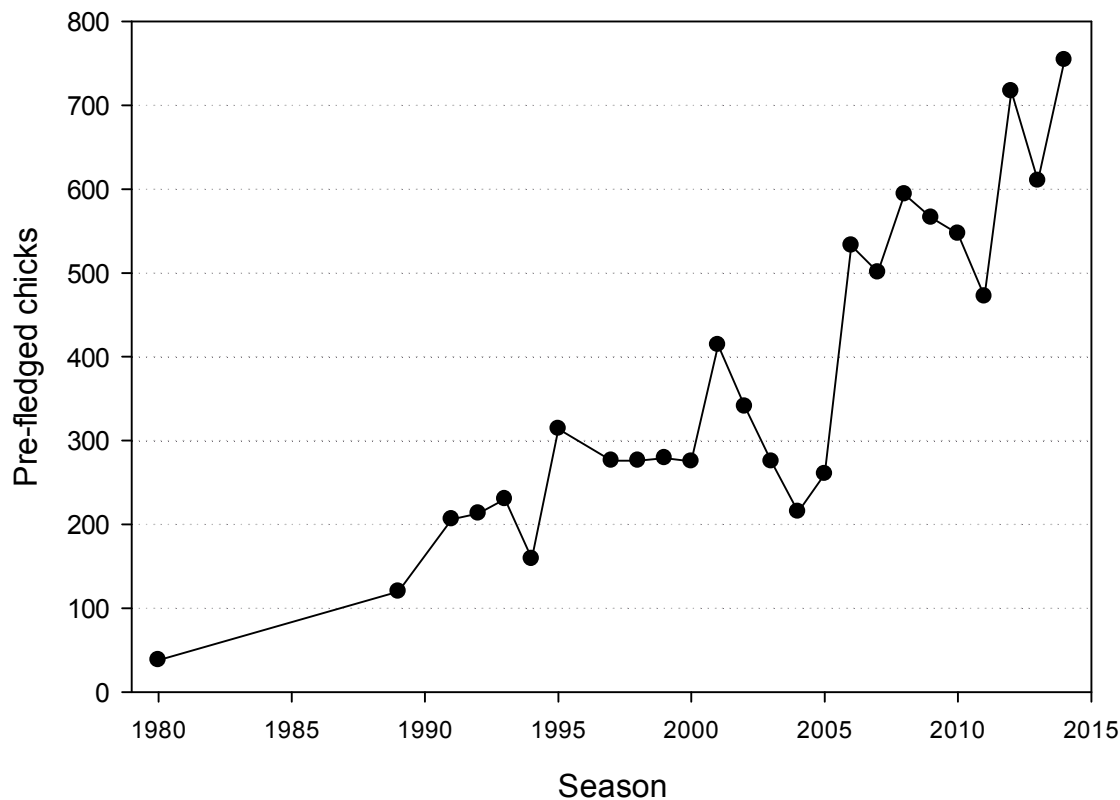


Figure 22: Seasonal changes in the number of King Penguin pre-fledged chicks at Volunteer.

An independent aerial survey was conducted in 2014 which provided a photo count of 1238 adult birds (Derek Pettersson pers. comm.).

Imperial Shag

At Motley Point it was estimated that there were 95 ± 2 Apparently Occupied Nests (AON) in 2014, down from 230 ± 88 in 2013. At Eagle Hill it was estimated that there were 462 ± 15 AON, up from 283 ± 8.3 in 2013. At Steeple Jason NW Flat it was estimated that there were 82 ± 4 AON.

Black-browed Albatross

Breeding Pairs

The total estimated number of breeding pairs of Black-browed Albatross on Steeple Jason fell by 4.8 % from 2,916 to 2,777 breeding pairs (**Figure 23**).

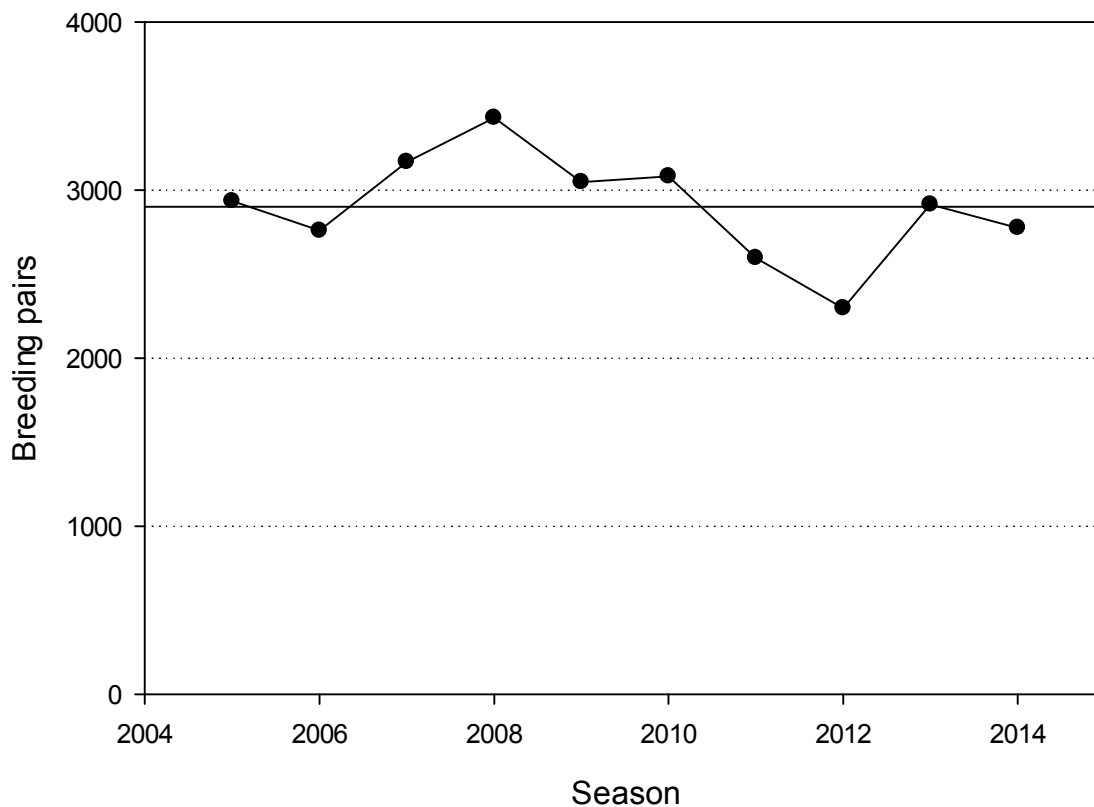


Figure 23: Seasonal changes in total estimated Black-browed Albatross breeding pairs from current annually monitored locations on Steeple Jason (solid line – seasonal average).

When compared to 2013, estimated breeding pair numbers decreased at all smaller monitoring sites (**Figure 24**), namely; S5Tip - down 9.5 %, NW Flat - down 23.5 %, NW Ridge - down 22.3 % and Penthouse - down 22.4 %. There was, however, a further increase in the largest monitoring sub-colony (Study Area) which rose by 7.5 %.

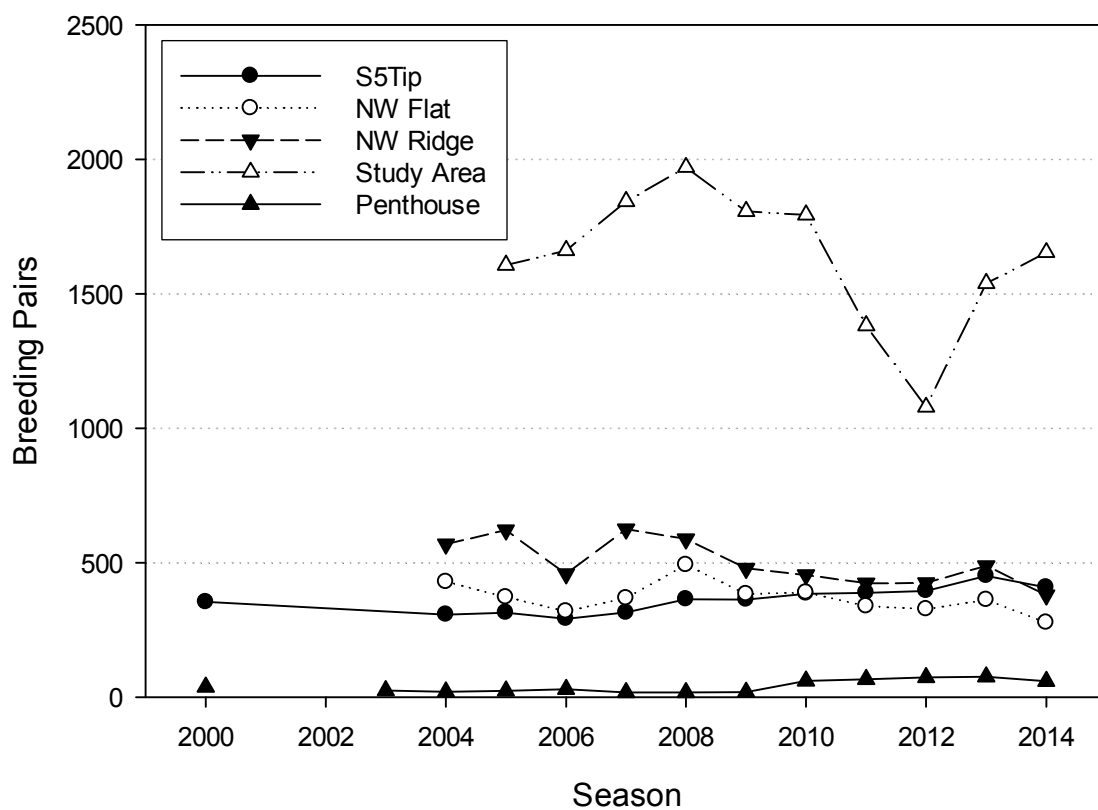


Figure 24: Estimated breeding pair counts of Black-browed Albatross at monitoring sub-colonies on Steeple Jason.

Breeding Success

Overall, mean breeding success for all sub-colonies on Steeple Jason increased from $60.8 \pm 7.4 \%$ to $85.8 \pm 0.1 \%$ (**Figure 25**). This is by far the highest mean observed over the course of the monitoring period.

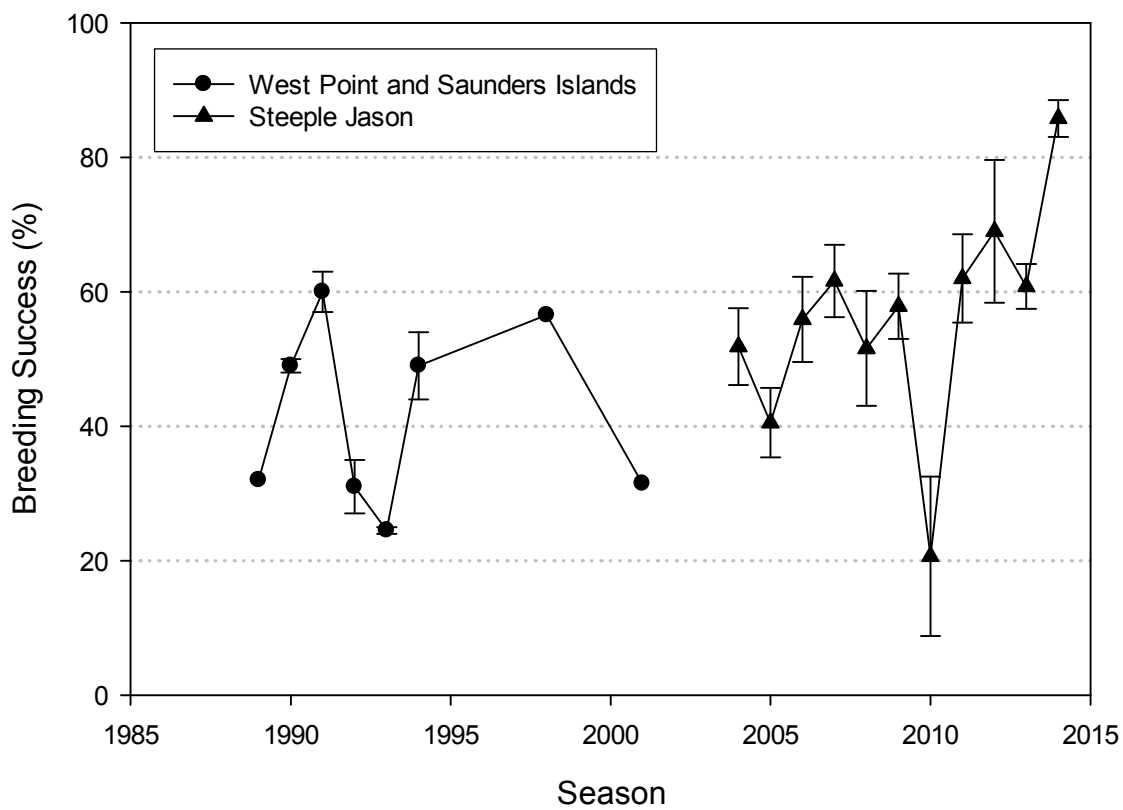


Figure 25: Estimated breeding success of Black-browed Albatross at monitoring sub-colonies on Steeple Jason. Standard Error bars show error about the overall mean by sub-colony means and do not incorporate error about individual sites.

Estimated breeding success was up at all sub-colonies/sites (**Figure 26**). Breeding success increased by between 10 % (S5Tip) to 41 % (Penthouse).

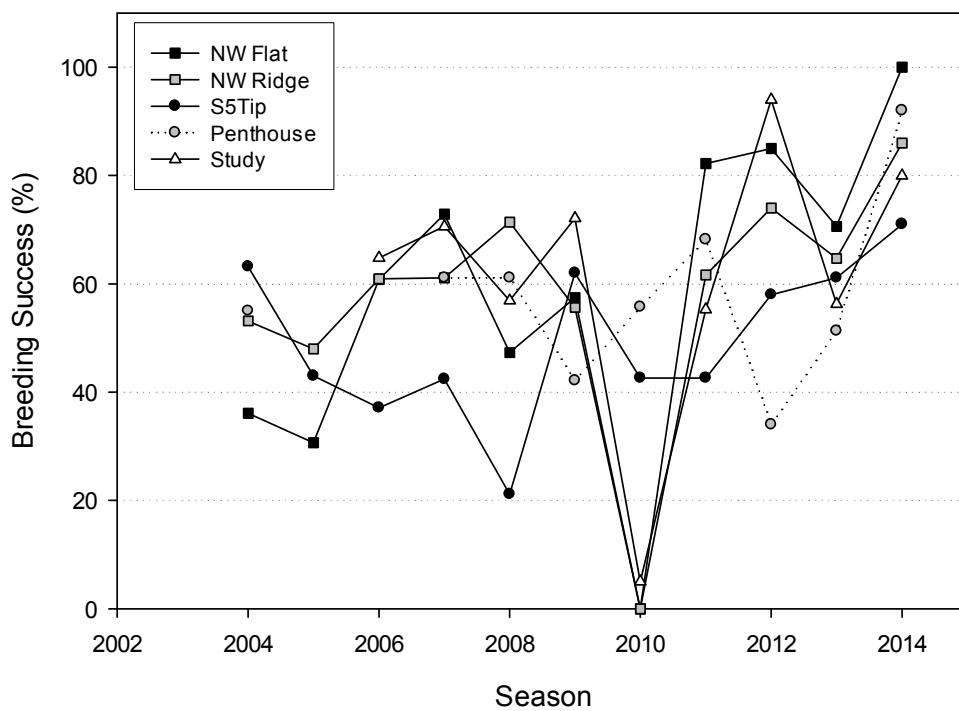


Figure 26: Estimated breeding success of Black-browed Albatross at monitoring colonies/sub-colonies on Steeple Jason.

Penguin Point South, Dunbar

The chick counts at Dunbar rose by 8.1 % from 148 in 2013 to 160 in 2014 (**Figure 27**).

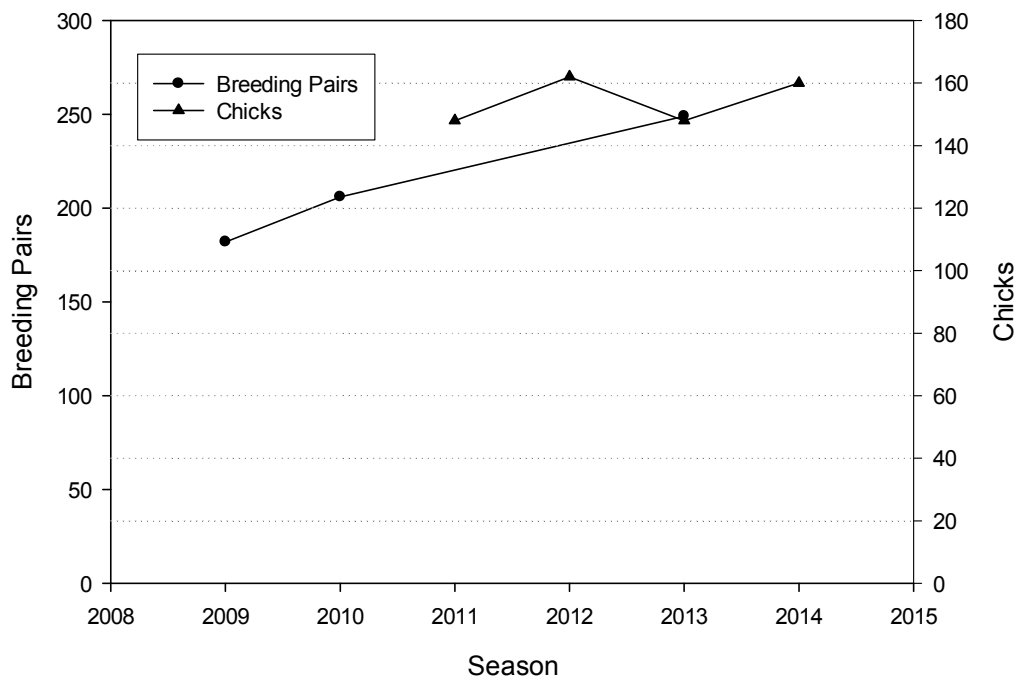


Figure 27: Black-browed Albatross breeding pair and chick counts for Penguin Point South, Dunbar.

Southern Giant Petrel

Breeding Pairs

The total estimated number of breeding pairs of Southern Giant Petrel at monitored colonies on Steeple Jason rose by 8.0 % to the highest number recorded since monitoring began (**Figure 28**). This is attributed to a 38.5 % rise in the NW colony, which again reached a recorded high. One pair attempted to nest at the Steeple NE site.

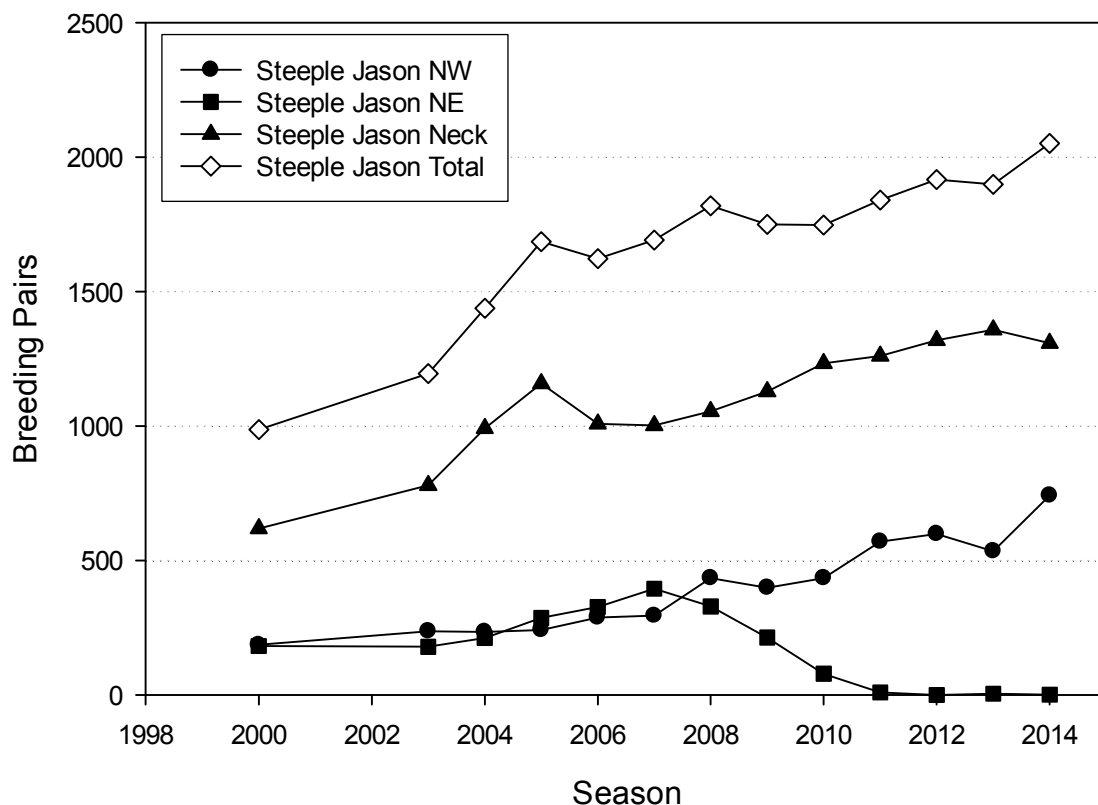


Figure 28: Estimated breeding pair numbers of Southern Giant Petrel at monitoring colonies on Steeple Jason.

Breeding Success

There was no breeding success at the NE colony (**Figure 29**). Estimated breeding success was down 8 % at the NW colony and up 8.1 % at the Neck.

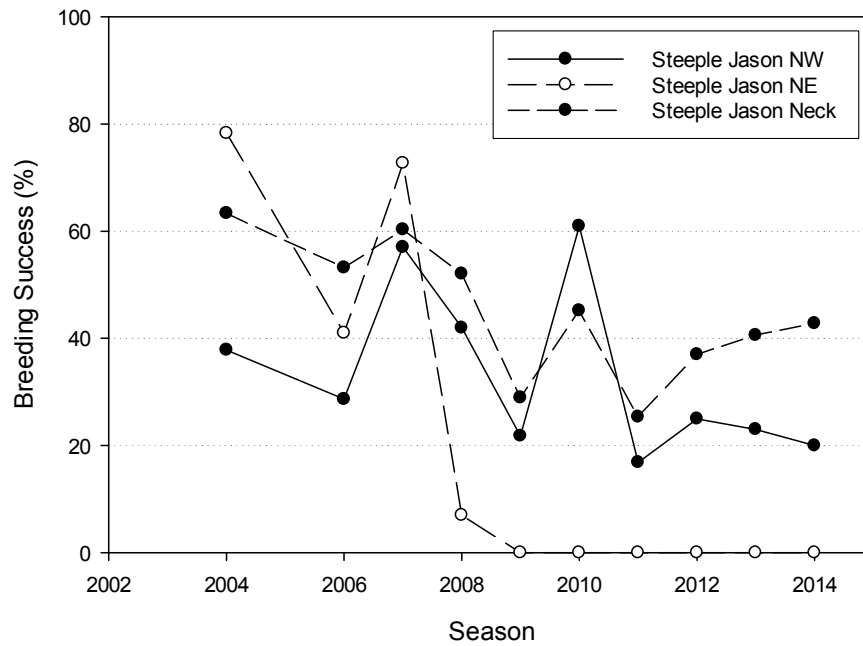


Figure 29: Estimated breeding success of Southern Giant Petrel at monitoring colonies on Steeple Jason.

Chick Count

Chick count data from Bleaker Island continued to show an overall increasing trend despite annual fluctuations (**Figure 30**). The chick count figure increased by 19 % from 269 in 2013 to 320 in 2014, the highest figure recorded for Bleaker Island since monitoring began.

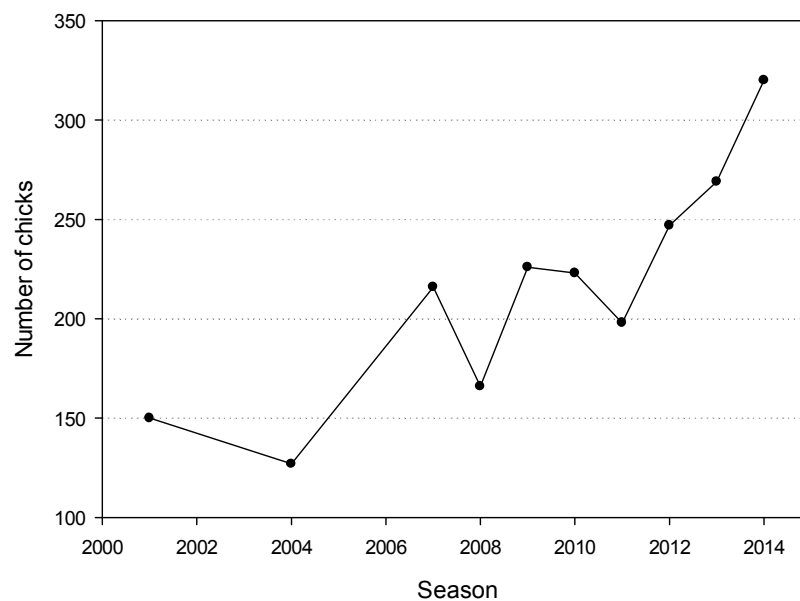


Figure 30: Southern Giant Petrel chick counts for Bleaker Island.

Discussion

Gentoo Penguin

In the 2014/2015 season, estimated numbers of Gentoo Penguin breeding pairs at monitored sites increased by 8.0 %. Given previous fluctuations in what has been an increasing population trend since 2003, there is currently no indication of any change to this situation. North-east colonies notably continued to reach new highs, with most other East Falkland colonies recovering partially from low breeding pair numbers in 2013. Steeple Jason colonies in the north-west both showed declines, with that at the House colony being the first notable decline in 10 years. Average estimated breeding success rose to just above the annual average. Regionally estimated breeding success increased in all areas, with only the House colony at Steeple Jason showing a marked decline; both colonies at Steeple Jason still appear to be following an overall declining trend in estimated breeding success.

Southern Rockhopper Penguin

The total breeding pair estimate of Southern Rockhopper Penguin for monitoring sites reached a new high since monitoring began in 2005. Estimated breeding populations at individual sites were considered generally to be stable/ increasing, with the exception of Steeple Jason where estimated breeding pairs fell notably. The estimate of average breeding success was higher than in recent seasons and well above the annual average.

Other species continue to be observed within rockhopper colonies. A Northern Rockhopper Penguin (*Eudyptes moseleyi*) was observed at Diamond Cove and was the first recorded breeding attempt for this species in the Falkland Islands, in this case with a Southern Rockhopper. The attempt was unsuccessful. Macaroni Penguin (*Eudyptes chrysolophus*) and hybrid Macaroni x Southern Rockhopper were observed in mixed pairs at Berkeley Sound.

Magellanic Penguin

Birds remain broadly in three groupings, which appear to be associated with the extent of tussac habitat at the monitoring site. Occupancy rates for Gypsy Cove were the second highest recorded and well above previous annual averages.

King Penguin

Numbers of estimated pre-fledged chicks rose to a new high for the Volunteer Green colony, continuing a strong positive trend.

Black-browed Albatross

Indications from the monitoring sites at Steeple Jason were of stable numbers at the largest breeding colony of this species. This is mirrored in the count data provided for Penguin Point South. The Study Area numbers continue to recover from the large reduction in breeding pairs resulting from the storm event in 2010, but are yet to attain pre-storm levels. The increases in this study site offset the majority of those reductions observed in all the smaller monitoring sites. Breeding success was the highest on record with one sub-colony recording 100 % success (subject to error on both breeding pair and pre-fledged chick counts).

Southern Giant Petrel

There is still an apparent steady upward trend in the Steeple Jason population of this species though a general downward trend in estimated breeding success also seems apparent. At Bleaker Island, chick counts have fluctuated but generally increased during monitoring (up 19 % from 2013 to 2014), giving good indication that breeding pairs are stable/increasing at this site.

Overall

During the 2014 season indications were of stable or increasing populations of those species monitored and of breeding success generally above seasonal average.

At sea, the Argentine Shortfin Squid *Illex argentinus* catch has been the highest on record and unseasonably South and East in nature, being found along the east coast of the Islands into the north of the *Doryteuthis gahi* spawning areas (source - Falkland Islands Government Fisheries Department). This indicator of high productivity may relate to increased seabird breeding success during the current season and the apparent wider distribution of squid may have had broader benefits to colonies across the Islands.

Acknowledgements

The continuation of the FISMP is dependent on access to seabird colonies. Falklands Conservation would like to thank the landowners/managers who have allowed us to conduct fieldwork on their land, including the Wildlife Conservation Society, Falkland Islands Government, Port Stephens, Fitzroy, Race Point, Johnsons Harbour, Goose Green, Walker Creek, and North Arm. We thank Mike Clarke, Derek Pettersson and Rob McGill for logistical support and the many volunteers that participated in data collection. We would also like to thank the landowners at Dunbar and Bleaker Island for providing their survey data and allowing it to be included within the report. The FISMP is made possible with financial support of the Falkland Islands Government through the Environmental Studies Budget.

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Appendix 1: Count Information

Location	Date of breeding pair count	Counters	Date of chick count	Counters
Volunteer Green	20/11/14	A. Stanworth N. McNally	10/1/15	A. Stanworth B. Robson
Race Point	17/11/14	A. Stanworth N. McNally	6/1/15	A. Stanworth B. Robson
Sea Lion Island	7/11/14	M. Morrison	9 - 10/1/15	S. Crofts V. Collier
New Haven	14/11/14	A. Stanworth N. McNally	3/1/15	A. Stanworth B. Robson
Bull Roads	14/11/14	A. Stanworth N. McNally	3/1/15	A. Stanworth B. Robson
Bull Point	15/11/14	A. Stanworth N. McNally	4/1/15	A. Stanworth B. Robson
Cow Bay	21/11/14	A. Stanworth N. McNally	9/1/15	A. Stanworth B. Robson
Low Bay	15/11/14	A. Stanworth N. McNally	4/1/15	A. Stanworth B. Robson
Motley Point	16/11/14	A. Stanworth N. McNally	5/1/15	A. Stanworth B. Robson
Bertha's Beach	16/11/14	M. Morrison	Not carried out	NA
Fox Point	16/11/14	M. Morrison	Not carried out	NA
Pleasant Roads	16/11/14	M. Morrison	Not carried out	NA
Steeple Jason	Gentoo 3 – 4/11/14. Rockhopper 4 – 6/11/14. Black-browed and giant petrel 30/10/14 - 6/11/14	M. Reeves N. McNally M. Barrientos M. Bobowski	Gentoo and Rockhopper 19 - 21/1/15. Black-browed and Giant Petrel 18-19/3/15	A. Stanworth W. Miles T. Poole B. Robson
Lagoon Sands	20/11/14	A. Stanworth N. McNally	9/1/15	A. Stanworth B. Robson
Diamond Cove	19/11/14	A. Stanworth N. McNally	8/1/15	A. Stanworth B. Robson
Rugged Hill/Eagle Hill	19/11/14	A. Stanworth N. McNally	8/1/15	A. Stanworth B. Robson
Port Stephens	25/11/13	L. Milston D. Towsey	Not carried out	NA
Penguin Point South	Not carried out	NA	March	M. Delignieres
Bleaker Island	Not carried out	NA	18 - 23/3/2015	M. Rendell

Appendix 2: Gentoo Penguin Count Data

Location	Colony	Grid Ref.	Breeding Pairs (Mean±1SD)		Breeding Success (Mean±1SD)	
			Count	Count Type*	Count	Count Type*
Bertha's Beach	Bertha's Beach	-58.358916 -51.882233	689 ± 7	TR	Not done	
Bull Point	Bull Roads	-59.398188 -52.309364	969 ± 38	TR	1.19 ± 0.09	TR
Bull Point	Bull Point	-59.321461 -52.342591	2059 ± 33	TR, TA, Ph	1.21 ± 0.02	TR, TA
Fox Point	Fox Point	-51.92 -58.45	450 ± 9	TR	Not done	
Low Bay	Low Bay	-58.879630 -52.077608	540 ± 18	TR	0.79 ± 0.07	TR
Motley Point	Motley Point	-58.643177 -52.108576	2030 ± 24	TR, TA	1.05 ± 0.01	TR
New Haven	New Haven	-59.222044 -51.742073	834 ± 22	TR	1.04 ± 0.06	TR
Pleasant Roads	Pleasant Roads	-51.83 -58.24	189 ± 1	TR	Nope done	
Race Point	Fanning Harbour	-59.087958 -51.464667	178 ± 14	TR	1.11 ± 0.09	TR
Race Point	Rookery Sands	-59.106928 -51.434122	1427 ± 95	TR, TA	1.46 ± 0.04	TR, TA, Ph
Sea Lion Island	Sea Lion Island	-59.072513 -52.426578	4366 ± 70	TR	1.19 ± 0.02	TR, TA
Steeple Jason	House	-61.233113 -51.020186	3918 ± 26	Ph	0.37 ± 0.02	TR, Ph
Steeple Jason	Neck	-61.214888 -51.034787	3505 ± 31	TR, Ph	0.91 ± 0.03	TR, Ph
Volunteer	Cow Bay	-57.879051 -51.428572	2490 ± 28	TR, Ph	1.15 ± 0.02	TR, Ph
Volunteer	Lagoon Sands	-57.77581 -51.513702	1275 ± 23	TR	1.39 ± 0.03	TR
Volunteer	Volunteer Green	-57.837858 -51.478494	3600 ± 56	TR, Ph	0.87 ± 0.03	TR, Ph

* TR – Tally Repeated, TA – Tally Agreed, Ph – Photo Count.

Appendix 3: Southern Rockhopper Penguin Count Data

Location	Colony/Sub-colony	Grid Ref.	Breeding Pairs (Mean \pm 1 SD)	Breeding Success (Mean \pm 1 SD)
Berkeley Sound	Diamond Cove	-57.923512 -51.538059	205 \pm 5	0.74 \pm 0.03
	Eagle Hill East	-57.785118 -51.544064	108 \pm 2	0.92 \pm 0.04
	Eagle Hill	-57.802981 -51.544497	881 \pm 26	0.97 \pm 0.04
	Eagle Hill West	-57.810499 -51.545082	819 \pm 38	0.97 \pm 0.06
	Rugged Hill East	-57.845031 -51.543674	435 \pm 13	1.07 \pm 0.04
	Rugged Hill West	-57.851570 -51.543488	546 \pm 14	1.10 \pm 0.05
Port Stephens	Stephen's Peak	-60.859281 -52.133803	2328 \pm 23	Not done
Race Point	Fanning Head North	-59.141540 -51.460831	679 \pm 66	0.77 \pm 0.17
	Fanning Head South	-59.137749 -51.469284	1057 \pm 18	0.81 \pm 0.02
Sea Lion Island	Rockhopper Point	-59.115501 -52.446667	551 \pm 16	0.67 \pm 0.03
Steeple Jason	NW Flat	-61.252682 -51.012810	104 \pm 8	0.75 \pm 0.08
	NW Ridge	-61.252884 -51.012939	79 \pm 3	0.88 \pm 0.04
	S5Tip	-61.220460 -51.037932	990 \pm 16	0.74 \pm 0.02
	Study Area	-61.206635 -51.046215	672 \pm 4	0.95 \pm 0.01

Appendix 4: Magellanic Penguin Survey Data

Transect	Number of Burrows	Occupancy (%)	Distance to last burrow	Density per Km²
1	0			0
2	0			0
3	0			0
4	4	75	37	23540
5	4	75	59	23540
6	5	60	47	23540
7	0			0
8	0			0
9	1	100	27	7846
10	0			0
11	0			0
12	6	33.3	105	15693
13	6	20	35	9416
14	6	25	35	11770
15	9	14.3	94	10088
16	3	33.3	37	7846
17	8	57.1	85	35871
18	0			0
19	0			0
20	0			0
21	0			0
22	2	50	49	7846
23	6	20	33	9416
24	6	40	41	18832
25	6	33.3	37	15693
26	3	100	34	23540
27	1	0	6	0
28	1	0	13	0
29	0			0

Appendix 5: Black-browed Albatross and Southern Giant Petrel Count Data

Black-browed Albatross

Sub-colony	Breeding Pairs (Mean \pm 1 SD)	Breeding Success (chicks/pair) (Mean \pm 1 SD)
Study Colony	1654 \pm 8	0.80 \pm 0.01
S5Tip	408 \pm 7	0.71 \pm 0.02
Penthouse	59 \pm 0	0.92 \pm 0.02
NW Flat	277 \pm 5	1.00 \pm 0.03
NW Ridge	379*	0.86 \pm 0.05

*breeding pairs back-calculated from chick count and mean breeding success from other sub-colonies.

Southern Giant Petrel

Colony	Breeding Pairs (Mean \pm 1 SD)	Breeding Success (chicks/pair) (Mean \pm 1 SD)
Neck	1309 \pm 36	0.43 \pm 0.03
North-west	741 \pm 36	0.20 \pm 0.05
House	1	0

