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Authors: McCormick, D.F.
Emslie, S.D.

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CONTINUING STUDIES OF THE DEMOGRAPHY AND FORAGING BEHAVIOR OF THE PYGOSCELIS PENGUINS

We were at Copacabana Field Station, Admiralty bay, King George Island, from mid -October 1992 to the end of February 1993. The bay and surrounding waters were ice free upon our arrival and had been for most of the winter had been mild and that most of the snow and ice in evidence at the time of our arrival was from recent storms.

Our research consisted of tree interrelated projects: the continuation of the previous years' demographic study on the Adelie, gentoo, and chinstrap penguin populations; a study of Adelie foraging behavior; and a study examining penguin band loss using implanted transponders. Adelies reoccupied their colonies in early October and began laying eggs shortly after our arrival. A severe snow storm in late October deposited several feet of heavy snow on the nesting Adelies,resulting in large egg losses throughout the rookery. Gentoos and chinstraps which began egg laying in mid to late November, were unaffected by the storm.

The demographic study followed the methodology of previous years. A random sample of 200 breeders of each species, as well as all known-age birds, were followed throughout the reproductive season. Adelies fledged less than one chick per pair, about average for Adelie; however gentoos and chinstraps fledged well over one chick per pair. These results suggest that food availability was high in the 1992-1993 season and all three species would have had high reproductive success if not for the adverse effect of environmental factors on the Adelies.

The Adelie foraging behavior study involved epoxying radio transmitters to the back feathers of 20 adults with chicks. The transmitters were left on for 4 weeks, from mid-December 1992 to mid-January 1993. A data logger, hooked up to a receiver, automatically recorded the times on land (signal present) and at sea (signal absent). The data collected are under analysis will be compared with previous years' foraging trip durations. The amounts of food brought back to feed the chicks averaged over 600 grams per trip by adults, which is comparable to food load sizes delivered to chicks in previous seasons.

A study on band loss was begun with Adelies and gentoos. Transponder implants were injected under the skin of the penquins, enabling us, with the aid of a hand-held scanner, to identify individual birds without bands. Three different groups of Adelie males were set up: banded only, implanted only, and banded and implanted. Since Adelie males are 99 percent nest-site faithful if they survive the winter (Trivelpiece and

Trivelpiece 1990), we will be able to determine next season if band loss is significant and if bands contribute to mortality. A small of gentoos was also implanted, in hopes that we would get some idea on band loss and band-induced mortality in the largest of the three species.

Reproductive success was below average for both the brown and south polar skuas. There were many non-weather-related losses of both eggs and chicks. This was probably due to poor food availability in the study area, particularly a lack of the antarctic silverfish in diet samples. This leads to marauding by failed breeders and nonbreeders, resulting in increased chick mortality among pairs that were successful. The other flying birds breeding in the area seemed to have an average summer.

As in past seasons, we were visited by a few nonresident incidentals. Several macaroni penguins and arctic terns were seen, and a black-necked swan was sighted in the bay in December.

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By D.F. MCCORMICK, S.D. EMSLIE, N. J. KARNOVSKY, L,W. KEITH,

S.G. TRIVELPIECE, and W.Z. TRIVELPIECE, Department of Biology, Montana State University, Bozeman, Montana 59717
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