

## Changes in some seabird populations at Marion Island

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South Africa's Prince Edward Islands are important breeding localities for sub-Antarctic seabirds, the conservation status of several of which is of concern<sup>1</sup>. At Marion Island, for some species, assessments of the numbers breeding and of breeding success have been made since 1994/95. Four penguin species breed at this island. For the far-ranging king penguin *Aptenodytes patagonicus*, the production of chicks fluctuated around a stable level<sup>2</sup>. Estimates of the population sizes of the other three penguins decreased, most severely for the two that feed closest to the island while breeding: gentoo *Pygoscelis papua* and rockhopper *Eudyptes chrysocome* penguins<sup>3-5</sup>. The two *Eudyptes* penguins (rockhopper and macaroni *E. chrysolophus*) leave the island during winter. For these two species, trends in the numbers breeding at specific colonies were well correlated<sup>6</sup>. The times of arrival of females for breeding, and for rockhopper penguins the mass of females on arrival, were significantly related to breeding success<sup>6</sup>. These results suggest that over-wintering conditions influence both the proportion of mature birds that breed and breeding success<sup>6</sup>; hence, attempts are being made to identify the winter feeding grounds. The Crozet shag *Phalacrocorax melanogenis*, another bird with a limited foraging range, also suffered a severe decrease<sup>7</sup>. The decreases of some of the seabirds are thought at least partially attributable to inadequate breeding success, suggesting poor feeding conditions around the island during the breeding season<sup>3-5,7</sup>. Long-term environmental change may be influencing prey availability near the island and at winter feeding grounds. To the north, off South Africa, an eastward displacement of sardine *Sardinops sagax*, an important forage fish for seabirds, has resulted in a mismatch in the distributions of the breeding localities and prey of seabirds, and recent large decreases of African penguins *Spheniscus demersus*<sup>8</sup>. At Marion Island, the populations of some species of albatross and petrel, which travel substantial distances away from the islands, have shown a long-term decrease<sup>1</sup>. These birds are at risk from mortality in high seas and continental fisheries<sup>9</sup>. As with penguins, it is necessary to establish the at-sea distributions of several of the albatrosses and petrels that breed at Marion Island.

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