

# Adelie penguin numbers may expand as glaciers retreat

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Shrinking glaciers could lead to increasing numbers of Adélie penguins (*Pygoscelis adeliae*) in East Antarctica, according to research published in the open access journal, *BMC Evolutionary Biology*.

The study shows that in the last 14,000 years the population of Adélie penguins has seen a 135-fold increase, as additional breeding sites become exposed by retreating glaciers. This [population explosion](#) suggests that current environmental conditions are more favorable for Adélie penguins than they were at the end of the last ice age.

However, despite the huge increase in penguin numbers, research shows that the effects of [climate change](#) are not uniform. Large regional variability means geographically distant populations of Adélie penguins will experience different environmental impacts, and the authors warn that in some parts of Antarctica the number of Adélie penguins is in decline.

Lead author, Jane Younger, from University of Tasmania, Australia says, "Shrinking glaciers appear to have been a key driver of population change over millennia for Adélie penguins in East Antarctica. Examining these birds' responses to past climate change means we can begin to predict how well Adélie penguins will respond in the future. Up to now, research has focused on short-term changes in terms of years or decades, but the climate change that is underway right now is likely to have effects over thousands of years. We need to consider millennial-scale trends alongside contemporary data to forecast species' abundance and

distribution changes under future [climate change scenarios](#)."

East Antarctica is currently home to 30% of the global population of Adélie penguins, with an estimated abundance of 1.14 million breeding pairs. As climate change progresses, glaciers and ice sheets in Antarctica are expected to retreat further.

Adélie penguins are sensitive to changes in [sea ice](#), the timing of sea ice retreat and the extent of glaciation, because they form breeding colonies on ice-free land along the Antarctic coastline and forage in the pack ice zone during the breeding season. An increase in sea ice can be detrimental to the birds, as adults have to forage for longer, reducing the frequency at which they can feed their chicks.

The researchers investigated the effect of climate change on Adélie penguins over the past 22,000 years, including the ending of the last ice age, the most recent global warming event prior to current climate change. Using mitochondrial DNA from multiple living colonies, they sequenced 56 individuals from six colonies. The genetic data indicates past population dynamics, such as trends in abundance and responses to environmental changes across the East Antarctic region.

Jane Younger says, "Adequate food supplies must be available to sustain an expanding population of Adélie [penguins](#). Whether this will be the case in the future remains to be seen, as the impacts of climate change on Adélie penguin prey species, such as Antarctic krill, are unclear at this time."

**More information:** Jane Younger et al. Proliferation of East Antarctic Adélie penguins in response to historical deglaciation, *BMC Evolutionary Biology* (2015). [DOI: 10.1186/s12862-015-0502-2](https://doi.org/10.1186/s12862-015-0502-2)

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