

British Antarctic Territory

South of latitude 60° S and bounded by
longitudes 20° W and 80° W

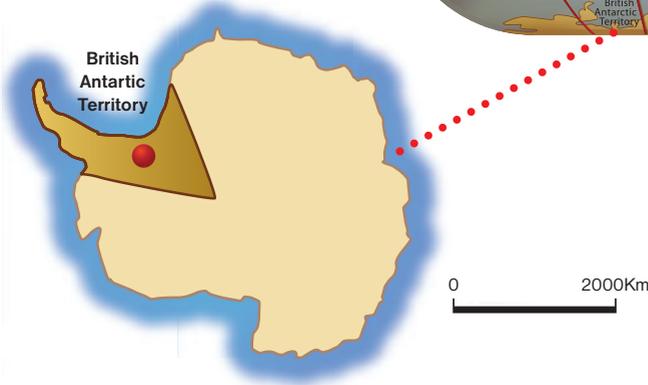
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British Antarctic Territory

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More information available at -
www.britishantarcticterritory.fco.gov.uk/en/



Basic facts and Figures

Location	The British Antarctic Territory (BAT) comprises the sector of the Antarctic south of latitude 60° S and bounded by longitudes 20° W and 80° W. The BAT has no permanent residents and is administered directly from London by the Foreign and Commonwealth Office's (FCO's) polar regions unit.
Area	1,709,400km ² (continent), 620km ² (South Orkney), 3,687km ² (South Shetlands).
Number of islands	South Orkney consists of four main islands. South Shetlands consists of 11 main islands. There are 100s of islands in and around the Peninsula.
Population	No permanent inhabitants. The UK maintains a year-round presence in the territory through the British Antarctic Survey (BAS), of the Natural Environment Research Council (NERC). BAS operates two year-round scientific research stations (Halley and Rothera) and a summer only base at Signy in the South Orkney islands.
Topography	The Antarctic Peninsula and the islands are mostly mountainous with significant ice cover (85% of the South Orkney Islands are ice covered).
Main economic sectors	Scientific research.

Legislative and Policy Framework

Multilateral environmental agreements

The BAT has been included in the UK's ratification of 10 MEAs including a number of specific Antarctic related agreements such as the Antarctic Treaty and its Protocol on Environmental Protection (also known as the Environmental Protocol) the Convention on the Conservation of Antarctic Seals, and the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR). The Antarctic Treaty designates Antarctica as "a natural reserve, devoted to peace and science". Status ratification of key MEAs:

Multilateral Environmental Agreement	Included in ratification?
Convention on Biological Diversity	✗
Convention on International Trade in Endangered Species	✗
Convention on Migratory Species	✗
Ramsar Convention on Wetlands	✗
World Heritage Convention	✗

British Antarctic Territory has ratified the Agreement on the Conservation of Albatrosses and Petrels.

National environmental legislation and strategies

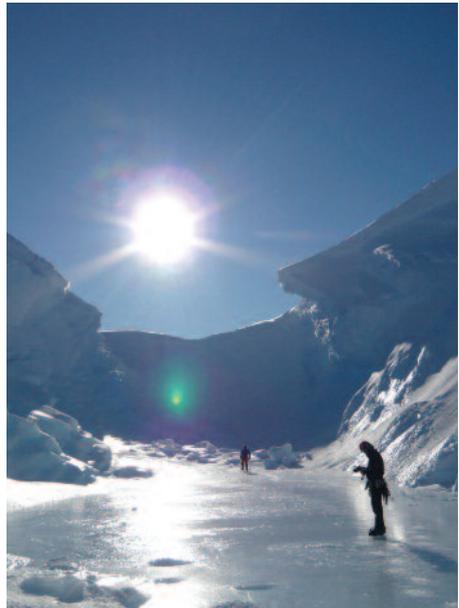
At present there is one main piece of legislation: The Antarctic Act 1994 and associated regulations, which transposes the requirements of the Environment Protocol and decisions and measures adopted by the Antarctic Treaty Consultative Meetings (ATCM) into UK domestic legislation. Strict ATCM conditions relating to environmental protection are supported by a range of governmental, tourism industry and NGO outreach programmes designed to raise awareness of the Antarctic environment.

See: www.fco.gov.uk/antarctica

Protected Areas

The world's first high seas Marine Protected Area (MPA) was created in the Southern Ocean in October 2009 – an area of over 90,000km². On land, there are 12 UK-managed Antarctic Specially Protected

Areas (ASPAs) and one Antarctic Specially Managed Area (ASMA) that is jointly managed by the UK with five other countries. A full list of ASPAs and ASMAs in the entire Antarctic region can be found on: www.ats.aq/documents/cep/Register_Updated_2010_e.pdf



Alladins Cave Hinge Zone © Craig Brown



Research Priorities

Antarctica's environment is a critical barometer of the world's climate health and the region is important as a global laboratory. Scientists from the British Antarctic Survey (BAS) *[BAS discovered the ozone hole over Antarctica in 1985, so triggering international concerns about the*

effects of atmospheric pollution] and other UK scientists are playing a leading role in a wide range of Antarctic research programmes. Much of the current work of the Antarctic Treaty's Committee for Environmental Protection (CEP) is focused on:

- effective protection of the environment and in particular the impacts of climate change and non-native species and,
- the dynamics of Southern Ocean ecosystems including the response to the impacts of climate and fisheries.

The UK makes a significant contribution to CEP and is taking a leading role in work in CCAMLR including to identify and establish marine protected areas.

Institutional Arrangements

FCO's Polar Regions Unit, with support from the British Antarctic Survey (BAS), leads on biodiversity issues within the BAT.

The UK was one of 12 signatories to the Antarctic Treaty in 1959 and was the first to ratify it. The Treaty, which entered into force in 1961, preserves Antarctica for peace and silence. The UK continues to play a leading role within the Antarctic treaty system.

Ecosystems and Habitats

Terrestrial: The harshness of the climate: low temperatures, strong winds, poor soils, and prolonged periods of light and darkness have strongly conditioned the species of these environments. The dominant plant cover consists of low-growing cryptogams and microorganisms including mosses, liverworts, lichens, fungal algae and *cyanobacteria*, found on ground which is ice-free during the summer months. Terrestrial animal communities consist entirely of invertebrates. Ice free areas are very important for breeding.

Marine: In contrast, marine ecosystems can be very rich in terms of both diversity and biomass, due to the presence of significant numbers of plankton in the cold waters and in the mixing zones where cold sea water mingles with warmer waters. The benthos of the South Orkneys shelf has been identified as particularly biodiverse (Barnes *et al* 2009).

Species

There is considerable invertebrate endemism both in the BAT and across Antarctica (Pugh and Convey 2008). There are only two higher insect species. While terrestrial species diversity is low, population densities can be very high. Marine diversity is particularly rich supporting several species of marine birds that forage in the surrounding waters and use ice-free islands and coastal areas as nesting grounds. Several species of whale (including the threatened Blue whale and Humpback) and seal also take advantage of the fish and plankton-rich waters. See Appendix 2 for more information.

Threats

Invasive species: Non-native species could become a threat to existing Antarctic biodiversity. Increased human activity in Antarctica mean that more seeds, insect eggs, spores and soil are accidentally transported to the region, while warmer temperatures and increased water availability resulting from climate change may make it easier for introduced species to become established (Frenot *et al.* 2005; Convey *et al.* 2006; Convey 2008).

Climate change: The Antarctic Peninsula has experienced one of the highest rates of warming in the last 50 years (Turner *et al.* 2009; Convey *et al.* 2009). Other influences such as increased ultra-violet radiation and seasonal drought compound the impacts of climate change (Convey 2006). Rising air temperatures will pave the way for plants to grow and reductions in Antarctic seasonal sea ice in some regions could also reduce the production of phytoplankton (and therefore krill populations) affecting food chains and ecosystems. Ice-dependent ecosystems will be required to evolve and adapt to new environmental conditions or become extinct in some areas (Turner *et al.* 2009). Management authorities for fisheries may need to adapt their management framework and procedures (Trathan and Agnew 2010). Further information on threats can be found at Appendix 3.

Projects

The Government of the BAT has directly funded a wide range of environmental projects which have contributed towards protection of biodiversity. It has recently commissioned a separate environmental strategy. Previous projects include production of a Wildlife Awareness Manual, development of a “toolkit” to aid and facilitate management of marine protected areas, a DNA survey to assess distribution of penguin colonies and the impacts of climate change, identification of important bird areas in the Antarctic Peninsula, and identification and development of Marine Protected Areas around the BAT. A list of BAT funded projects can be found on the BAT website.

Case Study: Baseline vegetation survey in the Antarctic Peninsula using hyperspectral imaging

In February 2011, in a project funded by the BAT, BAS completed a successful field campaign to collect the first hyperspectral airborne data in the Antarctic. Together with Canadian collaborators from ITRES Research Limited and DRDC (Defence Research and Development Canada) BAS collected contemporaneous ground, airborne and satellite observations. Details of vegetation type and the underlying rock can be identified from the reflected spectral signature recorded in these surveys.

Vegetation changes in response to contemporary climate change in the Antarctic Peninsula are amongst the most widely predicted consequences of environmental change. The Antarctic Peninsula is experiencing warming temperatures and increasing numbers of visitors, both of which will potentially impact the extent and type of vegetation in the region. However, robust and large-scale baseline vegetation information does not exist against which to identify these consequences, and cannot practicably be obtained through traditional ground survey approaches.

The data collected from the airborne survey will facilitate the development and calibration of a relatively low-cost method of monitoring vegetation changes in ASPAs and other sensitive regions.



Leopard seal © Craig Brown

Contacts

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British Antarctic Survey Website: www.antarctica.ac.uk/

Royal Geographic Society Website: www.discoveringantarctica.org.uk/

Interactive teaching and learning resources on Antarctica

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Appendices

All appendices referred to in this chapter are available at

<http://jncc.defra.gov.uk/page-5746>