

Study shows mixed fortunes for Signy penguins

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A pair of gentoo penguins. Credit: British Antarctic Survey

A forty year study on a remote Antarctic island shows that while populations of two penguin species are declining, a third is increasing. Analysis of census data from Signy Island in the South Orkney Islands reveals that, between 1978 and 2016, the number of chinstrap penguin pairs declined by nearly 70 per cent. Pairs of Adélie penguins dropped by more than 40 per cent but the number of gentoo penguin pairs more than trebled.

Writing in the journal *PLOS ONE*, scientists from British Antarctic Survey (BAS) say they have yet to understand the reasons behind the population changes but they mirror similar studies elsewhere.

The data collected at Signy derives from annual penguin counts at selected colonies and larger decadal counts of all occupied nests on the island. The colonies for each species vary in size and can contain up to several thousand pairs. During the period studied, breeding success for all three species remained stable.

Since the 1970s three Adélie colonies have disappeared completely. Chinstraps have been in steady decline while gentoos have undergone a series of population fluctuations...although their overall trend is upwards.

Studies from different sites across the West Antarctic Peninsula and the Scotia Sea show similar evidence of a decline in Adélie and chinstrap populations. Similarly, gentoo populations have either remained constant or increased. During the latter half of the Twentieth Century, Antarctic Peninsula temperatures increased by up to 0.5° C per decade though there has been a pausing in this upward trend in recent years.



The BAS Research Station on Signy Island. Credit: British Antarctic Survey

Lead author, Mike Dunn, a penguin ecologist at BAS, says:

"We have been monitoring these penguin populations as part of a wider programme to understand how Antarctic animals respond to environmental change. Our findings from Signy Island are particularly interesting because they closely resemble the trends found at other sites on the West Antarctic Peninsula and Scotia Arc. The results indicate a pattern of population change taking place right across this region. Now we have identified the trends, we are working to understand what is driving the population changes".

The penguin monitoring programme on Signy Island tracks the numbers of breeding pairs and chicks each year. Currently, there are estimated to be around 200,000 Adélie pairs, 600,000 chinstrap pairs and between 5 – 10,000 gentoo pairs in the South Orkneys.

Changes in penguin population size can indicate the state of the Southern Ocean ecosystem – a region that is biologically rich and whose fishing grounds are of significant commercial value. This research supports policy making bodies such as the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) which is responsible for setting catch limits for commercial krill and fish in the Southern Ocean in order to protect marine ecosystems and maintain sustainable levels of fishing in the Southern Ocean.

The study highlights the importance of carrying out long-term monitoring of population trends.

More information: Michael J. Dunn et al. Population Size and Decadal Trends of Three Penguin Species Nesting at Signy Island, South Orkney Islands, *PLOS ONE* (2016). [DOI: 10.1371/journal.pone.0164025](https://doi.org/10.1371/journal.pone.0164025)

Provided by British Antarctic Survey

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