

Conservation Action Plan for Wandering Albatrosses at South Georgia (2016-2020)



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LIST OF ACRONYMS

ACAP	Agreement on the Conservation of Albatrosses and Petrels
BAS	British Antarctic Survey
CAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CEMP	CCAMLR Ecosystem Monitoring Programme
Defra	Department for Environment, Food & Rural Affairs (UK)
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization of the United Nations
FCO	Foreign & Commonwealth Office (UK)
FIG	Falkland Islands Government
GSGSSI	Government of South Georgia & the South Sandwich Islands
IAATO	International Association of Antarctic Tour Operators
IATTC	Inter-American-Tropical-Tuna-Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
JNCC	Joint Nature Conservation Committee
RFMO	Regional Fisheries Management Organisation
RSPB	Royal Society for the Protection of Birds
SC-CAMLR	Scientific Committee of CAMLR
SEAFO	South East Atlantic Fisheries Organisation
SGS	South Georgia Surveys
SGSSI	South Georgia & the South Sandwich Islands
SPRFMO	South Pacific Regional Fisheries Management Organisation

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EXECUTIVE SUMMARY

South Georgia is a globally important breeding site for Wandering Albatrosses *Diomedea exulans*. The species is listed globally as Vulnerable by the IUCN. However, given their steep decline, the South Georgia population meets the IUCN criteria for Endangered status at the regional level. The Wandering Albatross is included in Annex 1 of the multi-lateral Agreement on the Conservation of Albatrosses and Petrels (ACAP), which the United Kingdom ratified in 2004, and extended to the relevant Overseas Territories, including South Georgia and the South Sandwich Islands. The long-term decline of the South Georgia population of Wandering Albatrosses has led to it being identified as one of the ACAP high priority populations. In order to strengthen and co-ordinate efforts to improve the conservation status of South Georgia Wandering Albatrosses, the Government of South Georgia and the South Sandwich Islands (GSGSSI) has developed this Conservation Action Plan.

Incidental fisheries mortality (bycatch) is currently considered to be the main threat to the South Georgia population of Wandering Albatrosses. Bycatch of seabirds has been reduced to negligible levels in fisheries operating around South Georgia, and the residual threat is currently attributed to fisheries operating outside of the South Georgia and the South Sandwich Islands Maritime Zone. Fisheries managed by Regional Fisheries Management Organisations (RFMOs) - intergovernmental organisations through which States collaborate on fishery conservation and management measures relating to the high seas and migratory fish stocks and associated species – are considered particularly important. Amongst the RFMOs, the International Commission for the Conservation of Atlantic Tunas (ICCAT) the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) and the Indian Ocean Tuna Commission (IOTC) are considered to present the greatest risk to South Georgia Wandering Albatrosses. Reducing seabird bycatch within these fisheries is therefore critical to improve the conservation status of Wandering Albatrosses from South Georgia.

Although Wandering Albatrosses are not currently considered to be threatened by any land-based processes at South Georgia, a number of potential threats are considered in this plan to determine if these factors warrant further investigation and action.

The overall goal of this Conservation Action Plan is to ensure the recovery and long-term survival of Wandering Albatrosses at South Georgia by understanding the nature and extent of the threats they face, and by implementing, facilitating or promoting priority conservation actions to reduce or eliminate these threats. The aim of the Plan is that by 2020, numbers of Wandering Albatross breeding at South Georgia will have started to increase. The plan serves as a framework to facilitate a co-ordinated, collaborative and proactive approach to the conservation of South Georgia Wandering Albatrosses. It outlines briefly the current state of knowledge relating to the ecology, distribution, and population dynamics of South Georgia Wandering Albatrosses, and the threatening processes impacting the population. It also includes information on the range of national and international policies, plans and legislation relevant to the conservation of Wandering Albatrosses at South

Georgia. Following and informed by these introductory sections, the plan then presents a Framework for Action, in which the goal and the recommended actions are described. In order to highlight the most urgent actions, the Plan distinguishes between *Priority Actions* and *Associated Activities*. The former are those that are required to create the step-changes needed to achieve the goal of this plan. These actions and activities fall into eight areas of work, or components of the Conservation Action Plan, that are outlined below, in no order of importance::

1. Long-term monitoring of Wandering Albatross population dynamics at South Georgia.
2. Long-term monitoring of the foraging ecology and diet of Wandering Albatrosses at South Georgia.
3. Monitoring and management of potential land-based threats to Wandering Albatrosses breeding at South Georgia.
4. Understanding marine-based threats to South Georgia Wandering Albatrosses in order to implement and promote best practice management approaches within and outside SGSSI waters to address these.
5. Understanding the potential impacts of climate change on the ecology and population dynamics of South Georgia Wandering Albatrosses.
6. Raising awareness of the plight of Wandering Albatrosses at South Georgia, and the actions that are required and being undertaken to improve their conservation status.
7. Participating in international conservation and fisheries fora to promote actions that will help support the conservation of Wandering Albatrosses from South Georgia.
8. Reviewing the Conservation Action Plan to evaluate accomplishments and update information on priority needs.

For each of these components, a brief summary of previous or current research, monitoring and management initiatives is provided, which together with the introductory sections on the current state of knowledge, serves to inform and underpin the actions that are specified. A summary of the actions pertaining to each objective, their relative priority rating and the key partner organisations, is provided in Tables 1 and 2.

It is important to note that there are a number of actions included in the implementation framework that are not, or will not be, implemented directly by GSGSSI, but by partner organisations. It is not the intention of GSGSSI to prescribe these actions to external agencies, but rather to recognize that they are a vital part of the conservation framework, and to help facilitate their implementation through engaging with and supporting as appropriate the external agencies in carrying them out.

The implementation period for this Conservation Action Plan is 2016-2020, which has been set to coincide with the time frame for the Biodiversity Action Plan for South Georgia & the South Sandwich Islands and the overarching South Georgia & the South Sandwich Islands Strategy. However, given the long-term nature of the overall goal, it is anticipated that the Conservation Action Plan will need to be extended beyond this five-year period. Routine reviews of performance against the stated objectives and actions, and an overall assessment at the end of the implementation

period, will be used as the basis for drafting a revised Action Plan for the following five-year period.

1. INTRODUCTION

The Wandering Albatross *Diomedea exulans* is one of the most iconic seabirds breeding at South Georgia, and is also one of the most threatened. In order to bolster efforts to better understand the factors contributing to the long-term decline in numbers of Wandering Albatrosses at South Georgia, and to address these threats, the Government of South Georgia and the South Sandwich Islands (GSGSSI) has identified the need for a dedicated Conservation Action Plan for this species at South Georgia.

GSGSSI has recently adopted *The Biodiversity Action Plan for South Georgia & the South Sandwich Islands (2016-2020)*, which serves to guide the management and protection of the Territory's environment and biodiversity. The Vision of the Biodiversity Action Plan is '*To work in partnership with experts and stakeholders in the UK and the rest of the world to conserve the biodiversity and ecosystem function of the South Georgia & the South Sandwich Islands' environment for the benefit of all human kind, and to facilitate responsible access, ensuring that the Territory remains at the forefront of cutting-edge environmental management best practice.*' The Biodiversity Action Plan seeks to ensure that species and habitats receive adequate protection, and outlines a number of objectives to achieve this goal. In light of on-going population declines at South Georgia, one of the tasks identified in the Biodiversity Action Plan is to develop Conservation Action Plans for the globally important populations of Wandering, Black-browed and Grey-headed Albatrosses (Activity 3.2.4).

This Conservation Action Plan is intended to serve as a framework to guide, in an informed, prioritised and co-ordinated manner, actions required to improve the conservation status of Wandering Albatrosses at South Georgia (and globally). The scope of the Conservation Action Plan is limited to the South Georgia population of Wandering Albatrosses (i.e. the actions identified are targeted specifically at this population, for which GSGSSI have ultimate responsibility). However, given the importance of the South Georgia population, improvements in the conservation status of this population will positively influence the overall conservation status of the species. Furthermore, given their wide-ranging nature, the ultimate responsibility for addressing threats to South Georgia Wandering Albatross varies. This Conservation Action Plan includes measures that are the direct responsibility of GSGSSI, but importantly also includes 'external' actions that involve other nations and organisations. In these latter cases, GSGSSI aims through outreach, collaboration and diplomatic engagement to promote and assist where possible the management of these 'external' threats to South Georgia Wandering Albatrosses.

The Conservation Action Plan provides a summary of the current state of knowledge of the population and conservation status of Wandering Albatrosses at South Georgia, and identifies priority actions required to improve their conservation status. It is not a legally binding document, and is not intended to be a comprehensive review of all available information, but rather a tool to facilitate effective conservation action.

1.2 Goal

To ensure the recovery and long-term survival of Wandering Albatrosses at South Georgia by understanding the nature and extent of the threats they face, and importantly to reduce or eliminate these threats by implementing or promoting the required conservation research and management actions.

1.3 Aim

By 2020, numbers of Wandering Albatross breeding at South Georgia will have started to increase.

2. CURRENT STATE OF KNOWLEDGE

2.1 Breeding distribution, population trend and conservation status

The Wandering Albatross has a circumpolar breeding distribution with large populations at four island groups: South Georgia in the South Atlantic Ocean, the Prince Edward Islands (comprising Marion and Prince Edward islands), Îles Crozet, Îles Kerguelen all in the southern Indian Ocean, and a very small population on Macquarie Island in the south-west Pacific. South Georgia currently supports the third largest breeding population of Wandering Albatrosses after the Prince Edward and Crozet islands, which host the largest and second largest populations, respectively.

The Wandering Albatross is one of South Georgia's most iconic seabird species, and is the only great albatross (*Diomedea* sp.) breeding there. The majority of the population is located in the northwest of the archipelago and on Annenkov Island, with a handful of sites at the southeast end of the archipelago which support small numbers of birds (Fig. 1); nesting habitat tends to comprise gently undulating tussac grasslands. The Wandering Albatross is a biennial breeding species. The total breeding season lasts a little more than a year. Adults return to colonies in November, about a month before egg-laying. Incubation extends from December to March, the brood period from March to mid-May, and post-brood chick rearing from May to December.

Long-term monitoring of the Wandering Albatross population at Bird Island, which supports the majority (c. 60%) of the total South Georgia population, demonstrates unequivocally a long term population decrease since regular censuses began in the 1960s (Fig. 2). The population at Bird Island declined from 1554-1922 (mean 1714) pairs in 1962-1964, to 772 pairs in 2014/15. The rapid decline in numbers between the mid 1990s and the mid 2000s (>4% per annum) has since ceased, with numbers relatively stable over the last 7-8 years, albeit at a substantially reduced level compared with the number of breeding pairs present in the 1960s (Fig. 2). Archipelago-wide surveys commissioned by GSGSSI in 2003/2004 (Poncet et al. 2006) and 2014/2015 (Poncet et al. in press), and annual counts at Albatross and Prion islands since 1999 (South Georgia Surveys, unpubl. data), show that the long-term decline of Wandering Albatrosses at Bird Island is similar to the rest of the

island group. The most recent archipelago-wide survey indicates that numbers of Wandering Albatrosses breeding annually at South Georgia decreased by 18% (1.8% per year) from 1,553 pairs in 2003/3004 to an estimated 1,278 pairs in 2014/15 (Poncet et al. in press).

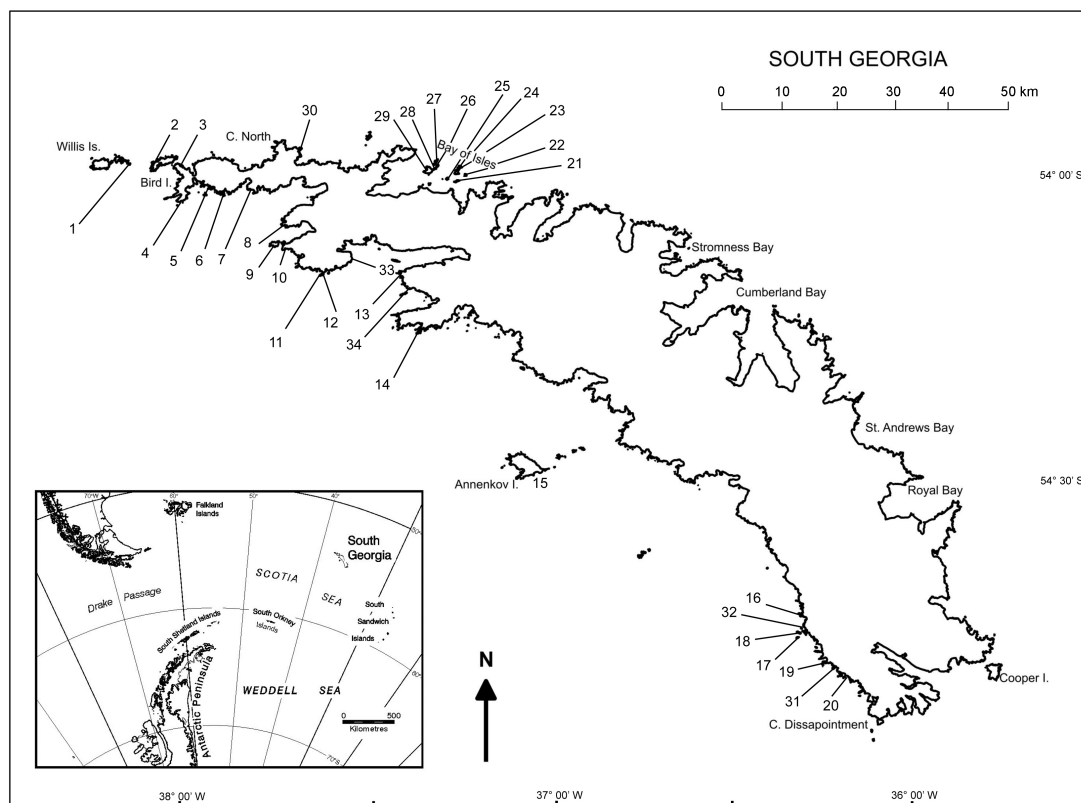


Figure 1: Breeding locations of Wandering Albatross at South Georgia with inset map showing location of South Georgia and the Scotia Sea. Numbers refer to the locations listed in Appendix 1.

In addition to annual counts of nesting birds, BAS has conducted annual demographic monitoring of banded Wandering Albatrosses at Bird Island from 1975/76 onwards to determine juvenile (0-3 years), immature (from first return to first breeding) and adult survival rates, and individual breeding frequency and success. Interim results from an analysis of demographic parameters in relation to fisheries and climate variables show that survival rates of juvenile, immature and adult Wandering Albatrosses declined in the early to mid 1990s (Phillips et al. 2014), coinciding with the period of rapid population decline (Fig. 2). The survival rates of immature and adult birds appear to have recovered in recent years. Breeding success has shown a gradual and consistent increase over the last thirty years, suggesting that feeding conditions for Wandering Albatrosses at South Georgia have been improving over this period (Phillips et al. 2011). Whether this is influenced by increased discard availability or a density-dependent reduction in intra-specific competition associated with the declining population, is unknown.

In contrast to South Georgia, which supports the third largest population, Wandering Albatrosses breeding at the Prince Edward and Crozet islands in the Indian Ocean have shown signs of recent recovery, following earlier declines. This is thought to be at least partly due to changes in the distribution of fishing effort, away from important breeding islands in the Indian Ocean.

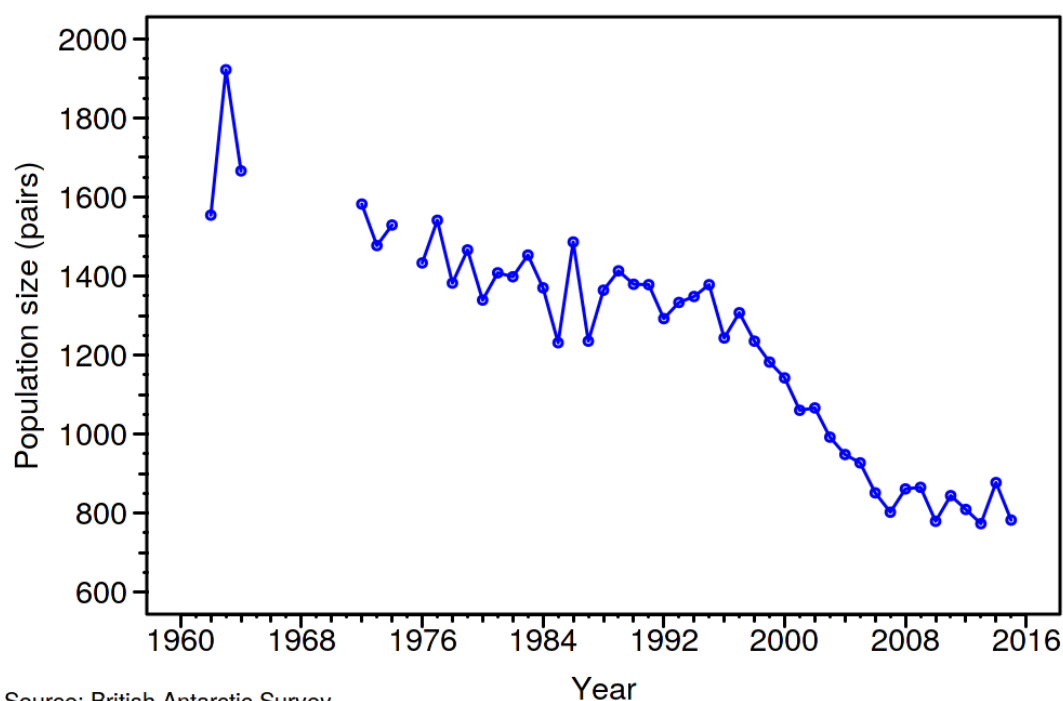


Figure 2: Population trend of Wandering Albatrosses at Bird Island, South Georgia. Data provided by British Antarctic Survey (BAS)

The Wandering Albatross is listed on Annex 1 of the Agreement on the Conservation of Albatrosses and Petrels (ACAP). Globally, the species is listed as **Vulnerable** to extinction by the International Union for Conservation of Nature's (IUCN) Red List of Threatened Species. Considered as a regional and biogeographic unit, the long-term decline of the South Georgia population meets the IUCN criteria for **Endangered** at the regional level (Jiménez et al. 2015), highlighting the parlous state of the Wandering Albatross population at South Georgia relative to the other breeding populations. The poor conservation status of the South Georgia population of Wandering Albatrosses has led to it being included in the list of high priority ACAP populations (see below).

2.2 Marine distribution and diet

Comprehensive data on the distribution of Wandering Albatrosses from South Georgia are available from tracking work conducted by BAS at Bird Island since the early 1990s. These data have been collected through the deployment of a range of devices (including satellite-transmitters, GPS loggers or geolocators) on breeding adults, non-breeding adults, immatures (prebreeders) and juveniles. The tracking

data have revealed important insights on the distribution of South Georgia Wandering Albatrosses, including their overlap and potential interaction with fisheries (see below). Both breeding and non-breeding birds have extensive foraging ranges that vary according to age, life-history category, breeding stage and sex. When breeding, Wandering Albatrosses from South Georgia range widely in the south-west Atlantic, between southern Brazil (25°S) and the Antarctic Peninsula (68°S), and between waters off Tristan da Cunha (19°W) to the Patagonian Shelf in the west and up to 85°W off the Pacific coast off southern Chile, mostly in pelagic waters (Fig. 3). During the brood period, however, (March to mid-May), foraging trips are mostly restricted to the South Georgia shelf and shelf-slope areas. From May to December, foraging trips of chick-rearing adults of both sexes are much more dispersed, extending to upwelling areas over the outer slope of the Patagonian Shelf. During chick-rearing, females tend to disperse further north than males into subtropical waters. The southern Patagonian Shelf is also utilised by non-breeding birds, and hence is an important foraging area year round (Agreement on the Conservation of Albatrosses and Petrels 2009).

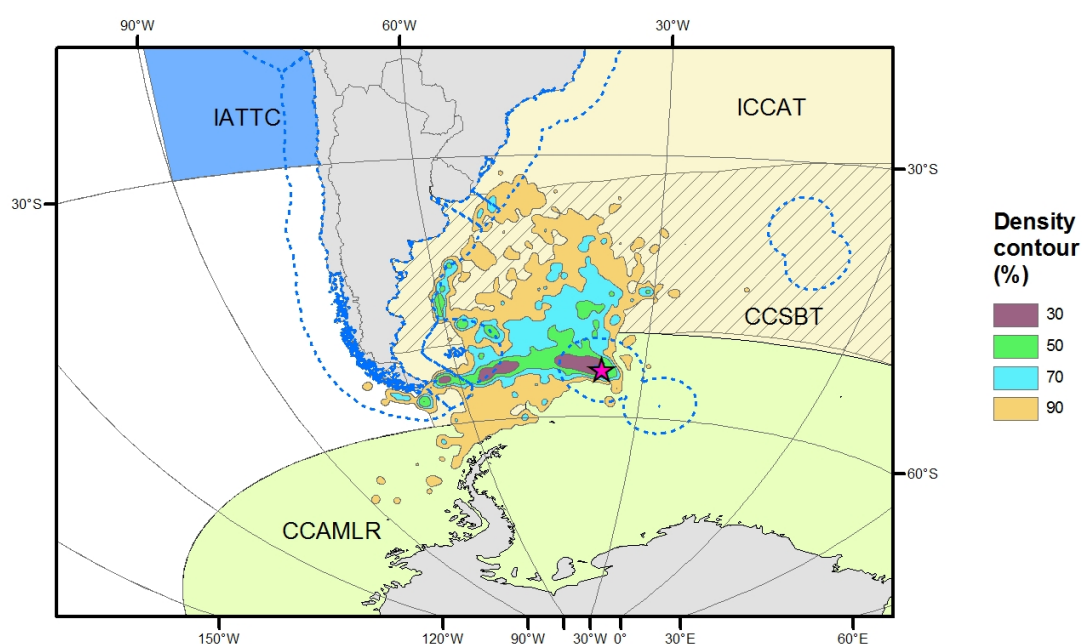


Figure 3: Density distribution of Wandering Albatrosses from Bird Island, South Georgia during the breeding season in relation to the main Regional Fisheries Management Organisations (RFMOs) and other fisheries management areas with which they overlap. The blue dotted lines outline areas of national jurisdiction. The 30% contour indicates areas of highest concentration, within which breeding birds spend 30% of their time. The 90% contour encompasses 90% of their breeding distribution. Data provided by BAS.

Tracking data from the non-breeding period, which are more limited than for the breeding period, and ring recoveries, show an initial dispersal of non-breeding birds across the South Atlantic Ocean to areas off South Africa on the coastal shelf, shelf-

slope and adjacent oceanic waters, followed by migration across the Indian Ocean to south-eastern Australian waters (Fig. 4).

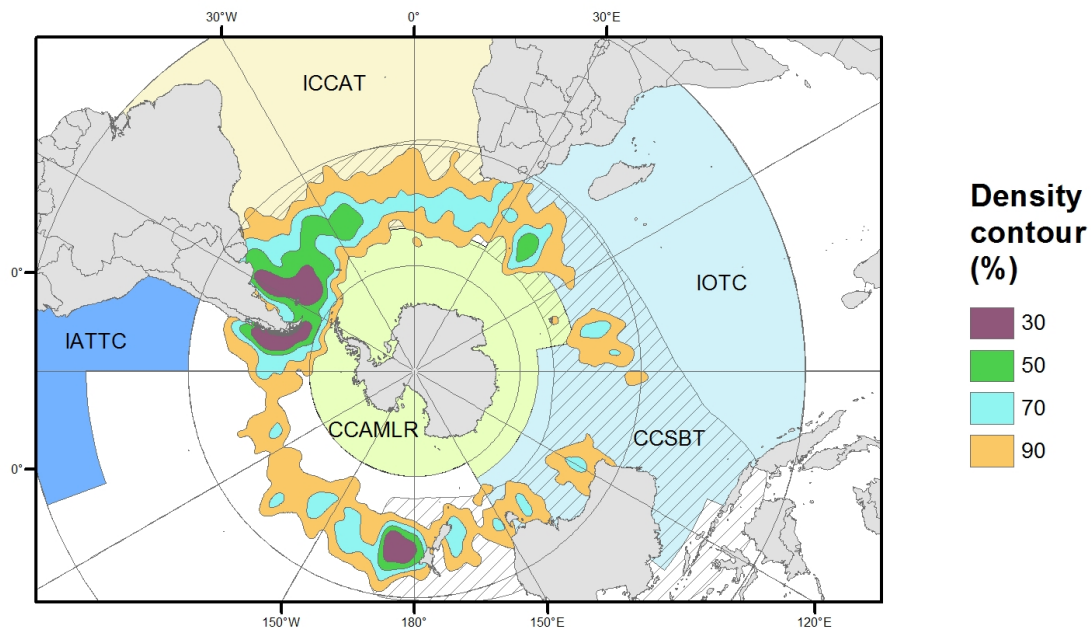


Figure 4: Density distribution of Wandering Albatrosses from Bird Island, South Georgia during the non-breeding period in relation to the main RFMO and other fisheries management areas with which they overlap. The blue dotted lines outline areas of national jurisdiction. The 30% contour indicates areas of highest concentration, within which breeding birds spend 30% of their time. The 90% contour encompasses 90% of their non-breeding distribution. Data provided by BAS.

The diet of Wandering Albatrosses at South Georgia has been well documented through the analysis of boluses regurgitated by chicks at Bird Island (Xavier et al. 2003, 2004). The diet is diverse, with fish, a wide variety of squid, and crustaceans all comprising important components. Their prey items are distributed from subtropical to Antarctic waters, reflecting the extensive foraging range of breeding birds. Wandering Albatrosses are well known followers of fishing vessels, and compete aggressively for fisheries discards. Dietary analyses show that during the brood period, males may consume large quantities of Patagonian Toothfish *Dissostichus eleginoides*, which they have presumably obtained as discards from demersal long-line vessels operating around South Georgia.

2.3 Threats

Albatrosses face numerous threats both on land (at their breeding colonies) and at sea. ACAP has established a set of criteria to assess the scope (proportion of population affected) and severity (intensity) of threats at each breeding site and for each breeding population. A factor or process is only considered a threat if it has

been documented in some way at the island group in question, and is likely to have a negative impact (population decline over the next decade) on the species or population. Potential or suspected threats are thus not included in the ACAP threat assessment process.

Given the lack of evidence for any land-based threats (such as human disturbance and introduced predators) or disease, and the negligible bycatch of birds within South Georgia and CCAMLR waters currently, the observed decline of Wandering Albatrosses at South Georgia has been attributed to bycatch associated with commercial fishing operations outside of this region (Agreement on the Conservation of Albatrosses and Petrels 2009; Poncet et al. 2006, in press).

The following section summarises known threats to Wandering Albatrosses at South Georgia. In addition, potential threats, or factors that may limit the population in some way and thus require further investigation, are also included.

2.3.1 Land-based threats

There is no evidence of any substantial land-based threats to Wandering Albatrosses breeding at South Georgia. However, it is considered useful and important to learn more about potential threats on land, especially disease, and to maintain management actions that serve to protect albatross breeding sites at South Georgia.

There has been some modification of Wandering Albatross breeding habitat at South Georgia since the 1960s, due to the increasing size of the Antarctic Fur-seal *Arctocephalus gazella* population and resultant vegetation trampling impacts (Croxall et al. 1990a). Observations at Prion and Albatross islands indicate that fur-seals have impacted the terrestrial habitats through trampling and eutrophication. Increased nutrients from fur-seals appears to be leading to localised and gradual replacement of short tussac, moss and *Deschampsia* communities (the preferred nesting habitat of Wandering Albatrosses at South Georgia) with tall tussac (Poncet 2011). Fur seal impacts have also been linked to changes in the distribution of Wandering Albatross nests at low altitude on Bird Island (Croxall et al. 1990a) and Albatross Island (Poncet 2015), but there is no evidence to show that they are limiting the numbers of Wandering Albatrosses nesting at South Georgia.

Initiatives to eradicate Norway Rats *Rattus norvegicus*, House Mice *Mus musculus* and Reindeer *Rangifer tarandus* have recently (2015) been completed, with post eradication monitoring currently underway. Although there is no evidence that any of these introduced mammals were a threat to Wandering Albatrosses at South Georgia, their eradication is a significantly positive contribution to the conservation of the terrestrial ecosystems of South Georgia. The devastating impact of House Mice on Tristan Albatrosses *Diomedea dabbenena* at Gough Island (Wanless et al. 2009) highlights the potential for this species to become a threat to Wandering Albatrosses at South Georgia, especially if it were to become the only introduced mammal and more widely distributed.

The remote nature of their breeding sites and their highly pelagic marine distributions likely afford some protection to albatrosses from contact with pathogens. However, information on the prevalence and potential impacts of pathogens on seabirds,

including Wandering Albatrosses, at South Georgia is limited. During the 2004/05 breeding season several hundred adult Chinstrap Penguins *Pygoscelis antarctica* were found dead in the colony at Cooper Bay. Subsequent analyses of tissue material confirmed avian cholera, caused by the bacterium *Pasteurella multocida*, to be responsible for the deaths. Large numbers of Chinstrap Penguins were reported dead in the colony again in 2010, and it is suspected that that these deaths were also the result of an outbreak of avian cholera. Consequently, the site has remained closed to visitors ever since. There have been no recorded incidents of disease affecting Wandering Albatrosses at South Georgia. However, avian cholera is responsible for mortality events in several species in Antarctica (Leotta et al. 2001, 2003), and is likely to be the major cause of the decline in the Indian Yellow-nosed Albatross *Thalassarche carteri* population at Amsterdam Island, where it is also considered a risk for the Amsterdam *Diomedea amsterdamensis* and Sooty Albatross *Phoebastria fusca* (Weimerskirch 2004), highlighting the potential for diseases to impact albatrosses on remote sub-Antarctic islands. Moreover, it is likely that most albatrosses are immunologically naïve to infectious diseases, rendering them susceptible to opportunistic pathogens. Climate change may lead to increases in pathogen transmission and disease, which may act synergistically with other threats such as fisheries mortality.

2.3.2 At-sea threats

2.3.2.1 Incidental mortality associated with fisheries (seabird bycatch)

Incidental mortality of seabirds in fisheries (hereafter “bycatch”), particularly of albatrosses and petrels, became a major conservation concern in the late 1980s (Brothers 1991). Initial evidence came from numerous recoveries in longline fisheries of Wandering Albatrosses ringed at South Georgia (Croxall and Prince 1990), estimates of very high levels of seabird bycatch from the Japanese tuna fishery off Australia (Brothers 1991), and population declines at South Georgia (Croxall et al. 1990b, Prince et al. 1998, Croxall et al. 1998). In longline fisheries, bycatch occurs when birds attack baited hooks and become hooked and drowned as the line sinks to fishing depth. In trawl fisheries, birds foraging on discards released from vessels may be injured or killed as a result of colliding with trawl gear, such as warp and net-monitoring cables, and subsequently dragged underwater, or entangled in nets. All evidence indicates that bycatch in external fisheries (outside of the South Georgia Maritime Zone), and particularly longline fisheries, remains the most severe and immediate threat to South Georgia Wandering Albatrosses, and is the main factor implicated in its ongoing decline and poor conservation status. The extensive foraging range of the Wandering Albatross means that birds encounter many different fishing fleets throughout the year, both within the South Georgia Maritime Zone and outside of it.

In South Georgia waters the fishery for Patagonian Toothfish was initiated in the late 1980s and expanded rapidly during the early 1990s, when there was considerable illegal, unregulated and unreported (IUU) fishing (Government of South Georgia and the South Sandwich Islands 2013). It was during and after this period that the South Georgia Wandering Albatross population experienced its greatest rate of decline (Fig. 2). Seabird bycatch rates in the Patagonian Toothfish fishery around South

Georgia have since been reduced from very high levels in the mid 1990s (an estimated 5755 seabirds were killed in Subarea 48.3 in 1997 alone) to zero in 2006 and 2007 (SC-CAMLR, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006; Croxall 2008, Varty et al., 2008). Bycatch rates have remained negligible ever since, with only two Wandering Albatross caught since. This achievement is due largely to the prescription by CCAMLR of a range of mandatory technical and operational bycatch mitigation methods that have been implemented, and in some cases further strengthened, by the GSGSSI, with co-operation, improved education of crews, and support from the fishing industry. These mitigation measures include the closure of CCAMLR Subarea 48.3 for fishing between September and mid- April each year (which coincides with the breeding seasons of most seabirds breeding at South Georgia), a suite of prescribed technical bycatch mitigation measures, and an international scheme of independent on-board scientific observers. Moreover, there are regular patrols undertaken by the GSGSSI Fisheries Patrol Vessel, FPV *Pharos* SG, and no evidence of IUU fishing within South Georgia waters in recent years.

In spite of the ongoing success in reducing bycatch of seabirds within fisheries operating in South Georgia and CCAMLR waters, the Wandering Albatross population at South Georgia has not recovered from its long-term decline, and although the sharp decline has levelled off in recent years, there are no signs that numbers have started to rebound, and the population remains in a threatened state. The residual threat is almost certainly due to bycatch from fisheries operating outside of the region. It is important to note that given their extreme life-history attributes (long-lived, high adult survival rates, delayed sexual maturity, biennial breeders and low fecundity), and their relatively small population size, even low levels of bycatch can negatively impact the Wandering Albatross population at South Georgia. Indeed, the rapid rate of decline at Bird Island 1997 to 2007 (4.5% per annum; Fig. 2) corresponded to the loss, without replacement, of only 95 breeding birds per year (Phillips et al. 2011).

The main threat to South Georgia Wandering Albatrosses therefore relates to seabird bycatch outside of the SGSSI Maritime Zone. Although there has been a general improvement in the collection and availability of seabird bycatch data over the last decade (Anderson et al. 2011), the volume and reliability of bycatch information, is still severely limited for many areas and fisheries. However, a number of studies have been published recently that provide useful insights into the vulnerability of South Georgia Wandering Albatrosses to fishing, especially during the breeding season. These studies have used extensive tracking data (from 1990-2012) from birds at Bird Island to determine the degree of overlap of breeding birds with pelagic longline fishing effort in the south-west Atlantic, managed by the International Commission for the Conservation of Atlantic Tunas (ICCAT), as well as information on ring recoveries, and bycatch data collected by some national fisheries observer programmes. Although overlap of birds with fishing effort does not necessarily equate to bird interactions with fishing gear and subsequent mortality, Jiménez et al. (2015) reported a positive correlation between numbers of ringed birds reported dead from longline vessels and their overlap index. The overlap index is therefore considered a reasonable proxy of bycatch risk.

The bycatch risk posed by pelagic longline vessels in the south-west Atlantic varies seasonally, being greatest during the incubation (January - March) and chick-rearing (May-December) periods, and lowest during the brood period (April), when the degree of central-place foraging constraint is greatest, and both sexes remain closer to the colony (Jiménez et al. 2014). The vulnerability of breeding Wandering Albatrosses from South Georgia during the chick-rearing period is further corroborated by bycatch data from the Uruguayan pelagic longline fleet and Japanese pelagic longline vessels fishing in Uruguayan waters, which caught Wandering Albatrosses throughout the chick-rearing period, but most frequently from September to November (Jiménez et al. 2014). Although both sexes overlap with pelagic longline fishing effort in the south-west Atlantic, females are at higher risk than males due to their tendency to forage further north, in subtropical waters. Any sex-based bias in bycatch rates likely exacerbates the impact on breeding numbers by reducing effective population sizes and fecundity. The greatest degree of overlap for both sexes was with the fleet from Taiwan, which in terms of effort is the largest in the Atlantic, followed by fleets from Brazil, Uruguay, Spain, Japan and Portugal (Jiménez et al. 2015). Previously, an assessment of seabird-fishery interactions in the Atlantic Ocean showed that ICCAT longline fisheries catch substantial numbers of seabirds, with those breeding at South Georgia amongst the most adversely impacted (Tuck et al. 2011, Jiménez et al. 2012). Collectively, these results serve to highlight the risk posed to South Georgia Wandering Albatrosses by ICCAT fleets in general, and particularly the fleets identified above. Further, they underscore the importance of ensuring the adoption and proper use of effective seabird bycatch mitigation measures by all vessels in the region and that systems are in place and being used to monitor vessel compliance and evaluate the effectiveness of these measures.

In a related study, analysis of tracking data collected from 1991 to 2012 showed that during the breeding season Wandering Albatrosses (and other albatrosses and large petrels) from South Georgia spend most of their time in waters managed by CCAMLR, and that areas managed by ICCAT were the second most intensively used (Tancell et al. 2016). The jurisdictional waters of Argentina, Brazil, Uruguay, Chile and the Falkland Islands were also used by breeding Wandering Albatrosses, but much less intensively than the areas managed by CCAMLR (including the jurisdictional waters of South Georgia) and ICCAT.

The overlap of non-breeding birds (including juveniles, immatures and non-breeding sabbatical adults) and fishing effort is not nearly as well known, partly due to the reduced availability of analysed tracking data, but also because of the much greater extent of their at-sea distributions compared to breeding birds. The ACAP Priority Population Assessment for Wandering Albatrosses at South Georgia (Phillips et al. 2011) presents an analysis of the combined overlap of the distribution of breeding adults, non-breeders, immatures (pre-breeders) and juveniles with fishing effort for a single year (2005). The results of this analysis were used to identify the greatest overlap and potential interaction with fisheries, by combining the proportion of year-round global Wandering Albatross distribution with total fishing effort from all pelagic and demersal longline fisheries with which they overlapped, and are included in Figs. 5, 6 and 7. Given their limited overlap with trawl fisheries, bycatch in longline fisheries is considered to be the main driver of the decline in Wandering Albatrosses

from South Georgia. Indeed, Wandering Albatrosses ringed on South Georgia have been reported dead in every major tuna and many demersal longline fisheries operating south of 30°S (Phillips 2013).

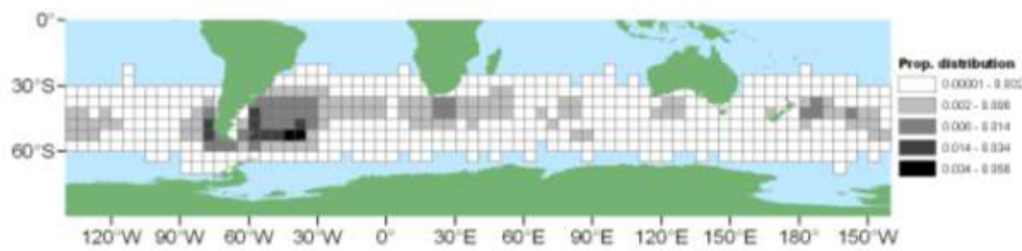


Fig. 5 Year-round distribution of Wandering Albatrosses from South Georgia in 2005, based on tracking data. Data are from British Antarctic Survey.

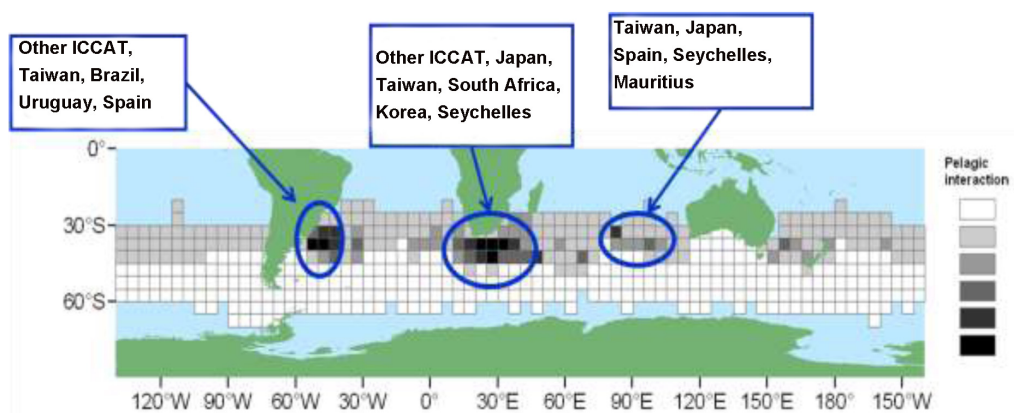


Fig. 6 Areas of greatest potential interaction (bird distribution x fishing effort) of Wandering Albatrosses from South Georgia in 2005 and pelagic longline fisheries. The largest fisheries in the three areas of greatest interaction are shown in boxes. Bird distribution data are from British Antarctic Survey. Fisheries data were collated by CSIRO, Hobart.

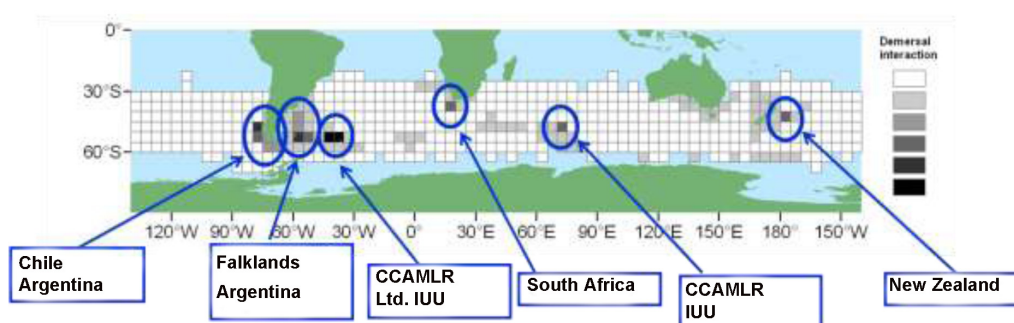


Fig. 7 Areas of greatest potential interaction (bird distribution x fishing effort) of Wandering Albatrosses from South Georgia in 2005 and demersal longline fisheries. The largest fisheries in the areas of greatest interaction are shown in boxes. Bird distribution data are from British Antarctic Survey. Fisheries data were collated by CSIRO, Hobart.

During the last decade there has been a concerted international effort to address the high level of seabird bycatch in fisheries, both within EEZs and on the High Seas. This has led to a range of recent policy instruments, including the development and adoption of ACAP, and the relatively recent adoption (within the last five years) of seabird conservation measures (bycatch mitigation measures) by the tuna RFMOs. This progress has been achieved through a collaborative and evidence-based approach to engaging with RFMOs by BirdLife International, ACAP and a number of active member states, involving inputs and collaboration from many scientists. Coincident and linked with these policy developments, has been an increasing effort to quantify the extent of seabird bycatch in fisheries, design and test technical and operational mitigation measures to reduce bycatch and implement management actions to mitigate known threats to seabird populations. These efforts, best illustrated by the CCAMLR example, have shown that by properly implementing an appropriate suite of fishery-specific mitigation measures, supported by an effective observer programme, seabird bycatch can be progressively reduced, and virtually eliminated.

Although the RFMOs responsible for managing tuna fisheries on the high seas have recently adopted seabird bycatch mitigation measures informed by ACAP best practice advice, the extent of use and effectiveness of these measures has yet to be properly assessed. One of the key challenges now is to ensure that the adoption of policies requiring the use of seabird conservation measures by these and other fisheries management organisations is being translated into effective action on the decks of fishing vessels. In order to address this challenge, there is a need for improved data collection through at-sea observer programmes to provide much better information on seabird bycatch rates, the effectiveness of bycatch mitigation measures, and levels of compliance.

2.3.2.2 Ingestion of fishing hooks

Wandering Albatrosses are also at risk of ingesting discarded fishing gear. Monitoring of marine debris and fishing gear associated with seabirds has been carried out annually by BAS at Bird Island since 1993/1994. A recent analysis of these data indicated that, owing to their wide foraging range and large gape, Wandering Albatrosses were the seabird species most affected by discarded fishing gear, especially fishing hooks, which are ingested, and digested or regurgitated (Phillips et al. 2010). This research revealed a recent increase in the number of multifilament snoods (gangions) associated with Wandering Albatross nests, which coincided with the more widespread adoption of a new demersal longline system (the trotline system), which has resulted in greater discarding of hooks. Stomach content analysis showed that many hooks are completely digested by chicks, and although fledging success of these chicks remained high, the long-term effects of the digestion of hooks are unknown (Phillips et al. 2010; Phillips et al. 2016).

2.3.2.3 Oil contamination

Seabirds are generally the most conspicuous victims of oil spill events. However, due largely to differences in foraging ecology, species vary in their susceptibility to oil

spills. Albatrosses tend to be less susceptible to oil contamination than diving species, such as penguins, and there has been no documented evidence that oil pollution has had anything more than a minor effect on Wandering Albatrosses. Oil-contaminated Wandering Albatrosses have been recorded around South Georgia (Agreement on the Conservation of Albatrosses and Petrels 2009). The causes of these incidents of contamination are unknown, but were likely due to oil discharged from vessels or old wrecks. Given the current and planned oil development activities in the Falkland Islands, and their use of these waters, especially during incubation (Tancell et al. 2016), South Georgia Wandering Albatrosses could be at risk from any oil spill events that may occur as a result of these activities (Premier Oil Exploration & Production Limited 2015).

2.3.3 Climate change

Climate change is emerging as a potentially important issue for Southern Ocean seabirds, but its impacts are complex, difficult to predict, and even more difficult to mitigate. Potential impacts include changes to annual sea surface temperature and marine productivity, and changes in wind, rainfall patterns and ambient temperature that could lead to increased exposure of nesting birds and chicks (Barbraud et al. 2012, Phillips et al. 2016). Through changes to marine and terrestrial environments, climate change may lead to modifications in the distribution, phenology, demography and population dynamics of seabirds, including Wandering Albatrosses. Climate change may also influence the scale and severity of other threats. For example, changes in the distributions of fish species may lead to modifications in fishing methods and the spatial and the temporal distribution of fishing effort, which has direct implications for albatross conservation. An increasing number of studies have documented combined impacts of both fisheries mortality and climate on albatross populations, which can interact in a complex manner (Rolland et al. 2008; Rolland et al. 2009a; 2009b; 2010; Barbraud et al. 2012). Warming conditions might also lead to a potential increase in the risk of disease transmission because of greater environmental stress in infected birds, and increased opportunities for the establishment of new vectors (Phillips et al. (2016).

3. POLICIES, PLANS AND LEGISLATION RELEVANT FOR MANAGEMENT

3.1 National instruments

All of South Georgia is formally protected, and all visits to and activities within the archipelago are managed by means of a permit system. The main activities conducted within South Georgia, including its Maritime Zone, are commercial fishing, tourism and science. The Wildlife and Protected Areas Ordinance (2011) provides a legal basis for the environmental policies of GSGSSI. The legislation affords complete protection for indigenous flora and fauna of South Georgia (and the South Sandwich Islands), including Wandering Albatrosses. The Ordinance establishes powers to designate and manage Specially Protected Species and Habitats

(although none have yet been established), Specially Protected Areas (the process to establish these is currently underway) and Marine Protected Areas (see below).

Fisheries within the jurisdictional waters of South Georgia and the South Sandwich Islands are managed to the highest international standards, including the use and monitoring of progressive seabird conservation and management measures. The Fisheries (Conservation and Management) Ordinance (2000), and subsequent amendments, provides a framework for the issuing of fishing licences, enforcement and penalties.

The South Georgia and South Sandwich Islands Marine Protected Area (MPA) was declared in 2012. The aim of this MPA, which occupies 1.07 million km², and includes large no-take zones in all coastal areas, is to ensure the protection and conservation of the regions marine biodiversity and ecological processes, whilst allowing sustainable and carefully managed fisheries. Details of the MPA, including management prescriptions and provisions for surveillance and monitoring are included in the South Georgia and the South Sandwich Islands Marine Protected Area Management Plan (Government of South Georgia and the South Sandwich Islands 2013).

The Biodiversity Action Plan for South Georgia and the South Sandwich Islands (2016-2020) provides a framework for environmental management of the Territory, outlining a range of environmental commitments and activities and how these will be implemented over the five year period: 2016-2020 (Government of South Georgia & the South Sandwich Islands 2016). This Conservation Action Plan for Wandering Albatrosses at South Georgia responds to one of the tasks (3.2.4) listed in the Biodiversity Action Plan.

3.2 International instruments

3.2.1 Agreement on the Conservation of Albatrosses and Petrels (ACAP)

The management of South Georgia and its biodiversity is also informed by a number of International Treaties or Agreements. Chief amongst these in relation to Wandering Albatrosses is ACAP. The United Kingdom (UK) was Party to the negotiation of the Agreement and ratified it in 2004, soon after it came into force, and this ratification has been formally extended to the relevant Overseas Territories, including South Georgia and the South Sandwich Islands. ACAP was developed under the broad auspices of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), but is an international instrument in its own right. ACAP seeks to achieve and maintain a favourable conservation status for albatrosses and petrels globally. This objective is pursued through a framework for undertaking and coordinating international activity to mitigate known threats to populations of affected species listed in Annex 1 of the Agreement.

ACAP is the leading forum for technical advice and primary source of information on best practice approaches to eliminate or minimise seabird bycatch during fishing operations, with this information now used extensively by international organisations,

and ACAP Parties and non-Party Range States, in the adoption and implementation of effective seabird conservation measures in their fisheries. A plan outlining guidelines for the implementation of ACAP at South Georgia and the South Sandwich Islands was published in 2010 (Wolfaardt and Christie 2010), and is in the process of being revised. This Conservation Action Plan for Wandering Albatrosses at South Georgia is intended to complement and not replace the ACAP Plan for South Georgia and the South Sandwich Islands.

3.2.1.1 ACAP Priority Populations

At the sixth meeting of ACAP's Advisory Committee in 2011, a number of high priority populations (of ACAP species) were identified based on rates of decline and levels of threat. The aim of identifying the highest priority ACAP populations is to help target collaborative conservation efforts at the most threatened populations, especially when resources are scarce. The main criteria for determining ACAP high priority populations are that the population is declining by more than 3% per annum, represents more than 10% of the global population, and for which a major underlying cause of the decline is incidental mortality in fisheries. Initially, five priority populations were identified, including Wandering Albatrosses at South Georgia. Parties responsible for these high priority populations are expected to develop a list of actions that prioritise research and conservation activities, and report to each ACAP Advisory Committee meeting on progress in implementing those activities. This Conservation Action Plan for Wandering Albatrosses at South Georgia serves *inter alia* as the framework for prioritising research and management actions and reporting routinely to ACAP on progress.

3.2.2 The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)

CCAMLR regulates fisheries activities in the Southern Ocean waters, including around South Georgia, by means of Conservation Measures and resolutions. These include the prescription, management and monitoring of seabird bycatch mitigation measures, for which CCAMLR has achieved considerable success, and is recognised as having set the gold standard. The Fisheries (Conservation and Management) Ordinance (2000) and subsequent amendments give effect to the GSGSSI's obligations under CCAMLR.

4. MONITORING AND RESEARCH

The great majority of monitoring and research on Wandering Albatrosses at South Georgia has been carried out by BAS at Bird Island, on the north-west tip of South Georgia. This research was initiated by Lance Tickell in the late 1950s, and has been continued by BAS from the early 1970s to the present day. Demographic monitoring of ringed birds has been conducted annually since 1975, and represents one of the longest and most comprehensive studies of albatrosses. These long-term demographic studies have been used to monitor the trend in the numbers of

Wandering Albatrosses breeding at Bird Island (see Fig. 2) and the demographic processes and mechanisms (e.g. survival, recruitment and breeding success) associated with the observed trend (Croxall 1979, Croxall et al. 1990b, 1998, Prince et al 1998). These data (including ring recoveries from fishing operations) have been crucial for demonstrating the linkages between the observed decline in numbers of birds at South Georgia and bycatch, and thus leveraging support for the adoption of seabird conservation measures (Prince et al. 1998, Croxall 2008, Waugh et al. 2008, Tuck et al. 2011).

Annual counts of the numbers of Wandering Albatrosses breeding at Albatross and Prion islands in the Bay of Isles have been undertaken since 1999, and monitoring of breeding success from 1998/99-2002/03 and from 2005/06-present (South Georgia Surveys, unpubl data). The first complete (archipelago-wide) survey of Wandering Albatrosses breeding at South Georgia was conducted in 1984, with subsequent surveys conducted in 2003/04 (Poncet et al. 2006) and most recently in 2014/15 (Poncet et al. in press).

BAS has been at the forefront in the development and implementation of a diverse range of foraging ecology research (tracking of at-sea distribution and activity, provisioning rates, diet assessment by conventional means and stable isotopes) conducted at Bird Island. This work has been carried out on a number of species at Bird Island, including Wandering Albatrosses, tracking individuals throughout the year using the latest tracking and logging technology. These data have formed essential components of risk assessments of seabird-fisheries interactions, based on spatio- temporal overlap between seabird species susceptible to bycatch and effort data for fisheries likely to catch them (see Section 2.3.2.1).

5. FRAMEWORK FOR ACTION

This Plan is intended to serve as a tool to guide and prioritise conservation action for South Georgia Wandering Albatrosses. It takes advantage of knowledge gained from extensive research and monitoring, and represents our best collective understanding of their current conservation needs. It is important to note that there are a number of important actions included in the implementation framework that are not, or will not be, implemented directly by GSGSSI, but by partner organisations, such as BAS. It is not the intention of GSGSSI to prescribe these actions to external agencies, but rather to recognize that they form a vital component of the conservation framework, and to help facilitate their implementation and support as appropriate the external agencies in carrying them out.

This plan seeks to achieve and maintain a favourable conservation status for Wandering Albatrosses at South Georgia, and in so doing contribute towards their improved conservation status globally.

Components of the Conservation Action Plan

In order to achieve the goal of this plan, a number of priority actions and associated activities have been identified that fall into the following eight components, in no order of importance:

1. *Long-term monitoring of Wandering Albatross population dynamics at South Georgia.*
2. *Long-term monitoring of the foraging ecology and diet of Wandering Albatrosses at South Georgia.*
3. *Monitoring and management of potential land-based threats to Wandering Albatrosses breeding at South Georgia.*
4. *Understanding marine-based threats to South Georgia Wandering Albatrosses in order to implement and promote best practice management approaches within and outside SGSSI waters to address these.*
5. *Understanding the potential impacts of climate change on the ecology and population dynamics of South Georgia Wandering Albatrosses.*
6. *Raising awareness of the plight of Wandering Albatrosses at South Georgia, and the actions that are required and being undertaken to improve their conservation status.*
7. *Participating in international conservation and fisheries fora to promote actions that will help support the conservation of Wandering Albatrosses from South Georgia.*
8. *Reviewing the Conservation Action Plan to evaluate accomplishments and update information on priority needs.*

Implementation

The implementation period for this Conservation Action Plan is 2016-2020, which has been set to coincide with the time frame for the Biodiversity Action Plan for South Georgia & the South Sandwich Islands and the overarching South Georgia & the South Sandwich Islands Strategy. However, given the long-term nature of the overall goal, it is anticipated that the Conservation Action Plan will need to be extended beyond this five-year period. As the nature of threats to Wandering Albatrosses at South Georgia is dynamic, an adaptive and flexible approach is required, that incorporates information collection and assessment, feedback and re-assessment. Routine reviews of performance against the stated objectives and actions, and an overall assessment at the end of the implementation period, will be used as the basis for drafting a revised Action Plan for the following five-year period.

Given their vast foraging ranges, and consequently the wide-ranging nature of threats to South Georgia Wandering Albatrosses, their conservation is a matter of international concern and shared responsibility. GSGSSI will not be able to realise the goal of this Plan alone because many of the threats to South Georgia Wandering Albatrosses occur outside of GSGSSI's area of jurisdiction. Even within GSGSSI's area of jurisdiction, a collaborative approach is required as a variety of stakeholders

play key roles in the conservation and protection of Wandering Albatrosses at sea and on land.

Whereas threats or management actions within the jurisdiction of GSGSSI will involve dedicated management or mitigation strategies, those that involve other nations will require a different approach, in which GSGSSI will need to engage with those nations (and other organisations), and through multi-lateral agreements such as ACAP, to promote and assist seabird conservation measures. This is particularly the case for mitigating the threat of bycatch, which will only be properly addressed through a concerted international effort, especially on the High Seas (Areas Beyond National Jurisdiction).

There are a number of international conservation initiatives currently underway that are working to address seabird bycatch on the High Seas and in other areas considered to be a risk for albatrosses and petrels (see Component 4 for further details). Although the scope of these initiatives includes all seabirds caught as bycatch, South Georgia Wandering Albatrosses constitute one of the key components. Consequently, these initiatives are reflected in the Framework for Action, even if GSGSSI are not a lead or formal partner organisation, to highlight opportunities for collaboration and synergies. The successful implementation of this Plan requires a coordinated partnership approach both within South Georgia and internationally.

Prioritisation

There are a number of important conservation and management actions already in place, and these should continue. However, in order to improve the conservation status of Wandering Albatrosses at South Georgia, there is a need to go beyond what is currently being done, and to identify the highest priority actions that will create the step-changes needed to achieve the goal of this plan. The step-change actions that will most likely promote improvements to their conservation status are those that help enhance our understanding of the nature and extent of at-sea (fisheries) threats, and on the basis of this improved understanding adopt a targeted approach to addressing these threats. Actions which meet these criteria have been identified as **Priority Actions**, and have been treated separately from the remaining actions, which are called **Associated Activities** in this Plan. A summary of the Priority Actions is provided in Table 1. The Associated Activities are summarised in Table 2, in which the relative importance of each in relation to improving the conservation status of Wandering Albatrosses from South Georgia is scored as **High, Medium or Low**.

It is important to note that there are some activities, such as those that relate to biosecurity, which are not considered to be a high priority for improving the conservation status of Wandering Albatrosses at South Georgia, but are important for South Georgia generally.

Component 1: Long-term monitoring of Wandering Albatross population dynamics at South Georgia

The breeding population of Wandering Albatrosses has been monitored annually at Bird Island since the 1960s, and is one of the most comprehensively studied albatross populations globally. These data have been instrumental in demonstrating the long-term population decline at South Georgia, determining the demographic mechanisms for the decline, and identifying bycatch as the main driver of the ongoing decline. In establishing the link between the population decline and bycatch in fisheries, these data have been crucial in leveraging support for the adoption of bycatch mitigation measures in a range of fisheries. The majority of the current population monitoring takes place at Bird Island, supplemented by annual monitoring of numbers and breeding success of the Wandering Albatross colonies at Albatross and Prion Islands. In addition, three archipelago-wide breeding population surveys have taken place since the mid-1980s, the most recent of which was conducted in 2014/15.

Accurate estimation of population size is critical for monitoring conservation status, and for identifying the key factors influencing changes in population size and demography of South Georgia Wandering Albatrosses. It is important that the established long-term monitoring initiatives are maintained so that the population trend of Wandering Albatrosses at South Georgia can continue to be robustly monitored, and the factors influencing the trend understood. The population monitoring strategy at South Georgia includes a combination of annual monitoring of breeding numbers and breeding success, comprehensive demographic studies at a sample of study colonies at Bird Island to assess adult and juvenile survival, recruitment and other demographic parameters that help identify the underlying causes of population trends, and complete archipelago censuses much less frequently. This approach will facilitate a good understanding of long-term population trends as it also includes information on annual variation in breeding numbers, which is particularly important for biennial species such as the Wandering Albatross, that can show high inter-annual variability in breeding numbers.

It appears that the population trend for Wandering Albatrosses at Bird Island is similar to that recorded for Albatross and Prion islands, and the rest of the archipelago (Poncet et al. 2006, in press). Consequently, it is not considered necessary at this point to initiate annual monitoring at any new sites. Given the time-series of data that already exists, and so that the Wandering Albatross population monitoring programme collects data from more than one site, continued monitoring of the colonies in the Bay of Isles (Albatross and Prion Islands) is considered useful. Monitoring efforts should be maintained either as an annual programme (as is the case currently), or to cover all Wandering Albatross colonies in the Bay of Isles every three to five years.

Associated Activities

- 1.1 Encourage and where appropriate support BAS to continue annual counts of the number of Wandering Albatrosses breeding at Bird Island (whole island).

- 1.2 Encourage and as appropriate support BAS to continue long-term demographic monitoring of Wandering Albatross at Bird Island.
- 1.3 Maintain annual monitoring of breeding numbers at Albatross and Prion islands and productivity at Prion Island.
- 1.4 Conduct monitoring of population numbers and breeding success for all Wandering Albatross colonies in the Bay of Isles every three to five years..
- 1.5 Conduct an archipelago-wide census of Wandering Albatrosses at South Georgia once every 10 years, using the same methodology and timing as previous surveys, and data from Bird Island to develop correction factors.
- 1.6 Given its importance as a breeding site (South Georgia's second largest breeding population), its location (the largest population to the south of the island), and its exclusion from the 2014/15 census, conduct a survey of Wandering Albatrosses breeding at Annenkov Island within the next three years. Investigate using remote sensing techniques to conduct the survey at Annenkov Island.
- 1.7 Ensure that all population status and trend data are routinely incorporated into the GSGSSI GIS and database, and submitted to ACAP.
- 1.8 Formally submit and present the paper on the 2014/15 survey of Wandering, Black-browed and Grey-headed Albatrosses at South Georgia (Poncet et al. in press) to the next meeting of ACAP's Population and Conservation Status Working Group, scheduled to take place in September 2017 in New Zealand.

Component 2: Long-term monitoring of the foraging ecology and diet of Wandering Albatrosses at South Georgia

Based on extensive tracking and associated research undertaken by BAS at Bird Island, the at-sea distribution, foraging ecology and diet of South Georgia Wandering Albatrosses, especially breeding birds, is relatively well known. These data have formed essential components of risk assessments of seabird-fisheries interactions, based on spatio- temporal overlap between seabird species susceptible to bycatch and effort data for fisheries likely to catch them. In this context the BirdLife Global Procellariiform Tracking Database (BirdLife International 2004), which serves as a repository for all albatross and petrel tracking data, has been a crucial tool for identifying actual and potential bycatch 'hotspots' in coastal waters and on the High Seas.

Although most age-classes and life-cycle phases of South Georgia Wandering Albatrosses have been tracked at some point, the distribution of non-breeding birds (including juveniles, pre-breeders/immatures and sabbatical adult birds) is not as well known as breeding birds. This is due to a combination of sample sizes (limited numbers of birds that have been tracked, and the number of years for which data exists) and the resolution of the tracking data collected (based on the type of device used – non-breeding birds have generally been tracked with geolocators which are accurate to c. 200km). The priority actions for further tracking work should be based on filling gaps to expand and improve overlap analyses of albatross distribution with

fishing effort, and thus advance knowledge of potential interactions between fisheries and Wandering Albatrosses from South Georgia. These priority actions are outlined in greater detail under Objective 4 dealing with marine-based threats.

The diet of South Georgia Wandering Albatrosses has been monitored through the analysis of regurgitated pellets (boluses) at nests on Bird Island. Knowledge of diet is important to understand possible changes in prey composition and implications for breeding and survival parameters. Although this approach is biased in that it focuses on undigested hard parts (mainly squid beaks), and thus does not reflect use of fisheries discards, it is non-invasive and therefore the most appropriate mechanism for monitoring diet at South Georgia. Some studies have inferred the consumption of fisheries discards through analysis of stable isotope ratios in feathers and prey items, based on samples taken from birds caught in fishing operations.

Associated Activities

- 2.1 Evaluate at-sea distribution data for South Georgia Wandering Albatrosses with respect to gaps and limitations in sample size, and likely overlap with high risk fisheries, and on this basis identify priority age and life-cycle phases for which further tracking data are required. Systematically update and fill data gaps in a prioritized manner. See Priority Action 4.1 and Associated Activity 4.7 for further details. The majority of the Wandering Albatross population is located in the north-west of the archipelago, and the majority of the birds from Bird Island forage to the north. Consequently, tracking birds from additional sites (outside Bird Island) is not considered a high priority, especially given the practical challenges involved. However, it may be worth investigating options to track birds from Annenkov Island, given that it is the second largest population and the largest one to the south, from which birds may have a greater tendency to forage more in Antarctic waters.
- 2.2 Ensure all tracking data are routinely submitted to the Global Procellariiform Tracking Database so that they can be used in future seabird-fisheries risk assessments.
- 2.3 Support the continued routine monitoring of the diet of Wandering Albatrosses at Bird Island through the analysis of regurgitated pellets.

Component 3: Monitoring and management of potential land-based threats to Wandering Albatrosses breeding at South Georgia

There is no evidence that any land-based threats are currently involved in the decline of Wandering Albatrosses at South Georgia. Visits to, and activities within, the archipelago are strictly managed by GSGSSI so as to ensure effective site protection, while at the same time encouraging responsible tourism and research. Only a few of the Wandering Albatross colonies at South Georgia are regularly visited by humans. These include Bird Island, Albatross Island and Prion Island for research purposes, and Prion Island, for tourist landings. Tourist landings at Prion Island are managed according to a [Visitor Management Plan](#), and by means of a

boardwalk, which ensures that human impacts on habitat and wildlife are avoided or minimised. Since the installation of the boardwalk, monitoring commissioned by GSGSSI has indicated that tourist visits to the island appear not to have influenced the distribution of Wandering Albatross nests.

One of the main objectives of the Biodiversity Action Plan for South Georgia and the South Sandwich Islands is to implement best practice biosecurity protocols, pre- and post-border monitoring and emergency response measures, especially since the completion of projects to eradicate rodents and reindeer from the island. A number of actions contained within the Biodiversity Action Plan are designed to support this biosecurity objective and thus reduce the risk of introducing non-native species and transmitting pathogens and diseases to South Georgia.

At least one, and probably two, outbreaks of avian cholera have occurred at South Georgia. In both cases, the outbreaks appear to have been restricted to Cooper Bay, where Chinstrap Penguins were the main victims. Although there have been no reported incidents of diseases impacting Wandering Albatrosses at South Georgia, avian cholera has impacted albatrosses at other island groups, so it is important to screen birds at South Georgia to establish baseline levels of these (or other) pathogens.

Effective protection and management of the terrestrial environment of South Georgia, and activities within it, has helped ensure that land-based activities and processes are not currently threatening Wandering Albatrosses. It is important that the stringent protection of breeding sites and management of human activities is maintained, and that knowledge regarding baseline levels of pathogens and disease in South Georgia Wandering Albatrosses is improved.

A range of Specially Protected Areas were identified in the 2006 South Georgia Plan for Progress (Pasteur and Walton 2006), but have not been established in law. One of the priority actions of the Biodiversity Action Plan for South Georgia and the South Sandwich Islands is to work with stakeholders to identify locations that should be declared as Protected Areas under the Wildlife and Protected Areas Ordinance (2011). It is envisaged that a range of different Protected Area categories will be established, with the entire terrestrial environment of South Georgia being afforded some form of legal protection (Government of South Georgia and the South Sandwich Islands 2016). Wandering Albatross breeding sites will be incorporated into this Protected Area planning process.

Associated Activities

- 3.1 Continue to support and manage responsible tourism activities at South Georgia.
- 3.2 Ensure that the South Georgia biosecurity protocols contained within the Biosecurity Handbook (2016) are properly implemented, regularly reviewed, and improved where possible.
- 3.3 Implement all biosecurity activities listed under Objective 6 of the Biodiversity Action Plan for South Georgia and the South Sandwich Islands.

- 3.4 Determine baseline levels of pathogens and disease in Wandering Albatrosses at South Georgia, and subject to the findings of this investigation develop and implement a long-term disease surveillance and response programme (see also 3.5). Liaise with pathologists to develop and implement appropriate sampling protocols.
- 3.5 Develop and implement a contingency plan that sets out rapid response remedial actions that should be implemented in the event of a disease outbreak and is based on best practice principles. The [Unusual Animal Mortality Response Plan](#) developed by the Australian Antarctic Division to provide guidance on what to do if sick or dead animals are discovered in unusually high numbers or with signs that suggest disease, could serve as the basis for a dedicated plan for South Georgia.
- 3.6 Continue to monitor the impact of Antarctic Fur-seals on the nesting habitat of Wandering Albatrosses (and other seabirds) at Albatross and Prion Islands.
- 3.7 Ensure that the Wandering Albatross breeding sites are included in the SGSSI Protected Areas planning process, and that these sites are optimally incorporated into the Protected Area Framework that is developed.

Component 4: Understanding marine-based threats to South Georgia Wandering Albatrosses in order to implement and promote best practice management approaches within and outside SGSSI waters to address these

The main threat to Wandering Albatrosses at South Georgia is undoubtedly bycatch associated with longline fisheries. Bycatch of Wandering Albatrosses and other seabirds has been reduced to negligible levels within the jurisdictional waters of South Georgia and the South Sandwich Islands, and in CCAMLR waters more broadly, although there is evidence to suggest some IUU fishing takes place within CCAMLR waters, including potentially in Subarea 48.2, just south of South Georgia. In spite of these successes the Wandering Albatross population at South Georgia remains threatened. All evidence indicates that this is due to bycatch of birds associated with fisheries operating outside of South Georgia and CCAMLR waters. The conservation of South Georgia Wandering Albatrosses is therefore dependent on the continued management of bycatch within South Georgia and CCAMLR waters (where breeding birds spend the majority of their time), and urgent efforts to reduce seabird bycatch in fisheries outside of this area.

It is thus important that GSGSSI and the UK government complement national policy and actions (to maintain and improve seabird bycatch reduction efforts) with actions at an international level. This is best done by engaging, including through ACAP, the relevant RFMOs, and through bilateral and multilateral approaches with other nations, to promote and assist with the reduction of seabird bycatch in their waters. This is indeed one of the key objectives of ACAP, which requires Parties to take measures both individually and collectively, to achieve and maintain a favourable conservation status for albatrosses and petrels (Article II).

Risk assessments, based on spatio-temporal overlap between the foraging distribution of birds and fishing effort, have highlighted the importance of ICCAT fisheries for South Georgia Wandering Albatrosses, especially for breeding birds. Non-breeding birds are even more wide-ranging, and although tracking data is more limited, it shows they overlap with a number of additional fisheries management areas and fleets. Fisheries managed by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) and the Indian Ocean Tuna Commission (IOTC) are thus likely also to be important; the distribution of birds, especially during the non-breeding period, also overlaps with the Convention area of the South Pacific Regional Fisheries Management Organisation (SPRFMO).

Effective action to reduce seabird bycatch involves five key steps: a) recognising and understanding the spatio-temporal nature of the problem, b) setting requirements for mitigation measures ensuring these are based on or informed by best-practice advice, c) collecting bycatch and associated data, d) establishing systems to monitor compliance, and e) evaluating the effectiveness of mitigation measures, and based on this evaluation refining the requirements if necessary.

All five tuna RFMOs have over the last five years adopted conservation and management measures that require the application of bycatch mitigation measures by vessels in areas overlapping with albatrosses and petrels. While this represents significant process, the extent to which these policies have translated into effective action is largely unknown. There is therefore a need to ensure that data on bycatch are adequately collected and reported, that monitoring and surveillance efforts are sufficient to assess compliance, and to evaluate the effectiveness of the prescribed mitigation measures.

There are a number of international initiatives underway that are working towards improved seabird bycatch mitigation within RFMOs, and more broadly, and which are relevant to South Georgia Wandering Albatrosses. The ACAP RFMO engagement strategy seeks to promote, through collaboration with Parties and other organisations such as BirdLife International, the adoption and implementation of best-practice seabird bycatch mitigation measures in all five tuna RFMOs, and the monitoring of their effectiveness. The main broad priority areas for ACAP engagement with RFMOs comprise the following:

- a) Participate in RFMO reviews of seabird conservation measures (ICCAT and IOTC will initiate reviews of their seabird conservation measures in September 2016).
- b) Promote the strengthening of seabird conservation measures within RFMOs (including advocating ACAP's recently (2016) revised best practice guidelines for mitigating seabird bycatch in pelagic longline fisheries).
- c) Work to strengthen RFMO bycatch data collection and reporting requirements, and the inclusion of appropriate seabird bycatch mitigation elements within RFMO compliance monitoring.

BirdLife International, through its local partner BirdLife South Africa, is leading the seabird bycatch component of an international project (*'Common Oceans Tuna Project'*) focusing on sustainable fisheries management and biodiversity conservation in tuna fisheries beyond Areas of National Jurisdiction. The project is currently underway, and is scheduled to continue until late 2018. The overall aims of the

seabird bycatch component of the project are to enhance uptake of best practice seabird bycatch mitigation measures by pelagic longline fleets in the Atlantic and Indian Oceans, to strengthen the capacity of national institutions to manage and conduct analyses of seabird bycatch data, and to facilitate an assessment of the combined impacts of all tuna RFMOs on seabirds. The target audience of the project and related work includes all of the main fishing nations that overlap with albatrosses and petrels in the Atlantic and Indian oceans, including those that have been identified as important for South Georgia Wandering Albatrosses (see section above on at-sea threats). The aims of the project are being pursued through a series of workshops and related activities focusing on seabird bycatch mitigation. These include: national awareness and observer training workshops, a pilot study in Cape Town, South Africa (used by many distant water fleets), to investigate the use of port-based outreach to support and monitor compliance in the use of seabird bycatch mitigation, and joint tuna RFMO seabird bycatch assessment workshops in 2016-2018, leading to the first ever global assessment of seabird bycatch in tuna fisheries. This programme of work, while broad in scope, is directly relevant to and important for the conservation of South Georgia Wandering Albatrosses.

Monitoring by BAS of marine debris and fishing gear associated with seabird nests at Bird Island has shown that Wandering Albatrosses are the species most affected by discarded fishing gear. The discarding of hooks is prohibited in SGSSI fisheries and since 2011 all longline vessels operating in South Georgia waters are required to use uniquely marked hooks that can be traced back to the vessel. Continued monitoring is needed to assess compliance with this requirement, and to identify emerging issues such as changes in gear type or fishing practices that may impact seabirds.

Although South Georgia Wandering Albatrosses have not been significantly impacted by oil pollution and contamination, ongoing monitoring and reporting of pollution and contamination incidents is required, especially given the development of hydrocarbon activities in the Falkland Islands.

Priority Actions

- 4.1 **Extend the analysis of Wandering Albatross overlap with fisheries that was conducted for breeding Wandering Albatrosses and pelagic longline fisheries** (Jiménez et al. 2015). This approach used a combination of GLS, PTT and GPS tracking data (accurate to c. 200km, c. 10km and c. 10m, respectively) and data on fishing effort at a resolution of 5 x 5 degree grid square (the best available for many fisheries). The outputs of this work have already been very helpful in identifying high-risk areas and fisheries for South Georgia Wandering Albatrosses, but could be usefully extended. Use existing PTT and GPS data from breeding, and GLS data from juvenile, older pre-breeding and non-breeding (sabbatical) Wandering Albatrosses to examine year-round overlap with demersal and pelagic longline fisheries for all life-history stages throughout their distribution. This has been done to some extent (see Figs 5-7) but for a single year only (2005). This updated analysis will help identify more specifically those fleets that overlap with Wandering Albatrosses from South Georgia, as well as the areas and

seasons of highest bycatch risk, and thus inform a more focussed approach to engaging with these fleets to better understand and address bycatch impacts

- 4.2 Report and disseminate results of any overlap analyses to ACAP and relevant RFMOs so that they can be used to conduct or update seabird-fisheries risk assessments, and help inform targeted engagement with fleets that overlap with South Georgia Wandering Albatrosses.**
- 4.3 Develop and implement collaborative strategies mitigating fisheries bycatch, including via the provision of data, updates and outreach materials arising from activities in the Conservation Action Plans.** Many of the nations identified as having fleets that overlap with Wandering Albatrosses from South Georgia are ACAP Parties, and one of the main objectives of ACAP is to provide a focus for international cooperation and the exchange of information and expertise in relation to albatross and petrel conservation. Some of the key fleets that have been identified in this Plan, such as those from Taiwan and Japan, are not currently ACAP Parties, and should be engaged through the ACAP RFMO strategy (see 4.4), and other means (see 4.5). Outputs from the analysis of overlap between South Georgia Wandering Albatrosses and fishing effort outlined in Priority Action 4.1 will serve as a key input to this process.
- 4.4 Through the ACAP RFMO engagement strategy, strengthen the application of seabird bycatch mitigation measures within RFMOs and encourage better monitoring of compliance and effectiveness** (see Annex 5 of the 2016 ACAP SBWG report [AC9 Doc Rev 1](#) for detailed actions of the engagement strategy). ICCAT is of particular importance for South Georgia Wandering Albatrosses, followed by CCSBT and IOTC. In 2016, ICCAT and IOTC will initiate processes to evaluate the effectiveness of their seabird conservation measures. Although GSGSSI is not a member of ICCAT, the UKOT is a member as is the UK (currently through the EU), and through support from FCO and Defra, have helped progress and support the adoption of seabird conservation measures by ICCAT. Outputs from the analysis of overlap between South Georgia Wandering Albatrosses and fishing effort outlined in Priority Action 4.1 will serve as key inputs to this process.
- 4.5 Engage with those fleets that overlap most with Wandering Albatrosses from South Georgia to improve their use of bycatch mitigation.** Of the pelagic longline fleets, those from Taiwan, Brazil, Uruguay, Spain, Japan and Portugal have been identified as having the greatest overlap during the breeding season. The overlap analysis outlined in Priority Action 4.1 will help clarify and update the identification of key fleets, including for non-breeding birds. Investigate the best mechanisms and opportunities for direct engagement with key fleets, such as the work being progressed by the seabird bycatch component of the FAO Common Oceans Tuna project (Activity 4.11)

Associated Activities

- 4.6 Continue to manage national fisheries to reduce or eliminate seabird bycatch.
- 4.6.1 Continue to manage all SGSSI fisheries in a risk-averse manner, to the highest international standards, and in line with all CCAMLR requirements, especially in relation to seabird bycatch mitigation.
- 4.6.2 Ensure that the seabird bycatch reporting requirements of ACAP are met (new protocols are currently being developed). Determine the most efficient method of obtaining the relevant data from CCAMLR (where all SGSSI bycatch and observer data are held) for ACAP reporting purposes.
- 4.6.3 Help facilitate, support and implement monitoring programmes at Bird Island, Albatross Island and Prion Island recording the incidence of fishing hooks and other marine debris associated with nests of Wandering Albatrosses. Items should be fully described and documented in the standard CCAMLR form (available at <https://www.ccamlr.org/en/node/75831>), and ideally archived or photographed for later analysis of provenance.
- 4.7 Encourage and support further tracking studies and spatio-temporal overlap analyses of South Georgia Wandering Albatrosses and fishing effort that identifies more accurately and at a higher resolution, fleets and vessels that are contributing to the bycatch of birds. Priority Action 4.1 is the first step in this process. The actions listed below represent further step-wise improvements in the resolution of data and outputs that will help identify more accurately the fleets and vessels responsible for bycatch of South Georgia Wandering Albatrosses and thus help inform more targeted engagement with these fleets.
- 4.7.1a Improve the accuracy of analyses of overlap of Wandering Albatrosses with fisheries by collecting new GPS tracking data from older pre-breeding and non-breeding Wandering Albatrosses attending colonies at Bird Island (which they do from November/December to April/May), which are likely to overlap more than breeders with pelagic longline fisheries in the southwest Atlantic.
- 4.7.1b Encourage and support the implementation of a fine-scale analyses of overlap of Wandering Albatrosses with fisheries using new GPS data combined with Automatic Identification System (AIS) data to determine overlap with specific vessels in real time. The first aim would be to compare fine-scale movements of breeding, older pre-breeding and non-breeding Wandering Albatrosses attending Bird Island with the location of pelagic longline fishing vessels derived from AIS. Data from the older pre-breeders and non-breeders could be collected more effectively using loggers that download to base stations.
- 4.7.1c The comparison of GPS and AIS data could be usefully expanded to include analysis of satellite imagery to identify overlap (at an intermediate scale) with IUU vessels that have turned off their AIS. This latter component would add significant costs to the work.
- 4.7.1d The comparison of GPS and AIS data could be expanded further to include non-breeding adult Wandering Albatrosses (and, if funds are available,

juveniles and older pre-breeders) that are no longer central-place foragers (May to December for pre-breeders and non-breeders, and December onwards for juveniles). Satellite-linked GPS devices would need to be used to obtain tracking data of sufficient resolution without needing to retrieve the device. These devices would come off after a few months, so the fine-scale overlap analysis would be restricted to that period. These devices are considerably more expensive than conventional or remotely-downloadable GPS loggers.

- 4.7.1e Finally, cameras could be deployed in conjunction with GPS loggers to record interactions with vessels, and potentially to identify legal and IUU vessels. Challenges include finding suitable attachment methods and a device/battery size that optimises recording duration.
- 4.8 In order to strengthen the ACAP RFMO engagement strategy, investigate mechanisms to progress seabird conservation objectives within ICCAT, CCSBT and IOTC through the EU, as appropriate; the EU is a member of all these RFMOs. The UK is also a member of the IOTC, on behalf of the British Indian Ocean Territory (BIOT).
- 4.9 Seek to work with other ACAP Parties that are EU members, as appropriate, to encourage and support the effective implementation of the European Commission (2012) Action Plan for Reducing Incidental Catches of Seabirds in Fishing Gears, which applies both to fishing vessels fishing in the EU, and EU flagged vessels fishing elsewhere.
- 4.10 Work with fishing companies that operate in SGSSI and CCAMLR waters to ensure that successful mitigation of seabird bycatch by their vessels in these waters is complemented by the same measures when these and other vessels operate in other areas where there are risks of seabird bycatch.
- 4.11 Investigate opportunities to support and help facilitate the seabird bycatch component of the FAO Common Oceans Tuna project being led by BirdLife South Africa.
- 4.12 Establish a simple template to collate observations of oil-contaminated birds, both in colonies and at sea (currently done by BAS at Bird Island). Disseminate these forms to researchers working in colonies, scientific fisheries observers and tourist expedition leaders, and request that they use them to record any relevant observations and return them to GSGSSI for later analysis. Ensure that the collated information is submitted routinely to relevant organisations and authorities, including CCAMLR, ACAP and the Falkland Islands Government.

Component 5: Understanding the potential impacts of climate change on the ecology and population dynamics of South Georgia Wandering Albatrosses

An increasing number of studies have recently investigated the potential impacts of climate change on Southern Ocean seabirds, including albatrosses. Climate

variables can affect seabirds directly, or indirectly through changes in foraging or breeding habitat, which in turn affect foraging strategies, distribution and phenology. Climate change may also impact seabirds by affecting the transmission of diseases and the distribution of fish species and consequently fisheries effort.

Using long-term data from Bird Island, BAS are currently investigating the respective roles of climate and fisheries variables in driving the decline in numbers of Wandering Albatrosses (and Black-browed and Grey-headed Albatrosses) at South Georgia, and other demographic parameters. Preliminary results of these analyses indicate that few of the changes in demographic traits over the last 30 years could be attributed to changes in climatic variables.

Actions relating to the potential effects of climate change on Wandering Albatrosses at South Georgia focus on progressing research and monitoring initiatives to detect and measure effects of climate change, and identifying information gaps and areas that require further investigation.

Associated Activities

- 5.1 Once completed, engage with and support BAS to use the results from the their research project investigating the influence of climate and fisheries variables on Wandering Albatross demography to synthesise information on the potential impacts of climate change on Wandering Albatrosses at South Georgia, and identify strategies to fill information gaps and develop appropriate monitoring strategies to better understand and track these impacts. The continued collection of demographic and foraging ecology data will be crucial in this respect (see Activities 1.2 and 2.1).

Component 6: Raising awareness of the plight of Wandering Albatrosses at South Georgia, and the actions that are required and being undertaken to improve their conservation status

Public support of Wandering Albatross conservation will provide benefits for all of the actions that are conducted as part of this Plan. Dissemination of information and targeted outreach and awareness-raising initiatives are crucial to promote and support the objectives of this Plan. There are a number of opportunities to raise awareness and understanding of the plight of South Georgia's Wandering Albatrosses and the actions that are required and are being taken to conserve them. It is important to recognise that there are a range of different target audiences, including policy makers, fishery managers, fishers, scientists, tourists and the general public, each of whom will often require different outreach approaches. The GSGSSI website includes sections dealing with the environment and wildlife that are regularly updated. Staff members of GSGSSI deliver annual presentations to the International Association of Antarctic Tour Operators (IAATO) on tourist management policies and activities, and also hold annual fisheries science meetings with industry representatives. These initiatives provide good opportunities for targeted engagement with the tourism and fisheries sectors, respectively.

Approximately 8,000 tourists visit South Georgia each year, and the wildlife and environment constitute an important component of the tourists' experience. Tourism activities are raising awareness and the profile of several conservation issues on the island, including by encouraging those who have visited the island to act as advocates for the conservation of the island and its biodiversity. The breeding colony at Prion Island provides a unique opportunity for tourists to experience Wandering Albatrosses first hand in their natural habitat. However, this opportunity is out of reach to most members of the public. Webcams and other interpretive tools can bring this experience into the homes and classrooms of a much larger target audience. Bird Island would be an optimal venue for such an initiative to link the imagery with the long-term studies of Wandering Albatrosses being undertaken there.

Internationally, awareness of albatross and petrel conservation is promoted through a range of different media, including scientific and popular publications and via websites of key organisations, such as ACAP, BirdLife International and IAATO. The 'Latest News' section of the ACAP website, which features new stories most days, and the ACAP Facebook page have proven to be popular and useful mechanisms to disseminate information regarding albatross and petrel conservation to the general public.

This Plan itself provides an opportunity for increasing awareness of issues affecting the conservation of Wandering Albatrosses at South Georgia, and what is being done to address these. Indeed, to be fully effective, it is important that objectives and actions contained in the plan are fully understood, and that progress or lack of progress in reaching the objectives is communicated, not only to those involved in progressing these actions, but by the wider ACAP community. This latter component is important because it provides an opportunity to discuss the implementation needs of the plan, many of which are reliant on international cooperation.

Associated Activities

- 6.1 Formally present this Conservation Action Plan for Wandering Albatrosses to the next meeting of ACAP's Working Groups and Advisory Committee, scheduled to take place in New Zealand in September 2017. At each of the subsequent meetings, present formal feedback on progress achieved against the objectives and actions outlined in the Plan.
- 6.2 Make this Conservation Action Plan (and updates) available on the GSGSSI (and ACAP) websites, and circulate information about its existence.
- 6.3 Produce a summary document of the annual reviews of the plan (see Action 8.1) that can be used to disseminate updates and progress to a range of target audiences, including the annual IAATO and SGSSI fisheries science meetings.
- 6.4 Investigate and use opportunities to disseminate information and stories regarding Wandering Albatross conservation at South Georgia. Drafting short news pieces for the Latest News section of the ACAP website, and indeed making information available on other relevant websites, provides one such opportunity. Other mechanisms include making available a summarised

version of the South Georgia Conservation Action Plans at the South Georgia Post Office, and the South Georgia Museum.

- 6.5 GSGSSI staff with environmental and fisheries responsibilities will be encouraged to attend ACAP meetings to present and promote work being undertaken to conserve South Georgia Wandering Albatrosses, to participate in wider discussions regarding albatross and petrel conservation, and remain informed of initiatives and opportunities relevant to the goal of this plan.
- 6.6 Investigate the installation and management of a Webcam at one or more Wandering Albatross colonies that can be linked to an interactive website for public awareness and school education.
- 6.7 Ensure information relevant to albatross conservation is delivered to visitors and South Georgia Museum staff through Government Officer presentations.
- 6.8 Develop a stamp issue to promote albatross conservation with opportunities for links and collaboration with project partners.
- 6.9 Update list of actions with any additional recommendations relating to Wandering Albatrosses arising from the SGSSI Outreach Strategy, scheduled for 2017.
- 6.10 Improve knowledge of the markets associated with fisheries that overlap with Wandering Albatrosses from South Georgia, and investigate mechanisms to increase awareness amongst consumers of products from these fisheries of the importance of implementing effective seabird bycatch mitigation strategies.

Component 7: Participating in international conservation and fisheries fora to promote actions that will help support the conservation of Wandering Albatrosses from South Georgia

Incidental mortality in external fisheries, for which GSGSSI does not have ultimate responsibility, is considered to be the main threat to the South Georgia Wandering Albatross population. Consequently, the successful implementation of this Plan, and the conservation status of South Georgia Wandering Albatrosses, is dependent on the involvement and contributions of other nations and organisations. This also requires GSGSSI and the UK government to participate actively in relevant international conservation and fisheries fora in order to encourage and support actions required for the conservation of Wandering Albatrosses from South Georgia. ACAP is the primary mechanism to achieve this objective, and a number of actions outlined in this Plan are of an international and cooperative nature.

Any intergovernmental collaboration between the UK (and GSGSSI) and other relevant countries should be based on the principle of shared interest and responsibility for albatross and petrel conservation. Such collaboration has many potential benefits. It will help all parties remain informed about the status of seabird bycatch mitigation policy and implementation in the different countries, understand the range of challenges, and thus ensure that the UK can optimally respond to priority issues and needs as they arise. A collaborative approach will facilitate the

exchange of expertise and information and assist in the integration of seabird bycatch data across jurisdictions. By establishing constructive working relationships with these other countries, the benefits could extend to matters of seabird bycatch on the High Seas of the South Atlantic, through fishing industry, joint venture and RFMO links.

Associated Activities

There are a number of actions and associated activities throughout this Plan, especially under Objective 4, that contribute towards meeting the objective of this component.

Component 8: Reviewing the Conservation Action Plan to evaluate accomplishments and update information on priority needs

The Plan should be reviewed annually to measure progress against the goal, aim, actions and associated activities. This will allow the Plan to be updated in response to review results, and for further refinement of actions and priorities, thus ensuring an adaptive management approach. In addition to formally reviewing the progress of the Plan, the annual review process will also be used for different parties to provide feedback on actions to which they have contributed. Ideally, the review process should take place prior to ACAP Advisory Committee meetings, allowing enough time to collate the necessary information so that it can be included as part of the national reporting process, and formally presented to the relevant ACAP Working Groups. Although progress against each of the actions should be assessed, assessing progress toward the desired goal for South Georgia Wandering Albatrosses will be accomplished primarily by tracking population trends and demographic parameters.

There are a number of actions included in the implementation framework that are not, or will not be, implemented directly by GSGSSI, but by partner organisations. It is not the intention of GSGSSI to prescribe these actions to external agencies, but rather to recognize that they are a vital part of the conservation framework, and to help facilitate their implementation through engaging with and supporting as appropriate the external agencies in carrying them out. A small steering group will be established to help facilitate a co-ordinated, collaborative and proactive approach to the goal, priority actions and associated activities outlined in this Plan.

Associated Activities

- 8.1 Develop a standardized template for the annual review of the Plan, and conduct succinct annual reviews.
- 8.2 Establish a small steering group to discuss and co-ordinate the implementation of the Plan, and identify opportunities for collaboration that would help meet the objectives of the Plan.

Table 1. Summary of the **Priority Actions** identified in the Conservation Action Plan for Wandering Albatrosses at South Georgia.

Lead & partner organisations:

BAS: British Antarctic Survey

BirdLife International and BirdLife South Africa

Defra: Department for Environment, Food & Rural Affairs

FIG: Falkland Islands Government

FCO: Foreign & Commonwealth Office (UK)

GSGSSI: Government of South Georgia & the South Sandwich Islands

IAATO: International Association of Antarctic Tour Operators

JNCC: Joint Nature Conservation Committee

RSPB: Royal Society for the Protection of Birds

SGS: South Georgia Surveys

	Action	Timeframe	Lead and Partner organisations
Component 4: <i>Understanding marine-based threats to South Georgia Black-browed Albatrosses in order to implement and promote best practice management approaches within and outside SGSSI waters to address these.</i>			
4.1	Extend the analysis of Wandering Albatross overlap with fisheries that was conducted for breeding Wandering Albatrosses and pelagic longline fisheries (Jiménez et al. 2015). This approach used a combination of GLS, PTT and GPS tracking data (accurate to c. 200km, c. 10km and c. 10m, respectively) and data on fishing effort at a resolution of 5 x 5 degree grid square (the best available for many fisheries). The outputs of this work have already been very helpful in identifying high-risk areas and fisheries for South Georgia Wandering Albatrosses, but could be usefully extended. Use existing PTT and GPS data from breeding, and GLS data from juvenile, older pre-breeding and non-breeding (sabbatical) Wandering Albatrosses to examine year-round overlap with demersal and pelagic longline fisheries for all life-history stages throughout their distribution. This has been done to some extent (see Figs 5-7) but for a single year only (2005). This updated analysis will help identify more specifically those fleets that overlap with Wandering Albatrosses from South Georgia, as well as the areas and seasons of highest bycatch risk, and thus inform a more focussed approach to engaging with these fleets to better understand and address bycatch impacts.	2016-2017	BAS, GSGSSI, BirdLife International
4.2	Report and disseminate results of any overlap analyses to ACAP and relevant RFMOs so that they can be used to conduct or update seabird-fisheries risk assessments, and help inform targeted engagement with fleets that overlap with South Georgia Wandering Albatrosses.	As required	BAS, BirdLife International, GSGSSI, JNCC

	Action	Timeframe	Lead and Partner organisations
4.3	Develop and implement collaborative strategies mitigating fisheries bycatch, including via the provision of data, updates and outreach materials arising from activities in the Conservation Action Plans. Many of the nations identified as having fleets that overlap with Wandering Albatrosses from South Georgia are ACAP Parties, and one of the main objectives of ACAP is to provide a focus for international cooperation and the exchange of information and expertise in relation to albatross and petrel conservation. Some of the key fleets that have been identified in this Plan, such as those from Taiwan and Japan, are not currently ACAP Parties, and should be engaged through the ACAP RFMO strategy (see 4.4), and other means (see 4.5). Outputs from the analysis of overlap between South Georgia Wandering Albatrosses and fishing effort outlined in Priority Action 4.1 will serve as a key input to this process.	Ongoing	GSGSSI, FCO, Defra, JNCC, ACAP, BirdLife International
4.4	Through the ACAP RFMO engagement strategy, strengthen the application of seabird bycatch mitigation measures within RFMOs and encourage better monitoring of compliance and effectiveness (see Annex 5 of the 2016 ACAP SBWG report AC9 Doc Rev 1 for detailed actions of the engagement strategy). ICCAT is of particular importance for South Georgia Wandering Albatrosses, followed by CCSBT and IOTC. In 2016, ICCAT and IOTC will initiate processes to evaluate the effectiveness of their seabird conservation measures. Although GSGSSI is not a member of ICCAT, the UKOT is a member as is the UK (currently through the EU), and through support from FCO and Defra, have helped progress and support the adoption of seabird conservation measures by ICCAT. Outputs from the analysis of overlap between South Georgia Wandering Albatrosses and fishing effort outlined in Priority Action 4.1 will serve as key inputs to this process.	Ongoing	GSGSSI, FCO, Defra, JNCC, ACAP, BirdLife International

	Action	Timeframe	Lead and Partner organisations
4.5	Engage with those fleets that overlap most with Wandering Albatrosses from South Georgia to improve their use of bycatch mitigation. Of the pelagic longline fleets, those from Taiwan, Brazil, Uruguay, Spain, Japan and Portugal have been identified as having the greatest overlap during the breeding season. The overlap analysis outlined in Priority Action 4.1 will help clarify and update the identification of key fleets, including for non-breeding birds. Investigate the best mechanisms and opportunities for direct engagement with key fleets, such as the work being progressed by the seabird bycatch component of the FAO Common Oceans Tuna project (Activity 4.11).	Ongoing	GSGSSI, FCO, Defra, JNCC, ACAP, BirdLife International and BirdLife South Africa

Table 2. Summary of associated activities that contribute to the goal of this Conservation Action Plan. The table serves to prioritise activities, and facilitate the review of progress against each.

Activities already underway and/or with resources allocated by GSGSSI
Activities already being implemented by partner organisations
Activities that will be partly/wholly implemented/funded by GSGSSI with other partners collaborating/contributing as appropriate, but which have not yet been started
Activities that remain dependent on obtaining funds or capacity

	Activity	Importance	Timeframe	Lead & partner organisations
Component 1: Long-term monitoring of Wandering Albatross population dynamics at South Georgia				
1.1	Encourage and where appropriate support BAS to continue annual counts of the number of Wandering Albatrosses breeding at Bird Island (whole island).	High	Annual	BAS, GSGSSI
1.2	Encourage and as appropriate support BAS to continue long-term demographic monitoring of Wandering Albatross at Bird Island (at established study colonies)	High	Annual	BAS, GSGSSI
1.3	Maintain annual monitoring of breeding numbers at Albatross and Prion Islands and productivity at Prion Island	High	Annual	GSGSSI, (SGS)
1.4	Conduct monitoring of population numbers and breeding success for all Wandering Albatross colonies in the Bay of Isles every three to five years	Medium	Every 3-5 years	GSGSSI, (SGS)
1.5	Conduct an archipelago-wide census of Wandering Albatrosses at South Georgia once every 10 years, using the same methodology and timing as previous surveys, and data from Bird Island to develop correction factors.	High	Every 10 years. Next census 2024/25	GSGSSI, BAS
1.6	Given its importance as a breeding site (South Georgia's second largest breeding population), its location (the largest population to the south of the island), and its exclusion from the 2014/15 census, conduct a survey of Wandering Albatrosses breeding at Annenkov Island within the next three years. Investigate using remote sensing techniques to conduct the survey at Annenkov Island.	Medium	During mid-incubation period (January) before 2020	GSGSSI, BAS (for correction factors)

1.7	Ensure that all population status and trend data are routinely incorporated into the GSGSSI GIS and database, and submitted to ACAP	High	Annual	GSGSSI, BAS, JNCC
1.8	Formally submit and present the paper on the recent survey of Wandering, Black-browed and Grey-headed Albatrosses at South Georgia (Poncet et al. submitted) to the next meeting of ACAP's Population and Conservation Status Working Group, scheduled to take place in September 2017 in New Zealand	Medium	2017	GSGSSI
Component 2: Long-term monitoring of the foraging ecology and diet of Wandering Albatrosses at South Georgia				
2.1	Evaluate at-sea distribution data for South Georgia Wandering Albatrosses with respect to gaps and limitations in sample size, and likely overlap with high-risk fisheries, and on this basis identify priority age and life-cycle phases for which further tracking data are required. Systematically update and fill data gaps in a prioritized manner. See Activity 4.7 for further details.	High	Ongoing	BAS
2.2	Ensure all tracking data are routinely submitted to the Global Procellariiform Tracking Database so that they can be used in future seabird-fisheries risk assessments	High	Ongoing	BAS, GSGSSI
2.3	Support the continued routine monitoring of the diet of Wandering Albatrosses at Bird Island through the analysis of regurgitated pellets.	Low	Ongoing	BAS, GSGSSI
Component 3: Monitoring and management of potential land-based threats to Wandering Albatrosses breeding at South Georgia				
3.1	Continue to support and manage responsible tourism activities at South Georgia	Medium	Ongoing	GSGSSI, IAATO
3.2	Ensure that the South Georgia biosecurity protocols contained within the Biosecurity Handbook (2016) are properly implemented, regularly reviewed, and improved where possible	Medium	Ongoing	GSGSSI
3.3	Implement all biosecurity activities listed under Objective 6 of the Biodiversity Action Plan for South Georgia and the South Sandwich Islands	Medium	Refer to Biodiversity Action Plan	GSGSSI
3.4	Determine baseline levels of pathogens and disease in Wandering Albatrosses at South Georgia, and subject to the findings of this investigation develop and implement a long-term disease surveillance and response programme (see also 3.5). Liaise with pathologists to develop and implement appropriate sampling protocols	Medium	2016-2018	GSGSSI, BAS (A potential PhD student has submitted a project proposal to investigate this issue at Bird Island)

	Activity	Importance	Timeframe	Lead & partner organisations
3.5	Develop and implement a contingency plan that sets out rapid response remedial actions that should be implemented in the event of a disease outbreak. The Unusual Animal Mortality Response Plan developed by the Australian Antarctic Division to provide guidance on what to do if sick or dead animals are discovered in unusually high numbers or with signs that suggest disease could serve as the basis for a dedicated plan for South Georgia	Medium	2016-2018	GSGSSI
3.6	Continue to monitor the impact of Antarctic Fur-seals on the nesting habitat of Wandering Albatrosses (and other seabirds) at Albatross and Prion Islands	Low	Ongoing	GSGSSI, (SGS)
3.7	Ensure that the Wandering Albatross breeding locations are included in the SGSSI Protected Areas planning process, and that these sites are optimally incorporated into the Protected Area Framework that is developed	Low	2016-2020	GSGSSI
Component 4: <i>Understanding marine-based threats to South Georgia Wandering Albatrosses in order to implement and promote best practice management approaches within and outside SGSSI waters to address these</i>				
4.1-4.5	See Priority Actions in Table 1.			
4.6	Continue to manage national fisheries to reduce or eliminate seabird bycatch			
4.6.1	Continue to manage all SGSSI fisheries in a risk-averse manner, to the highest international standards, and in line with all CCAMLR requirements, especially in relation to seabird bycatch mitigation	High	Ongoing (annual review)	GSGSSI
4.6.2	Ensure that the seabird bycatch reporting requirements of ACAP are met (new protocols are currently being developed). Determine the most efficient method of obtaining the relevant data from CCAMLR (where all SGSSI bycatch and observer data are held) for ACAP reporting purposes	High	Ongoing (annual review)	GSGSSI, JNCC
4.6.3	Help facilitate, support and implement monitoring programmes at Bird Island and Albatross and Prion Islands recording the incidence of fishing hooks and other marine debris associated with nests of Wandering Albatrosses. Items should be fully described and documented in the standard CCAMLR form (available at https://www.ccamlr.org/en/node/75831), and ideally archived or photographed for later analysis of provenance	Medium	Ongoing, annual reporting to CCAMLR	GSGSSI, BAS

	Activity	Importance	Timeframe	Lead & partner organisations
4.7	Encourage and support further tracking studies and spatio-temporal overlap analyses of South Georgia Wandering Albatrosses and fishing effort that identifies more accurately and at a higher resolution, fleets and vessels that are contributing to the bycatch of birds. Priority Action 4.1 is the first step in this process. The actions listed below represent further step-wise improvements in the resolution of data and outputs that will help identify more accurately the fleets and vessels responsible for bycatch of South Georgia Wandering Albatrosses and thus help inform more targeted engagement with these fleets.			
4.7.1a	Improve the accuracy of analyses of overlap of Wandering Albatrosses with fisheries by collecting new GPS tracking data from older pre-breeding and non-breeding Wandering Albatrosses attending colonies at Bird Island (which they do from November/December to April/May), which are likely to overlap more than breeders with pelagic longline fisheries in the southwest Atlantic.	High	2016-2018	BAS, GSGSSI, BirdLife International
4.7.1b	Encourage and support the implementation of a fine-scale analyses of overlap of Wandering Albatrosses with fisheries using new GPS data combined with Automatic Identification System (AIS) data to determine overlap with specific vessels in real time. The first aim would be to compare fine-scale movements of breeding, older pre-breeding and non-breeding Wandering Albatrosses attending Bird Island with the location of pelagic longline fishing vessels derived from AIS. Data from the older pre-breeders and non-breeders could be collected more effectively using loggers that download to base stations	Medium	2016-2019	BAS, GSGSSI, BirdLife International
4.7.1c	The comparison of GPS and AIS data could be usefully expanded to include analysis of satellite imagery to identify overlap (at an intermediate scale) with IUU vessels that have turned off their AIS. This latter component would add significant costs to the work.	Medium	2016-2019	BAS, GSGSSI, BirdLife International
4.7.1d	The comparison of GPS and AIS data could be expanded further to include non-breeding adult Wandering Albatrosses (and, if funds are available, juveniles and older pre-breeders) that are no longer central-place foragers (May to December for pre-breeders and non-breeders, and December onwards for juveniles). Satellite-linked GPS devices would need to be used to obtain tracking data of sufficient resolution without needing to retrieve the device. These devices would come off after a few months, so the fine-scale overlap analysis would be restricted to that period. These devices are considerably more expensive than conventional or remotely-downloadable GPS loggers.	Medium	2016-2019	BAS, GSGSSI, BirdLife International

	Activity	Importance	Timeframe	Lead & partner organisations
4.7.1e	Finally, cameras could be deployed in conjunction with GPS loggers to record interactions with vessels, and potentially to identify legal and IUU vessels. Challenges include finding suitable attachment methods and a device/battery size that optimises recording duration.	Low	2016-2020	BAS, GSGSSI, BirdLife International
4.8	In order to strengthen the ACAP RFMO engagement strategy, investigate mechanisms to progress seabird conservation objectives more formally within ICCAT, CCSBT and IOTC through the EU, as appropriate; the EU is a member of all these RFMOs	Medium	Ongoing	GSGSSI, FCO, Defra, JNCC, ACAP
4.9	Seek to work with other ACAP Parties that are EU members to encourage and support the effective implementation of the European Commission (2012) Action Plan for Reducing Incidental Catches of Seabirds in Fishing Gears, which applies both to fishing vessels fishing in the EU, and EU flagged vessels fishing elsewhere	Medium	Ongoing	GSGSSI, FCO, Defra, JNCC
4.10	Work with fishing companies that operate in SGSSI and CCAMLR waters to ensure that successful mitigation of seabird bycatch by their vessels in these waters is complemented by the same measures when these and other vessels operate in other areas where there are risks of seabird bycatch	Medium	Ongoing	GSGSSI, FCO, Defra
4.11	Investigate opportunities to support and help facilitate the seabird bycatch component of the FAO Common Oceans Tuna project being led by BirdLife South Africa	High	2016-2018	GSGSSI, BirdLife South Africa, BirdLife International
4.12	Establish a simple template to collate observations of oil-contaminated birds, both in colonies and at sea (currently done by BAS at Bird Island). Disseminate these forms to researchers working in colonies, scientific fisheries observers and tourist expedition leaders, and request that they use them to record any relevant observations and return them to GSGSSI for later analysis. Ensure that the collated information is submitted routinely to relevant organisations and authorities, including CCAMLR, ACAP and the Falkland Islands Government.	Low	As required	GSGSSI, BAS, CCAMLR

	Activity	Importance	Timeframe	Lead & partner organisations
Component 5: Understanding the potential impacts of climate change on the ecology and population dynamics of South Georgia Wandering Albatrosses				
5.1	Once completed, engage with and support BAS to use the results from their research project investigating the influence of climate and fisheries variables on Wandering Albatross demography to synthesise information on the potential impacts of climate change on Wandering Albatrosses at South Georgia, and identify strategies to fill information gaps and develop appropriate monitoring strategies to better understand and track these impacts. The continued collection of demographic and foraging ecology data will be crucial in this respect (see Activities 1.2 and 2.1).	Medium	2016-2020	BAS, GSGSSI
Component 6: Raising awareness of the plight of Wandering Albatrosses at South Georgia, and the actions that are required and being undertaken to improve their conservation status				
6.1	Present this Conservation Action Plan for Wandering Albatrosses to the next meeting of ACAP's Working Groups and Advisory Committee, scheduled to take place in New Zealand in September 2017. At each of the subsequent meetings, present formal feedback on progress achieved against the objectives and actions outlined in the Plan.	High	2017	GSGSSI, JNCC
6.2	Make this Conservation Action Plan (and updates) available on the GSGSSI (and ACAP) websites, and circulate information about its existence.	High	2016 and ongoing	GSGSSI
6.3	Produce a summary document of the annual reviews of the plan (see Objective 8) that can be used to disseminate updates and progress to a range of target audiences, including the annual IAATO and SGSSI fisheries science meetings.	High	2017 and ongoing	GSGSSI, JNCC
6.4	Investigate and use opportunities to disseminate information and stories regarding Wandering Albatross conservation at South Georgia. Drafting short news pieces for the Latest News section of the ACAP website, and indeed making information available on other relevant websites, provides one such opportunity. Other mechanisms include making available a summarised version of the South Georgia Conservation Action Plans at the South Georgia Post Office, and the South Georgia Museum.	Medium	Ongoing	GSGSSI, JNCC

	Activity	Importance	Timeframe	Lead & partner organisations
6.5	GSGSSI staff with environmental and fisheries responsibilities will be encouraged to attend ACAP meetings to present and promote work being undertaken to conserve South Georgia Wandering Albatrosses, to participate in wider discussions regarding albatross and petrel conservation, and remain informed of initiatives and opportunities relevant to the goal of this plan	Medium	As required	GSGSSI
6.6	Investigate the installation and management of a Webcam at one or more Wandering Albatross colonies that can be linked to an interactive website for public awareness and school education.	Medium	2016 and ongoing	GSGSSI, RSPB, BAS, FIG (to involve schools in the Falkland Islands)
6.7	Ensure information relevant to albatross conservation is delivered to visitors and South Georgia Museum staff through Government Officer presentations.	Medium	Ongoing	GSGSSI
6.8	Develop a stamp issue to promote albatross conservation with opportunities for links and collaboration with project partners.	Medium	2016-2017	GSGSSI
6.9	Update list of actions with any additional recommendations relating to Wandering Albatrosses arising from the SGSSI Outreach Strategy, scheduled for 2017.	Low	2017	GSGSSI
6.10	Improve knowledge of the markets associated with fisheries that overlap with Wandering Albatrosses from South Georgia, and investigate mechanisms to increase awareness amongst consumers of products from these fisheries of the importance of implementing effective seabird bycatch mitigation strategies.	Medium	2016-2020	GSGSSI, FCO
Component 7: Participating in international conservation and fisheries fora to promote actions that will help support the conservation of Wandering Albatrosses from South Georgia				
Component 8: Reviewing the Conservation Action Plan to evaluate accomplishments and update information on priority needs				
8.1	Develop a standardized template for the annual review of the Plan, and conduct succinct annual reviews.	High	Annually	GSGSSI
8.2	Establish a small steering group to discuss and co-ordinate the implementation of the Plan, and identify opportunities for collaboration that would help meet the objectives of the Plan.	High	2016-2017, then ongoing	GSGSSI and partner organisations

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REFERENCES

- Agreement on the Conservation of Albatrosses (2009) ACAP Species assessment: Wandering Albatross *Diomedea exulans*. Downloaded from <http://www.acap.aq> on 10 September 2009
- Anderson OR, Small CJ, Croxall JP, Dunn EK, Sullivan BJ, Yates O, Black AD (2011) Global seabird bycatch in longline fisheries. *Endangered Species Research* 14: 91-106
- Barbraud C, Rolland V, Jenouvrier S, Nevoux M, Delord K, Weimerskirch H (2012) Effects of climate change and fisheries bycatch on Southern Ocean seabirds: a review. *Marine Ecology Progress Series* 454: 285-307
- BirdLife International (2004) Tracking ocean wanderers: the global distribution of albatrosses and petrels. Results from the Global Procellariiform Tracking Workshop, 1-5 September 2003, Gordon's Bay, South Africa. BirdLife International, Cambridge, UK
- Brothers N (1991) Albatross mortality and associated bait loss in the Japanese longline fishery in the Southern Ocean. *Biological Conservation* 55: 255-268
- Croxall JP (1979) Distribution and population changes in the wandering albatross *Diomedea exulans* L. at South Georgia. *Ardea* 67: 15-21.
- Croxall JP, Prince PA (1990) Recoveries of Wandering Albatrosses *Diomedea exulans* ringed at South Georgia 1958-1986. *Ringed and Migration* 11(1): 43-51
- Croxall JP, Pickering SPC, Rothery P (1990a) Influence of the increasing Antarctic fur seal population on wandering albatrosses *Diomedea exulans* at Bird Island, South Georgia. In K.R. Kerry & G. Hempel (eds) *Ecological change and the conservation of Antarctic ecosystems*: 237-240. Springer Verlag, Berlin.
- Croxall JP, Rothery P, Pickering SPC, Prince P. (1990b) Reproductive performance, recruitment and survival of wandering albatrosses *Diomedea exulans* at Bird Island, South Georgia. *Journal of Animal Ecology* 59: 775-796.
- Croxall JP, Prince PA, Rothery P, Wood AG (1998) Population changes in albatrosses at South Georgia. In G. Robertson & R. Gales (eds) *Albatross biology and conservation*: 68-83. Surrey Beatty & Sons, Chipping Norton, Australia.
- Government of South Georgia & the South Sandwich Islands (2016) Biodiversity Action Plan for South Georgia & the South Sandwich Islands 2016-2020. Government House, Stanley, Falkland Islands

- Government of South Georgia and the South Sandwich Islands (2013) South Georgia and the South Sandwich Islands Marine Protected Area Management Plan. Version 2.0. Government House, Stanley, Falkland Islands
- Jiménez S, Domingo A, Abreu M, Brazeiro A (2012) Risk assessment and relative impact of Uruguayan pelagic longliners on seabirds. *Aquatic Living Resources* 25: 281-295
- Jiménez S, Domingo A, Brazeiro A, Defeo O, Wood AG, Froy H, Xavier JC, Phillips RA (2015) Sex-related variation in the vulnerability of wandering albatrosses to pelagic longline fleets. *Animal Conservation*: n/a-n/a doi 10.1111/acv.12245
- Jiménez S, Phillips RA, Brazeiro A, Defeo O, Domingo A (2014) Bycatch of great albatrosses in pelagic longline fisheries in the southwest Atlantic: Contributing factors and implications for management. *Biological Conservation* 171: 9-20
- Leotta G, Cerda R, Coria N, Montalti D (2001) Preliminary studies on some avian diseases in Antarctic birds. *Polish Polar Research* 22: 227-231
- Leotta GA, Rivas M, Chinen I, Vigo GB, Moredo FA, Coria N, Wolcott MJ (2003) Avian cholera in a Southern Giant Petrel (*Macronectes giganteus*) from Antarctica. *Journal of Wildlife Diseases* 39: 732-735
- Phillips RA (2013) Requisite improvements to the estimation of seabird by-catch in pelagic longline fisheries. *Animal Conservation* 16: 157-158
- Phillips RA, Gales R, Baker GB, Double MC, Favero M, Quintana F, Tasker ML, Weimerskirch H, Uhart M, Wolfaardt A (2016) The conservation status and priorities for albatrosses and large petrels. *Biological Conservation* 201: 169-183
- Phillips RA, Pardo D, Forcada J, Jiménez S, Wood A (2014) Fisheries overlap, and influence of environmental and fisheries covariates on the demography of Wandering and Grey-headed Albatrosses. Sixth meeting of ACAP's Seabird Bycatch Working Group. SBWG6 Doc 17. Punta del Este, Uruguay, 10-12 September, 2014
- Phillips RA, Ridley C, Reid K, Pugh PJA, Tuck GN, Harrison N (2010) Ingestion of fishing gear and entanglements of seabirds: Monitoring and implications for management. *Biological Conservation* 143: 501-512
- Phillips RA, Wood AG, Croxall JP (2011) Priority population assessment - Wandering Albatross at South Georgia (Islas Georgias del Sur). Annex 9 in the Report of the Breeding Sites Working Group and Status and Trends Working Group - Joint BSWG4/STWG6. AC6 Doc 11. Guayaquil, Ecuador, 29 August - 2 September 2011
- Poncet S (2011) South Georgia Surveys Albatross and Prion Island Monitoring Programme 2011 Report. South Georgia Surveys unpublished report.
- Poncet S (2015) South Georgia Surveys Albatross and Prion Island Monitoring Programme 2015 Report. South Georgia Surveys unpublished report.
- Poncet S, Robertson G, Phillips RA, Lawton K, Phalan B, Trathan PN, Croxall JP (2006) Status and distribution of Wandering, Black-browed and Grey-headed albatrosses breeding at South Georgia. *Polar Biology* 29: 772-781

- Poncet S, Wolfaardt AC, Black A, Browning S, Lawton K, Lee J, Passfield K, Strange G, Phillips RA (in press) Recent trends in numbers of wandering, black-browed and grey-headed albatrosses breeding at South Georgia. *Polar Biology*
- Premier Oil Exploration & Production Limited (2015) 2015 Falkland Islands Exploration Campaign Post-Consultation Environmental Impact Statement. Document No: FK-BU-PMO-EV-REP-0003
- Prince PA, Rothery P, Croxall JP, Wood AG (1994). Population dynamics of black browed and grey headed albatrosses at Bird Island, South Georgia. *Ibis* 136: 50-71.
- Prince PA, Croxall JP, Trathan PN, Wood AG (1998) The pelagic distribution of South Georgia albatrosses and their relationships with fisheries. In G. Robertson & R. Gales (eds) *Albatross biology and conservation*: 137-167. Surrey Beatty & Sons, Chipping Norton, Australia.
- Rolland V, Barbraud C, Weimerskirch H (2008) Combined effects of fisheries and climate on a migratory long-lived marine predator. *Journal of Applied Ecology* 45: 4-13
- Rolland V, Barbraud C, Weimerskirch H (2009a) Assessing the impact of fisheries, climate and disease on the dynamics of the Indian Yellow-nosed Albatross. *Biological Conservation* 142: 1084-1095
- Rolland V, Nevoux M, Barbraud C, Weimerskirch H (2009b) Respective impact of climate and fisheries on the growth of an albatross population. *Ecological Applications* 19: 1336-1346
- Rolland V, Weimerskirch H, Barbraud C (2010) Relative influence of fisheries and climate on the demography of four albatross species. *Global Change Biology* 16: 1910-1922
- SC-CAMLR (1996) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 15th meeting of the Scientific Committee. CCAMLR, Hobart.
- SC-CAMLR (1997) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 16th meeting of the Scientific Committee. CCAMLR, Hobart.
- SC-CAMLR (1998) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 17th meeting of the Scientific Committee. CCAMLR, Hobart.
- SC-CAMLR (1999) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 18th meeting of the Scientific Committee. CCAMLR, Hobart.
- SC-CAMLR (2000) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 19th meeting of the Scientific Committee. CCAMLR, Hobart.

- SC-CAMLR (2001) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 20th meeting of the Scientific Committee. CCAMLR, Hobart.
- SC-CAMLR (2002) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 21st meeting of the Scientific Committee. CCAMLR, Hobart.
- SC-CAMLR (2003) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 22nd meeting of the Scientific Committee. CCAMLR, Hobart.
- SC-CAMLR (2004) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 23rd meeting of the Scientific Committee. CCAMLR, Hobart.
- SC-CAMLR (2005) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 24th meeting of the Scientific Committee. CCAMLR, Hobart.
- SC-CAMLR (2006) Scientific Committee for the Conservation of Antarctic Marine Living Resources. Report of the 25th meeting of the Scientific Committee. CCAMLR, Hobart.
- Tancell C, Sutherland WJ, Phillips RA (2016) Marine spatial planning for the conservation of albatrosses and large petrels breeding at South Georgia. *Biological Conservation* 198: 165-176
- Tuck GN, Phillips RA, Small C, Thompson RB, Klaer NL, Taylor F, Wanless RM, Arrizabalaga H (2011) An assessment of seabird-fishery interactions in the Atlantic Ocean. *ICES Journal of Marine Science* 68: 1628-1637
- Varty N, Sullivan B, Black A (2008) FAO International Plan of Action-Seabirds: An assessment for fisheries operating in South Georgia and South Sandwich Islands. BirdLife International Global Seabird Programme. Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire, UK
- Wanless RM, Ryan PG, Altwegg R, Angel A, Cooper J, Cuthbert R, Hilton GM (2009) From both sides: dire demographic consequences of carnivorous mice and longlining for the critically endangered Tristan albatrosses on Gough Island. *Biological Conservation* 142: 1710-1718
- Waugh SM, Baker GB, Gales R, and Croxall JP (2008) CCAMLR process of risk assessment to minimise the effects of longline fishing mortality on seabirds. *Marine Policy* 32: 442–454
- Weimerskirch H (2004) Diseases threaten Southern Ocean albatrosses. *Polar Biology* 27: 374-379
- Wolfaardt AC, Christie D (2010). South Georgia and the South Sandwich Islands Implementation Plan for the Agreement on the Conservation of Albatrosses and Petrels (ACAP). Government of South Georgia and the South Sandwich Islands, Stanley, Falkland Islands

- Xavier JC, Croxall JP, Trathan PN, Wood AG (2003) Feeding strategies and diets of breeding grey-headed and wandering albatrosses at South Georgia. *Marine Biology* 143: 221-232
- Xavier JC, Trathan PN, Croxall JP, Wood AG, Podesta G, Rodhouse PG (2004) Foraging ecology and interactions with fisheries of Wandering Albatrosses (*Diomedea exulans*) breeding at South Georgia. *Fisheries Oceanography* 13: 324-344

Appendix 1: Wandering Albatross breeding sites at South Georgia (see map in Fig. 1)

Location (Fig. 1)	No.	Location Name
1		Proud Island
2		Bird Island
3		Cape Alexandra
4		Coal Harbour
5		Frida Hole
6		Chaplin Head
7		Weddell Point
8		Kade Point
9		Saddle Island
10		Demidov isthmus
11		Granat Point
12		Tidespring Island
13		Cape Rosa
14		Nunez Peninsula
15		Annenkov Island
16		Diaz Cove North
17		Kupriyanov Island outer
18		Poncet Island
19		Ranvik
20		Trollhul
21		Inner Lee
22		Outer Lee
23		Skua Island
24		Prion Island
25		Petrel Island
26		Invisible Island
27		Mollyhawk Island
28		Crescent Island
29		Albatross Island
30		Nameless Point
31		Trollhul north
32		Kupriyanov islet
33		Nilse Hullet
34		Aucellina Point