



THE MONTAGU ISLAND SHEARWATER STUDY

Montagu Island (82 ha; 36° 15' S, 150° 14' E) is situated about 10 km east of Narooma on the New South Wales South Coast. Shearwaters belong to a distinct group of pelagic seabirds, the Procellariiformes, distinguished by their raised tubular nostrils and ranging throughout the world's oceans with three-quarters of species occurring within the Australasian region. Three species of *Ardeanna* (formerly *Puffinus*) Shearwater breed on the island. Wedge-tailed Shearwaters *A. pacifica* and the Short-tailed Shearwaters *A. tenuirostris* breed in mixed colonies by burrowing into sandy soil under vegetation such as Spiny-headed Mat-rush *Lomandra longifolia*. The Sooty Shearwater *A. grisea* also breeds on the island amongst these other two species but in very low numbers. About 15,000 pairs of shearwaters arrive to breed on the Island in October each year, with chicks fledging the following April.

An assessment of breeding success has been made annually since 1960. Each year in the last week of March all burrows in three permanently marked rectangular study plots are thoroughly checked to determine the number of shearwater chicks present. When a chick is detected, it is extracted, measured, banded and returned to its burrow. Data from two study areas (NISA of 293 m² and SISA of 428 m²) have been collected since 1960 and a third study area (THISA of 293 m²) was added in 1992. As it is unlikely that a breeding attempt would fail at such a late stage of the nestling period, the chicks present are assumed to fledge successfully.

Over the years fewer and fewer Short-tailed Shearwaters have been found on NISA. On SISA the numbers of Short-tailed Shearwater chicks have been relatively stable in recent years, although numbers are very variable from year to year. However, the exceptionally high numbers found during the years 1973-1987 have never been repeated. Numbers of Short-tailed Shearwater chicks found on THISA since 1992 have been relatively consistent year to year.

Of all the shearwater fledglings in the long-term study plots during 1967-99, 68.8% were *P. tenuirostris*, and 30.3% were *P. pacificus*. The remaining shearwaters (0.9%) represented the few Sooty Shearwaters *P. griseus* that breed on Montagu Island.

An initial trend suggesting a rapid decline in the proportion of Wedge-tailed Shearwater chicks up to 1965 did not continue and the long-term trend is certainly in favour of increasing proportions of this species in the population on the Island.

Catastrophic events have occurred on at least two occasions with consequent low survival of chicks. This occurred spectacularly in 1971 and again in 1999. These disasters were caused by flooding after exceptionally heavy and concentrated summer rainfall. Such events have probably occurred about once every 30 years over the past century.

The study provides evidence that the Short-tailed Shearwater is not, as at first thought, colonizing Montagu Island at the expense of the Wedge-tailed Shearwater. Indeed, there has been a clear trend towards increasing proportion and numbers of Wedge-tailed Shearwaters in the colonies. It may be that warmer breeding seasons during recent years have favoured Wedge-tailed Shearwaters and put those species more dependant of foods that are found in colder waters at a disadvantage.

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Preliminary studies using satellite tracking devices have shown that Short-tailed Shearwaters perform spectacular round trips to the edge of the Antarctic pack-ice from Montagu Island. Chicks are provisioned by adults that travel these long-distance foraging trips, taking up to 21 days and covering up to 15 000 km each trip.

Since 1994, more intensive studies have been conducted on various aspects of the breeding ecology of the shearwaters on Montagu Island. These continuing studies, together with the annual survey (now into its 50th year!) are providing further insight into the population dynamics of these shearwaters on the Island and the processes involved in their breeding ecology.

Further reading

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Serventy, D.L. (1963). Egg-laying Timetable of the Short-tailed shearwater, *Puffinus tenuirostris*. *Proc XIII Internat. Ornith. Cong.*, pp 338-343.



By late March chicks are fast losing down from the body. Here are three Short-tailed Shearwater chicks with progressively less down on their undersides

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