

PRELIMINARY RESULTS OF SATELLITE TRACKING OF THE WANDERING ALBATROSS AROUND AND FROM AUSTRALIA

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INTRODUCTION

There are world-wide reports of a sustained decline in many of the albatross populations, including those of the Wandering Albatross *Diomedea exulans* (Weimerskirch and Jouventin 1987; Croxall 1991; Garnett 1992), and capture on the baited hooks used in long-line tuna fishing is considered the major cause (Brothers 1991; Croxall 1991). Banding has shown that Wanderers move around the circumpolar southern oceans. French and British scientists, using the ARGOS satellite facility, have tracked breeding Wandering Albatrosses over thousands of kilometres when foraging, and shown that they enter areas where tuna are being fished (Jouventin and Weimerskirch 1990; Prince *et al.* 1992).

Wandering Albatross are biannual breeders and, in the intervening non-breeding years, some birds visit the seas off Australia such as inshore shelf areas at Bellambi, New South Wales, where they have been studied for 36 years by the New South Wales Albatross Study Group (Gibson and Sefton 1959). Little is known of the foraging behaviour of non-breeding albatrosses so there is a unique opportunity in Australia to track their movements in the nearby seas and then their return to the breeding island.

A committee was formed in 1992 (the authors) to develop such a scientific study using the ARGOS satellite tracking system.

METHODS

ARGOS radio transmitters (PTTs) were glued to the back feathers of four Wandering Albatrosses captured off Bellambi, New South Wales in July and August 1992. The technique employed varied slightly between birds. The birds chosen were of the *chionoptera* race to complement studies elsewhere of breeding birds. The extensive database of the New South Wales ASG enabled the selection of birds which had been captured off Bellambi on at least six occasions previously or were from a known breeding island. Details of the birds and the PTTs deployed are given in Table 1.

PRELIMINARY RESULTS

The birds foraged initially inshore, locally along the Illawarra Coast, and/or up to 150–250 km offshore east to south-east over the mid-Tasman Sea. They used short (10–15 km) and longer flights. They may have paddled the shorter distances between reported locations as they moved to the floating cuttlefish upon which they feed when inshore. On leaving the waters off Bellambi, birds 2, 3 and 4 flew south off the east coast to east and south of Tasmania, and then west around southern Australia. Mostly, they flew in pelagic waters, generally within the 200 nautical mile Australian Fishing Zone. Every few days they flew 300–500 km in 24–36 hours at an average of c. 30 km/h. They stopped off Cape

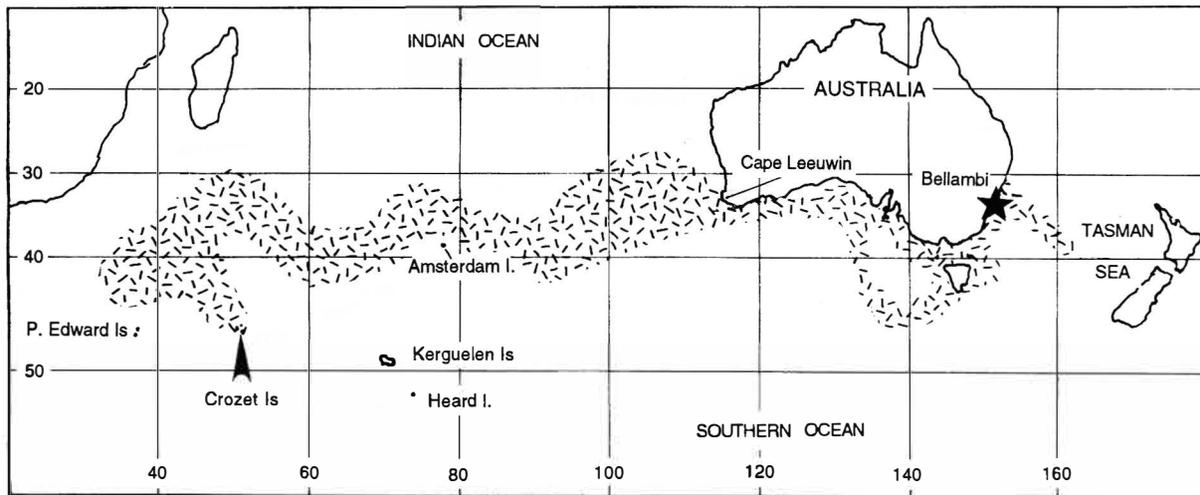


Figure 1. The seas over which four Wandering Albatrosses foraged from July/August until December 1992.

Leeuwin before flying west across the Indian Ocean. One bird (4) was known to breed at the Crozet Islands, the others are now presumed to come from one or other of the Subantarctic breeding islands in the Indian Ocean. All three flew mostly between 33–43°S, and Figure 1 shows the waters over which the birds flew, on occasions as far as 700–1 000 km in a 24–36 hour flight. These data are now being analysed to appraise their foraging movements within the known albatross feeding area off Bellambi, to identify other feeding areas around the coast of Australia, and to establish if these older birds moved through the tuna-fishing grounds on their return to their breeding island. The details of their flight paths in relation to the weather and ocean system are also being analysed.

CONCLUSIONS

It has been demonstrated that Wandering Albatrosses can be carefully selected and their movements followed around the coast of Australia and beyond. Furthermore, the attachment of the PTT, which was over a larger surface area and which protruded less above the feathers of the back, survived the return flight of Bird 4 to the Crozet Islands. Additional refinements to packaging and attachment should further improve the performance of the PTTs.

Long-term banding studies and the satellite telemetry techniques, when combined, are powerful tools to study the migration and the foraging behaviour of large oceanic seabirds. Their potential for supplying meaningful data for the conservation of these species is great. However, the co-operation of ornithologists, both locally and internationally, is necessary and can be very rewarding. Extensive advice and data were freely given by Drs John Croxall and Peter Prince of the British Antarctic Survey and Dr Henri Weimerskirch of the French Centre National de la Recherche Scientifique and we are particularly grateful for their enthusiastic support.

The success of this venture has surpassed expectations. The Committee now proposes to continue this and other biological studies that will contribute to the conservation of albatrosses.

ACKNOWLEDGMENTS

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TABLE 1

The Wandering Albatrosses captured off Bellambi, New South Wales, their movements, and details of the deployment of the PTTs.

Bird No.	No. of times caught previously, and years	Date	Deployment of PTT			Comments
			Type	BL ¹	PD ²	
1	7, 1964-92	16 July	Toyocom 2038	7	7.5	Stayed inshore off Illawarra coast. Reception ceased 23 July.
2	7, 1966-92	16 Aug.	Microwave Telemetry 100	16	3.5	In western Tasman Sea and inshore off east coast including Bass St. until mid Oct. Reached Indian Ocean on 14 Nov. Reception lost 800 km west of Cape Leeuwin after 12 weeks.
3	7, 1975-92	21 Aug.	Microwave Telemetry 100	16	3.5	In western and central Tasman Sea in Aug. In Indian Ocean by late Sept., reaching Prince Edward I., 40°E; travelled 120° of longitude, 1/3 of the way around the world. Reception lost after 10 weeks.
4	7, 1971-92	21 Aug.	Telonics ST6	26	4.5	First banded breeding on Possession I., Crozet Is. Stayed at Illawarra until end of Aug. then flew directly south and around south coast. Entered Indian Ocean late Sept. arriving at nest site on Possession I. on 3 Dec.

¹BL — battery life in weeks; ²PD — number of positions daily.

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Nomenclature of the Wandering Albatross *Diomedea exulans*

The white birds of the high southern latitudes are usually described as the race *chionoptera*. Wanderers which breed on islands of lower latitudes are smaller and have darker plumages, and the bird which breeds on Amsterdam Island, southern Indian Ocean, was described as a new species *D. amsterdamensis* by Roux¹. Robertson and Warham² have now described two new races

for the New Zealand sub-region: *D. exulans antipodensis* which breeds on the Antipodes Islands and Campbell Island, and *D. exulans gibsoni* which breeds on the Auckland Islands.

¹Roux, J.-P. et al. (1983). *Oiseaux* 53: 1-11.

²Robertson, C. J. R. and Warham, J. (1982). *Bull. B.O.C.* 112: 74-81.

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