

A Landscape Effect On The Demography Of Adélie Penguins In The Western Antarctic Peninsula Region

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Explanations regarding the causal origins of long-term change in Adélie penguin populations have focused almost exclusively on the effects of variability in the marine environment. Although this perspective has broad theoretical and empirical support, new research indicates that population trends in this species may also be regulated in part by factors that affect the availability and quality of terrestrial breeding habitats. These findings, based on analyses of Adélie penguin breeding population data that span more than 30 years near Palmer Station, western Antarctic Peninsula, suggest that “habitat-specific demography” may be an important but unrecognized feature regulating the population dynamics of this species. Although the causal mechanisms involved are still under investigation, preliminary findings indicate that the relevant processes are linked to interactions between breeding habitat geomorphology and changing patterns of snow deposition due to climate warming. One result of these processes is a form of habitat fragmentation, which in turn affects demography at multiple space (individuals, colonies, rookeries) and time (interannual to centuries) scales. These findings further imply that the existing information needed to understand and model Adélie penguin population dynamics may be incomplete unless the potential effects of breeding habitat variability on demography are recognized. Because the species is regarded as a critical bio-indicator of marine ecosystem dynamics, this could impair the interpretation of data related to the effects of climate change, fisheries and human disturbance in Antarctica.

Suggested Readings:

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Related Readings:

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