

Looking to the future – signals from the past ...



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Left above: Adélie penguin colony at Whitney Point, Casey in November 1963. Left below: The same colony in November 2001. Right above: Macaroni penguin colony at Heard Island, November 1929. Right below: The same colony in November 2000.

Most seabirds can live for more than 30 years, and some species of albatross can live for more than 60 years. Long-term seabird population trends can signal climate change, human disturbance, interactions with fisheries and effectiveness of management regimes, in addition to natural changes in population sizes. Separating natural changes from human-induced changes is a major focus of many long-term studies around the Antarctic and subantarctic.

A major hurdle however are the time scales involved – the time required to identify long-term trends in seabird populations may well exceed the professional life of the researchers undertaking the work. Archival photographs are a valuable source of information from the time before organised surveys, and may be used to establish historical baselines for ‘modern’ data sets. Photographs have also supplemented regular surveys, improving the data sets available for analyses, and thus increasing our abilities to detect and understand the signals. This research program is matching historical with contemporary images; two image pairs spanning almost 40 and more than 70 years are shown here.

The first pair of photographs shows Adélie penguin *Pygoscelis adeliae* colonies at Whitney Point, Casey. The original survey and census was undertaken in 1959–60 by an American student undertaking pioneering research on the behaviours of Adélie penguins. As part of his studies, all colonies were mapped, photographed and a census undertaken. Photopoints of each colony were also established at the time with a view to providing a means to compare colonies over time. These photopoints were re-established in 1989–90 and have been used since to continue monitoring these colonies. The photographs complement ground counts that are undertaken every summer to assess long-term population trends. The photographs show the same colony in November 1963 and November 2001. While there have been only minor changes in the near colony, the 2001 photograph shows the presence of a large colony (in excess of 1,000 pairs in 2002–03) that was not apparent in 1963.

The second image pair shows a macaroni penguin colony on Heard Island. The BANZAR Expedition visited Heard Island in November 1929 and photographs of the

landscape and wildlife were taken around the Atlas Cove region. During the 2000–01 ANARE to Heard Island, our project mapped and surveyed seabird populations (‘Heard Island’s seabirds under scrutiny’, *Australian Antarctic Magazine* 1:12). One component of our survey was to photograph colonies for which historical images exist, such as this one. The photographs show the same colony in November 1929 and November 2001. It is clear that the colony has extended onto the left and lower areas of the slope.

Further efforts will be made to collect similar historical images from other areas of the Australian Antarctic Territory to enable comparisons to be made for a greater range of species over similar time spans. By examining a range of species from a number of localities, this study will enable the determinations of local and regional trends in breeding seabird populations.

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