



## Antarctic Birds Affected by Climate Change

Antarctic seabirds may be breeding later in response to climate change, according to a new study. Results indicated that some bird species are arriving at their colonies an average of nine days later and laying eggs on average two days later than they did in the 1950s. These results suggest that Antarctic seabirds are already responding to environmental changes.

There is now convincing evidence to support the theory that in the Northern Hemisphere spring events such as the arrival of migrant birds and the blossoming of trees occurred progressively earlier during the 20th century in response to climate change. However, little information exists for the Southern Hemisphere due to a lack of long term data sets, in particular for the Antarctic fauna.

French researchers have analysed the only long term record of arrival and egg-laying for all species of seabird that came to breed in East Antarctica during a 55 year period. Data on the nine species of bird were collected by ornithologists at the Dumont d'Urville Antarctic research station between 1950 and 2004.

The results of this analysis showed an unexpected general trend toward later arrival and egg-laying. Over this period, four species showed a clear trend towards arriving later in Antarctica and two showed a clear trend toward later breeding. Most other species arrived and bred later, but the trends were not statistically significant at levels set by the French team. Overall, the authors found that on average bird species are arriving at their colonies 9.1 days later and laying eggs 2.1 days later than they did in the 1950s. This observed trend is actually the opposite of the pattern seen in the Northern Hemisphere.

The authors argue that changes in bird population dynamics in the Northern Hemisphere are linked to progressively warmer spring temperatures since the mid-20th century, which in turn are likely to have increased the availability of food supplies, resulting in earlier arrival and laying dates. Nevertheless, in eastern and continental Antarctica, no warming or cooling has been observed since the early 1950s. The authors suggest that two factors could explain the observed trend in Antarctica:

- A 12%-20% reduction in the extent of sea ice over the last 50 years has been linked to a decline in numbers of krill and other marine organisms that are the major food source for seabirds.
- The sea ice season has been getting longer since the 1970s. The late break-up of sea ice is known to delay access to seabird colonies and food resources at sea.

These two factors may have reduced the quantity and accessibility of food supplies available in early spring, which is the period when birds require more food to build up the reserves they need to breed. However, changes in sea ice explain only 24% of the variation in arrival and egg-laying, so other factors must also be influencing the dynamics of the bird population in Antarctica.

The current study reveals new evidence about the ongoing shifts in the Antarctic bird populations in response to climate change. If these species are not able to respond appropriately to changes occurring in their breeding areas, they could be seriously affected by current climate trends in the near future.

**Source:** Christophe Barbraud and Henri Weimerskirch (2006) "Antarctic birds breed later in response to climate change", PNAS 103(16):6248-6251.

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