

## LONGEVITY IN LITTLE PENGUINS *EUDYPTULA MINOR*

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Little Penguins *Eudyptula minor* live around the mainland and offshore islands of southern Australia and New Zealand (Marchant & Higgins 1990). They are the smallest penguin species extant, breeding in burrows and coming ashore only after nightfall. Most of their mortality appears to result from processes occurring at sea (Dann 1992). The average life expectancy of breeding adult birds is approximately 6.5 years (Reilly & Cullen 1979, Dann & Cullen 1990, Dann *et al.* 1995); however, some individuals in southeastern Australia have lived far in excess of the average life expectancy.

Approximately 44 000 birds have been flipper-banded on Phillip Island (38°31'S, 145°08'E) in southeastern Australia from 1968 to 2004. Up to September 2003, seven banded birds had been recovered more than 20 years after banding (Table 1). Recaptures were made at a number of study sites on the Summerland Peninsula on Phillip Island. The number of birds banded and the frequency of visits to the burrows in these sites varied over the years, resulting in a variable search effort for individuals across time. Visits varied from weekly (1968–1970) to monthly (1971–1984) to every second week during the breeding season and monthly outside the breeding season (1985–2004). Additional study sites were added in 1981 and 1984, and these were visited monthly until 1999 and then every second week during breeding periods and infrequently at other times.

Six of the seven individuals more than 20 years old had been banded as chicks; one had been banded as an adult (minimum age of adult established from breeding status [Dann & Cullen 1990]). The birds were sexed by measurement of bill depths on recapture or recovery (Arnould *et al.* 2004). The sex of individuals was classified as “female” if bill depth at the front of the nares was less than 13.3 mm and as “male” if greater than 13.3 mm (Arnould *et al.* 2004).

Four were females, two were males and one was of unknown sex (Table 1). The oldest of the birds was a male that was banded by the Penguin Study Group as a chick before fledging on Phillip Island on 2 January 1976 in a part of the colony known as “the Penguin Parade.” This bird was not recorded again after initial banding until it was five years old and was found raising two chicks at the Penguin Parade. This individual had a bill depth measurement 12% less than the mean for male penguins from Phillip Island (Arnould *et al.* 2004), but was classified as a male based on the sex of its mates (sexed as females from the presence of cloacal distension following egg-laying or from their bill-depth measurements). During the next 20 years, the bird was recorded breeding 12 times and had at least three mates. It was last recorded incubating eggs on 18 November 2000 when 24 years, 10 months old and was last recaptured (alive) on 22 September 2001 when 25 years, 8 months old. This is a longevity record for the species.

Five of the seven individuals that had survived 20 or more years had had their bands replaced because of excessive wear at an average interval of 12.5 years after the initial banding. Flipper-banding has been shown to have an effect on survival in five of six species of penguins studied (see review in Jackson & Wilson 2002) and is likely to have reduced the longevity of penguins in this study. Despite this problem, original bands remained on two penguins for more than 20 years without noticeable deterioration of the band or obvious detriment to the birds, suggesting that the effects of banding may vary from one individual to another.

There are few published records of longevity in Little Penguins. A penguin chick banded on Bruny Island in Tasmania was found as an adult female at Port Campbell on the Victorian coast and was

**TABLE 1**  
**Records of Little Penguins *Eudyptula minor* initially banded on Phillip Island in Victoria, Australia that have survived 20 years or more<sup>a</sup>**

Banding date	Age at banding	Re-trap/recovery date	Sex	Alive	Re-trap/recovery location	Elapsed time (years)
2 Jan 1976	Chick	22 Sep 2001	M	Y	Phillip Island	25.7
4 Mar 1972	Chick	21 Mar 1994	F	Y	Phillip Island	22.0
20 Dec 1969	Chick	25 Nov 1991	F	Y	Phillip Island	21.9
13 Jan 1975	Chick	11 Apr 1996	F	N <sup>b</sup>	Sandringham, Port Phillip Bay	21.2
11 Dec 1977	Chick	11 Apr 1998	—	N <sup>c</sup>	Phillip Island	20.3
3 Jan 1975	Chick	14 Feb 1995	M	Y	Phillip Island	20.1
16 Dec 1981	Adult	24 Dec 2001	F	Y	Phillip Island	20.0

<sup>a</sup> Re-traps/recoveries are up to September 2003 and refer to the last re-trap/recovery.

<sup>b</sup> Beachwashed.

<sup>c</sup> Killed by a Red Fox *Vulpes vulpes*.

last seen still breeding at the age of 21 years (Reilly 1977). Reilly & Cullen (1979) predicted that an average of 4.7% of Phillip Island penguins could be expected to live another 20 years after they start to breed. Little Penguins breed at two or three years of age (Dann & Cullen 1990), and so these birds would be expected to live at least 22–23 years. So far we have found only three birds of that age but, because many have been banded in areas infrequently visited, the probability of recovery of many of them is low.

Studies of sufficient duration to determine longevity in other species of penguin are uncommon, but two studies suggest that longevity may be greater in larger species. For example, an African Penguin *Spheniscus demersus* was known to be at least 27 years of age, and 22 other African Penguins have survived at least 20 years (Whittington *et al.* 2000). For Emperor Penguins *Aptenodytes forsteri*, based on a mean longevity of 19.9 years, it has been predicted that 1% of eggs would result in a 50-year old adult, (Mougin & van Beveren 1979).

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