

## Penguin breeding failure and mortality

Since both your account of the penguin mortality in the Falklands Islands last spring (Lyster, 1986; Anon., 1986) and British representations to the United Nations General Assembly to justify assumption of control over the local fisheries appear to have missed a comment on the reports of the incident in *Nature* (Rich, 1986a,b; Bourne, 1986), it may be useful to enlarge upon it.

My colleague W. F. Curtis and I also saw a limited number of dead and dying rockhopper penguins *Eudyptes chrysocome* (a scientific name that takes priority over *E. crestatus*) during the course of observations on seabirds around the Falklands between February and May 1986 (Bourne and Curtis, 1986). Most of the mortality, which only involved a fraction of the estimated breeding population of five million birds, occurred towards the end of the breeding season, when first some young birds and subsequently some of the moulting adults appeared to have starved to death (Dowse, 1986).

We failed to notice abnormal mortality among the gentoo penguins *Pygoscelis papua*, which are also said to have been affected to a lesser extent in the Falklands, or the Magellanic penguins *Spheniscus magellanicus*, which are apparently the only species breeding in the area where penguin mortality was also reported along the adjacent coast of Argentina (Rich, 1986b). The closely related jackass penguins *S. demersus* also appear to have had a poor breeding season in South Africa (Crawford *et al.*, 1986), and Yolanda van Heezik of Otago University reports (*in litt.*) that a shortage of fish was followed by both chick and adult mortality and a decline in the population of the world's rarest penguin species, the yellow-eyed penguin *Megadyptes antipodes*, which breeds in similar latitudes in New Zealand.

It seems rather doubtful that all these widespread breeding failures, followed in some cases by adult mortality, could be due to the simultaneous onset of competition for food from fishermen. In the Falklands the only previous investigation of the rockhoppers' diet (Croxall *et al.*, 1985) indicated that they were feeding on a small species of squid of the genus *Teuthowenia* and various plankton, which are not yet taken by fishermen, though Dr

P. J. Moors (1986 and *in litt.*) reports that at Campbell Island, south of New Zealand, where they have already been declining for nearly half a century, longer than there has been an overfishing problem, they also take small blue whiting *Micromesistius poutassou*, which is one of the species most affected by overfishing around the Falklands.

It is also notable that the summer of 1985–86 was associated with a considerable influx of northern warm-water seabirds to the Falklands, including the first recorded Cory's and little shearwaters *Calonectris diomedea* and *Puffinus assimilis* and Franklin's and band-tailed gulls *Larus pipixcan* and *L. belcheri* (Bourne and Curtis, 1986). It seems possible that all these birds may have been affected by some widespread oceanic fluctuation around the northern margin of the Southern Ocean resembling the El Niño Southern Oscillation of the tropical Pacific, where the periodic appearance of warm water is associated with widespread seabird breeding failure followed by adult mortality and dispersal (Schreiber and Schreiber, 1984).

### References

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