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A Proposal to Fully Protect the South Sandwich Islands

Safeguarding globally significant wildlife in the South Atlantic

Overview

South Georgia and the South Sandwich Islands (SGSSI) sit about 4,000 kilometres north of Antarctica and 2,700 kilometres east of South America in the South Atlantic Ocean. In 2012, the United Kingdom established a sustainable use marine protected area (MPA) around these largely uninhabited islands to manage the local fishery and protect the globally significant wildlife.

As the government of SGSSI begins a review of the effectiveness of the MPA, the Pew Bertarelli Ocean Legacy Project calls for the protection around the South Sandwich Islands to be reclassified to create a fully protected marine sanctuary. At over 500,000 square kilometres, this is an area of ocean more than twice the size of the UK. With all extractive activities prohibited, this sanctuary would serve as an important zone for scientific monitoring and assessment.

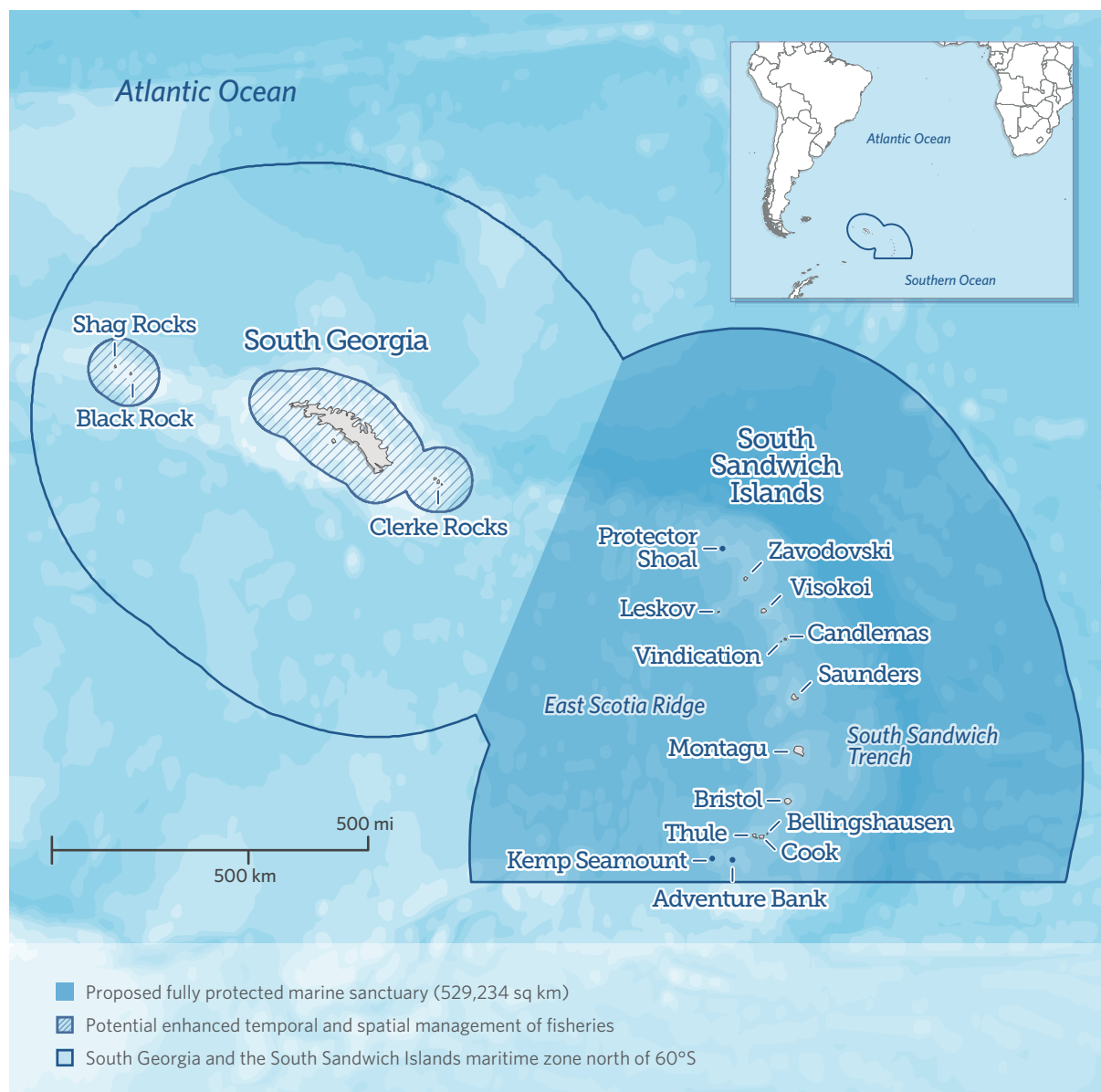
The current MPA encompasses 1.07 million square kilometres of the SGSSI exclusive economic zone (EEZ). However, just 2 percent of these waters are fully protected from extraction of resources such as fish. The MPA review will conclude in 2018.

The South Sandwich Islands are near pristine and are home to some of the world's most significant wildlife populations, but the archipelago's environment faces an uncertain future largely because of a changing climate. Currently, fishing is limited around the South Sandwich Islands and accounts for less than 5 percent of revenues for the Government of South Georgia and the South Sandwich Islands (GSGSSI).

Full protection would safeguard the marine environment before climate and other threats take their toll. This status would also support critical scientific analysis of the impact of climate changes in these waters, as well as in the wider Southern Ocean region that stretches to Antarctica.

Reclassification of the South Sandwich Islands as a fully protected sanctuary would affirm the UK's standing as a global leader in ocean conservation. Taking such an action in the near future would allow for the MPA review to focus on the waters around South Georgia, where complex interactions among climate concerns, tourism, fishing, and invasive species require in-depth analyses to inform management decisions.

Proposal for a South Georgia and the South Sandwich Islands Marine Sanctuary



Note: Map shows area of proposed South Sandwich Island marine sanctuary on the right and the South Georgia waters on the left.

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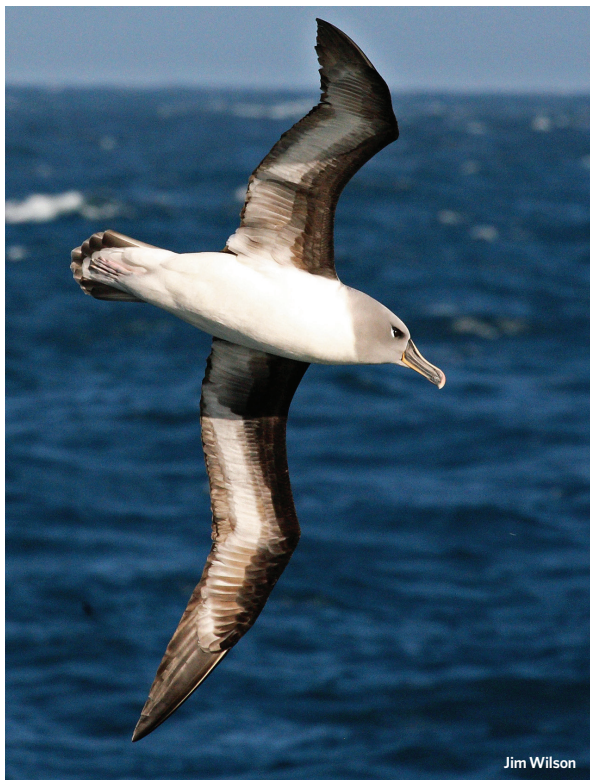
The case for full protection of the South Sandwich Islands

Today, most fishing in the waters of SGSSI takes place near South Georgia, a reality that highlights the opportunity to enhance protection around the South Sandwich Islands. The SGSSI government has launched a review, slated to be completed in 2018, to determine whether the MPA is meeting its overarching objectives: to protect the area's globally significant biodiversity and ecosystems from harmful pressures such as fishing, tourism, invasive species, and climate change.¹

Globally significant wildlife

The South Sandwich Islands are a global biological hotspot for threatened penguins and other seabirds. The islands host nearly half of the world's chinstrap penguin population (1.3 million breeding pairs), approximately 95,000 breeding pairs of macaroni penguins, more than a 100,000 breeding pairs of Adélie penguins, and several thousand breeding pairs of gentoo penguins. Additionally, 4 percent of the world's southern giant petrels breed on these islands.² In addition, there is evidence that the South Sandwich Islands have not experienced the significant declines reported for some penguin species on South Georgia, in the South Orkney Islands, and along the western Antarctic Peninsula.³ The archipelago is the only arc of active volcanoes in the Southern Ocean, and its waters contain unique deep-sea hydrothermal vent ecosystems; seamounts; and the South Sandwich Trench, which is 8 kilometres deep.

Still, scientists have very limited knowledge about the South Sandwich Islands, especially with respect to bird species, deep-sea benthic and pelagic ecosystems, and the functional ecology of krill, a keystone species for the region. What is certain is that the ecosystem is one of a kind and globally significant. To preserve it, full protection from the impact of extractive activities such as fishing is essential.



Top: Grey-headed albatross near the South Sandwich Islands.



Above right: Its light coloring caused by a genetic mutation, this leucistic chinstrap penguin gathers with other chinstraps on Saunders Island in the South Sandwich Islands.

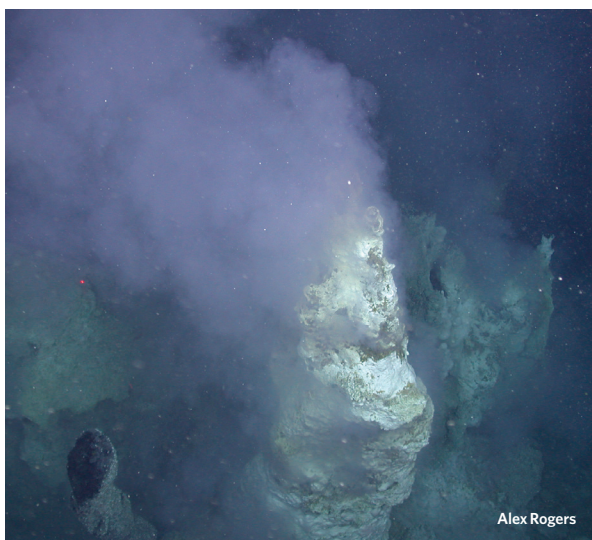


Below right: A humpback whale off the South Sandwich Islands.

Near pristine

There has been little attempt to explore and exploit the South Sandwich Islands for natural resources in comparison with the neighbouring waters of South Georgia Island, which saw both the boom and bust of the whaling and seal fur industries in the early 20th century. Among the factors that have contributed to this status are the lack of a natural harbour, rough seas, high levels of ice, and volcanic activity. Only in recent years has the local government permitted exploratory fishing for toothfish in these waters.

Fishermen now operate in the waters of the South Sandwich Islands for approximately one month each year, generating less than 5 percent of total revenues for the local government, which equates to about £150,000 annually.⁴ The fishery could be expanded, but the limited scientific knowledge of the area and the potential impact on the ecosystem should preclude this. Protecting the South Sandwich Islands marine environment would be a cost-effective approach to safeguarding one of the few remaining near-pristine marine environments on the planet.



Left: A hydrothermal vent, known as a white smoker, in Kemp Caldera along the South Sandwich Islands arc.

Right: An iceberg near Vindication Island, one of the South Sandwich Islands.

Barometer for a changing climate in the Antarctic region

The South Sandwich Islands has the potential to become a scientific monitoring and assessment zone of global importance and provide another opportunity for the UK to demonstrate leadership in protecting ocean waters. The ecosystems and species of the archipelago face an uncertain future, in part because of the regional impact of climate change, including freshwater runoff from melting glaciers in Antarctica, ocean acidification, sea surface warming, and changes in sea-ice distribution. Scientists do not yet have a firm understanding of the long-term effect of these changes on the biodiversity of the wider Antarctic region. Recent studies, however, indicate that populations of krill, the main food of nearly all of the region's predators, are likely to be heavily impacted.⁵

Several factors make the South Sandwich Islands important for getting a better sense of what is driving changes seen elsewhere in the Southern Ocean. By mid-winter in most years, sea ice cuts through these islands. That means Zavodovski and Visokoi, the farthest north, are often ice-free year round, while that is rarely the case for the southernmost islands. Reflecting this, scientists have determined that there is a biogeographic boundary across the island chain: Antarctic species are found on one side and sub-Antarctic species on the other.

Given their location bridging the Atlantic and Southern oceans, the South Sandwich Islands and the surrounding waters represent a critical biological barometer of a changing climate. Appropriate monitoring would provide invaluable information on the impact here, as well as in the broader region under the jurisdiction of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). The most effective measurement and monitoring require that the environment be fully protected.

Advances in enforcement technology

Illegal, unreported, and unregulated (IUU) fishing poses one of the biggest threats to ocean health and global marine conservation efforts. Traditional monitoring, such as fishery protection vessels, especially in remote areas such as the South Sandwich Islands, comes with prohibitive costs for those seeking to police IUU fishing. However, in 2015, a partnership between the UK government's Satellite Applications Catapult and Pew led to the development of pioneering satellite monitoring capabilities that enable cost-effective surveillance to be carried out remotely.⁶

The UK and other governments have engaged Satellite Applications Catapult's business unit OceanMind and the Oversea Ocean Monitor application to support fisheries monitoring and to interpret vessel activity in protected areas. OceanMind also uses the technology to help retailers ensure that the products they sell are responsibly sourced.

The state of the oceans

The ocean covers over 70 percent of the planet⁷ and plays an essential role in supporting life on Earth. Its waters help regulate global chemistry and climate, are home to more than 2 million species, and provide food for more than 4 billion people.⁸

Ocean waters produce over half of the oxygen we breathe⁹ and have absorbed over a quarter of all human-made carbon dioxide emitted since the Industrial Revolution.¹⁰ Over the same period, the ocean has absorbed more than 90 percent of the excess heat resulting from human activities, providing a buffer against the full impact of a changing climate on the land. But these changes are taking a toll on ocean health. Rising ocean temperatures and increased acidity are already affecting the distribution and abundance of marine life and ecosystems.¹¹ In addition, overfishing, marine pollution, and other human impacts are reducing critical ecosystem benefits and harming ocean health.



Chinstrap penguins—along with an Adélie penguin—swim off Candlemas Island in the South Sandwich Islands.



A brown skua peers into a camera on Saunders Island in the South Sandwich Islands.

Large, fully protected MPAs are a key tool for addressing these challenges, just as national parks protect habitat and species on land. Marine reserves safeguard ocean areas from large-scale industrial fishing, extraction of natural resources, and other destructive activities. The MPAs that bring the greatest conservation benefits share certain features: They are large, well-enforced, isolated, old, and highly protected from extractive activities.¹²

Without commercial fishing and other extractive activities, MPAs enhance the biological processes that underpin marine species adaptation and resilience, and they increase the chance that the ecosystem can cope with stresses such as climate change, pollution, and overfishing. To date, however, less than 2 percent of the world's ocean has been fully protected. Leading scientists recommend that be increased to at least 30 percent.¹³

UK leadership

Over the last decade, the UK has led the world in its commitment to establish large-scale, fully protected marine protected areas. Under current plans, by 2020 the UK will have protected—to varying degrees of conservation value—about 4 million square kilometres of ocean (an area greater than the landmass of India) across six sites: British Indian Ocean Territory, Pitcairn, Ascension, Tristan da Cunha, Saint Helena, and South Georgia and the South Sandwich Islands. In making these commitments, it has partnered with the communities and governments of its overseas territories as well as leading foundations and nongovernmental organisations (NGOs) such as The Pew Trusts, the Bertarelli Foundation, and the Royal Society for the Protection of Birds to support marine protection.

South Georgia and the South Sandwich Islands

South Georgia and the South Sandwich Islands includes two geographically and geologically distinct groups of remote and inhospitable islands. The South Georgia group includes one large island and some minor ones and sits about 4,000 kilometres north of Antarctica and 2,700 kilometres east of South America. The South Sandwich Islands are an arc of 11 small volcanic islands spread over 385 kilometres to the east of South Georgia. Eight of the volcanic cones have been active in the past century.

East of the South Sandwich Islands, the East Scotia Ridge is home to the first deep-sea hydrothermal vent communities of organisms discovered in the Southern Ocean. Other hydrothermal vents have been found in calderas off the islands. To the west, the South Sandwich Trench is one of the deepest points on the planet. There are no permanent residents in the territory, although the British Antarctic Survey (BAS) operates two research stations on South Georgia.



Chinstrap penguins congregate on an iceberg off Vindication Island in the South Sandwich Islands.

SGSSI is considered one of the most significant wildlife hotspots in the world—home to 95 percent of all Antarctic fur seals, 54 percent of all southern elephant seals, and cetaceans such as southern right whales, sei whales, fin whales, humpback whales, minke whales, blue whales, and sperm whales. As much as a quarter of the world’s penguins live there, including the largest chinstrap colony on the planet, on the South Sandwich Islands.¹⁴ These islands are critical to several species of albatross, such as the grey-headed, black-browed, and wandering albatrosses.

The South Georgia and South Sandwich Islands Marine Protected Areas Order came into force in February 2012. It includes most of the EEZ, though not the area south of 60°S. Commercial fisheries for krill, icefish, and toothfish are permitted to operate, with some temporal and spatial closures to protect specific species such as foraging chinstrap penguins. Still, just 20,000 square kilometres are now fully protected. The MPA review provides an ideal opportunity for the government, working with the academic and NGO communities, to explore whether existing fishing management provisions go far enough at a time of significant regional environmental flux.

Conclusion

Given the near-pristine environment, globally significant wildlife, economic case, and opportunity to measure climate impacts, the UK and local government should agree to reclassify the South Sandwich Islands as a fully protected marine sanctuary.

Full protection of the South Sandwich Islands would represent a best-practice approach by conserving the marine environment before negative impacts are felt, in accordance with the precautionary principle and the standards of ecosystem-based management. The UK adopted this approach when considering the Pitcairn Islands Marine Reserve.

Reclassification of the MPA surrounding the South Sandwich Islands would reaffirm the UK’s standing as a global leader in ocean conservation.

Endnotes

- 1 Government of South Georgia and the South Sandwich Islands, “South Georgia and the South Sandwich Islands Marine Protected Area Management Plan,” last updated, Aug. 21, 2013, <http://www.gov.gs/docsarchive/Environment/Marine%20Protected%20Area/MPA%20Management%20Plan%20v2.0.pdf>. (A) Conserve marine biodiversity, habitats, and critical ecosystem function; (B) Ensure that fisheries are managed sustainably, with minimal impact on associated and dependent ecosystems; (C) Manage other human activities—including shipping, tourism, and scientific research—to minimise impacts on the marine environment; (D) Protect the benthic fauna from the destructive effects of bottom trawling; (E) Facilitate recovery of previously over-exploited marine species; (F) Increase the resilience of the marine environment to the effects of climate change; (G) Prevent the introduction of non-native marine species.

- 2 Heather J. Lynch et al., "In Stark Contrast to Widespread Declines Along the Scotia Arc, a Survey of the South Sandwich Islands Finds a Robust Seabird Community," *Polar Biology* 39, no. 9 (2016): 1615-25, <https://link.springer.com/article/10.1007/s00300-015-1886-6>.
- 3 Ibid.
- 4 Government of South Georgia and the South Sandwich Islands, "South Georgia and the South Sandwich Islands Financial Statements and Audit Report for the Year Ended 31st December 2015," <http://www.gov.gs/docsarchive/GSGSSI/Financial/FS%20Signed%20Financial%20Statements%202015.pdf>.
- 5 So Kawaguchi et al., "Risk Maps for Antarctic Krill Under Projected Southern Ocean Acidification," *Nature Climate Change* 3 (2013): 843-47, <http://www.nature.com/nclimate/journal/v3/n9/full/nclimate1937.html?foxtrotcallback=true>.
- 6 The Pew Charitable Trusts, "Project Eyes on the Seas," last updated March 16, 2015, <http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2015/03/project-eyes-on-the-seas>.
- 7 Gilles Boeuf, "Ocean, Biodiversity, and Climate," last updated 2016, http://www.ocean-climate.org/wp-content/uploads/2017/03/ocean-biodiversity-climate_Oct2016_BD_ppp-5.pdf.
- 8 Food and Agriculture Organization of the United Nations, "The State of World Fisheries and Aquaculture: Opportunities and Challenges," last updated 2014, <http://www.fao.org/3/a-i3720e.pdf>.
- 9 Hans-O. Pörtner et al., "Ocean Systems," *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (2013): 411-84. https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap6_FINAL.pdf.
- 10 Laurent Bopp et al., "The Ocean: A Carbon Pump," accessed 2017, http://www.ocean-climate.org/wp-content/uploads/2017/03/ocean-carbon-pump_07-2.pdf.
- 11 Global Ocean Commission, "From Decline to Recovery: A Rescue Package for the Global Ocean," last updated June 24, 2014, http://www.some.ox.ac.uk/wp-content/uploads/2016/03/GOC_Summary_2015_AUG-1.pdf.
- 12 Graham J. Edgar et al., "Global Conservation Outcomes Depend on Marine Protected Areas with Five Key Features," *Nature* 506, no. 7487 (2014): 216-20, <http://www.nature.com/nature/journal/v506/n7487/full/nature13022.html>.
- 13 Bethan C. O'Leary et al., "Effective Coverage Targets for Ocean Protection," *Conservation Letters* 9, no. 6 (2016): 398-404, <http://onlinelibrary.wiley.com/doi/10.1111/conl.12247/abstract>.
- 14 Alex D. Rogers, Christopher Yesson, and Pippa Gravestock, "Chapter One - A Biophysical and Economic Profile of South Georgia and the South Sandwich Islands as Potential Large-Scale Antarctic Protected Areas," *Advances in Marine Biology*, vol. 70 (2015): 1-286, <https://www.ncbi.nlm.nih.gov/pubmed/26296718>.

This issue brief was updated in October 2017 to add the size of the proposed protected area.



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The Pew Charitable Trusts and the **Bertarelli Foundation** joined forces in 2017 to create the Pew Bertarelli Ocean Legacy Project. This effort builds on a decade of work by both organizations to protect the ocean. Pew's Global Ocean Legacy initiative, established in 2006, helped obtain commitments to safeguard more than 6.3 million square kilometers (2.4 million square miles) of ocean by working with philanthropic partners, indigenous groups, community leaders, government officials, and scientists. Since 2010, the Bertarelli Foundation has worked to create marine protected areas around the globe and simultaneously advance our understanding of marine science.