

BAND WEAR ON SHORT-TAILED SHEARWATERS *Puffinus tenuirostris*

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A colony of Short-tailed Shearwaters *Puffinus tenuirostris* on Fisher Island in Bass Strait has been studied intensively for over 30 years (Serventy and Curry 1984). Like many such long-term studies of seabirds this project relies on recognition of individuals using numbered leg-bands. From 1947 to 1949 young shearwaters were fitted with copper leg-bands but these were rapidly affected by corrosion and abrasion. Since 1950, virtually all breeding adults and young have been marked annually with monel bands by members of the Tasmanian National Parks and Wildlife Service (formerly the Fauna Board of Tasmania) and CSIRO Division of Wildlife and Rangelands Research.

The bands used were 37 x 10 mm strips of 26 gauge cold-rolled and annealed monel (67% nickel, 30% copper, 1.5% iron and 1% manganese) weighing just over 1.5 g. These strips bands were wrapped around the tarsus in a scroll (Serventy 1956). All bands were produced by the same manufacturer and most used came from the same batch. As the study developed, many individuals were double-banded with an older band on one leg and a more recent band on the other. This provided a check on possible band loss. Eventual removal and replacement of some of these old bands, as well as some younger ones, allowed an examination of band wear on shearwaters.

Figure 1 shows that the loss of weight of a band was linearly related to the length of time it had been carried. On average a band lost about 1.2% of its initial weight each year. This weight

loss did not appear to be influenced by the sex of the wearer or by the band having been placed on a nestling or an adult (Fig. 1). The band worn for longest (nearly 30 years) was about half its initial weight when removed.

All bands examined were still legible and corrosion of the surface was slight. Wear of bands was concentrated at their top and bottom interior edges and was greatest on the upper edge, as described by Rowley (1966) and Coulson (1976). These authors also noted how wear started to cut into the height of a band after about a third of its initial weight had been lost, with localised notching in the central part of the band where the metal may be thinnest. This precisely described the older shearwater bands. Many of these bands would not have remained on the wearer for many more years but no band is known to have fallen off a double-banded individual before its removal.

Coulson (1976) in a study of wear of monel bands on large gulls also found that weight loss was constant with age and that there was no difference in wear on birds banded as adults or young. The bands on these gulls lost 3.8% of their initial weight each year. Since these gulls may live over 30 years, bands were liable to be lost after about half way through this period. In Short-tailed Shearwaters with a similar lifespan, a lower rate of band wear means that bands probably do not become unrepresentative until after 20-25 years.

It is rather surprising that band wear should be relatively slight in a species that digs and

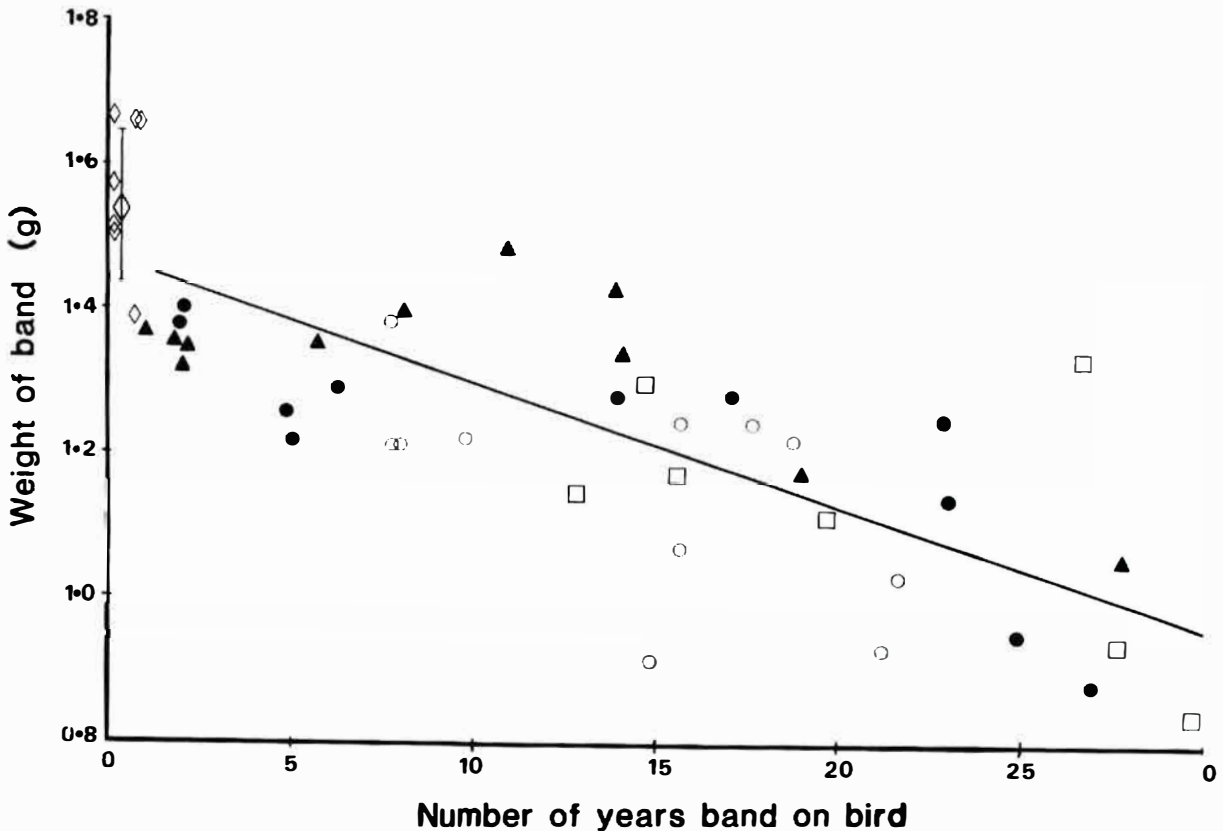


Figure 1. The relationship between the weight of a band and the length of time it was carried by shearwater ($r_{45} = -0.775$). The regression equation was: band weight = $1.472 \text{ g} - 0.017 \times \text{years on bird}$. The symbols represent individuals banded as adult males (●), nestling males (○), adult females (▲), nestling females (□) or nestlings of unknown sex (◇). The larger symbol (◇) and vertical line represent the mean and range of weights of 111 bands recovered from nestlings during commercial harvesting; these values were not included in the regression calculation.

nests in burrows. However, Hatch and Nisbet (1983), examining band wear in three species of terns which nest together, found that the percentage of the initial band weight which was lost each year was not related to the abrasiveness of the nesting substrate. They suggested that the lower rate seen in the Arctic Tern *Sterna paradisaea* (0.9%) was related to its more pelagic habits compared with the more coastal Common Tern *S. hirundo* (4.1%) and Roseate Tern *S. dougallii* (6.3%). The low rate of band wear in shearwaters may also be linked to their pelagic lifestyle, especially in the non-breeding season.

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