## SHORT NOTE

## Longevity record for common diving petrel (kuaka, *Pelecanoides urinatrix*) in New Zealand

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Common diving petrels (kuaka, *Pelecanoides urinatrix urinatrix*) have been monitored on Mana Island, Wellington, since a colony was established there following translocations of chicks in 1997–99 (Miskelly & Taylor 2004; Miskelly *et al.* 2009). In addition to the 118 translocated chicks that fledged, 229 parent-reared chicks and 183 adult diving petrels were banded on Mana Island between 1997 and 2022 (Miskelly & Taylor 2004; authors, *unpubl. data*). During these 26 years, up to 20 breeding pairs per annum have been monitored at the main colony

at Shearwater Point, south-west Mana Island, with occasional monitoring of isolated pairs and subcolonies elsewhere on the island (e.g. Miskelly *et al.* 2004). This monitoring programme has revealed that few diving petrels survive longer than 15 years. Of 246 adult diving petrels handled on Mana Island, only three have exceeded this age to date (Table 1). These three birds comprise 3.1% of the 98 birds handled or recaptured as adults before 2008 (birds that would potentially be 16 years or older by 2022).

**Table 1.** Brief histories of the three longest-lived common diving petrels (kuaka, *Pelecanoides urinatrix urinatrix*) recorded on Mana Island, Wellington. Ages are based on an estimated October hatch date, with a minimum age of first return of 10 months. D-154390 & D-154392 were both translocated to Mana Island from North Brother Island the day after they were banded. D-178698 raised a chick to fledging in 2022.

Band no.	Sex	Date banded	Banded as	Last recorded	Age
D-154390	Male	26 Nov 1998	Chick	21 Oct 2020	22 y 0 m
D-154392	Female	26 Nov 1998	Chick	16 Nov 2015	17 y 1 m
D-178698	Male	17 Mar 2005	Adult	5 Dec 2022	19 y 2 m +

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The longest-lived individual was a male (band number D-154390) that was translocated as a chick from North Brother Island on 27 November 1998, and which fledged from Mana Island on the night of 16 December 1998. He was first recorded back on Mana Island on 26 February 2000, and remained faithful to the same burrow for 21 consecutive breeding seasons. For the first 16 years he was paired with D-154392 from the same cohort of translocated chicks (Table 1). These two long-lived birds raised ten chicks together, five of which were recorded back at the colony as adults. Following loss of his first mate, D-154390 paired with three different females over the following five years, and last raised a chick in 2019, when 21 years old. He was last recorded at the colony on 21 October 2020 (at 22 years old), when his final breeding attempt failed at the egg stage when a pair of sooty shearwaters (Ardenna grisea) took over the breeding burrow.

During his lifetime, D-154390 incubated an egg in 21 consecutive years, cared for 16 chicks, and fledged 13 of them. Six of his offspring were recorded back on Mana Island as adults, with five of them known to have bred (two of them bred at least 11 times each). His total number of descendants known to have fledged by the end of 2022 was 43 (F1 x 13, F2 x 19, F3 x 11). At least five of his descendants were present and bred in the colony in 2022. These figures are minima, as not all diving petrel burrows on Mana Island are monitored. All petrel species produce a maximum of one chick per annum, and so the major determinant of an individual's lifetime reproductive success is its lifespan (Ollason & Dunnet 1988; Wooller *et al.* 1989; Brooke 2004).

The previous oldest age for a common diving petrel that we are aware of in New Zealand was a bird banded as an adult on Motuotau Island, Bay of Plenty, on 24 May 1994, and found dead on nearby Waihi Beach on 22 July 2011, at a minimum age of 18.5 years old (Te Papa specimen OR.029576). After submitting this note, we were informed of a common diving petrel (subspecies chathamensis) recaptured on Whenua Hou / Codfish Island in October 2022, nearly 19 years after it was banded as an adult in November 2003, making it at least 20 years old (Johannes Fischer, pers. comm.). The oldest common diving petrel recorded in the French bird banding scheme was a bird of subspecies exsul recovered on Île Mayès, Îles Kerguelen, in February 2019, 29 years after it was banded there as a likely juvenile in April 1990 (Karine Delord & Aymeric Fromant, pers. comm., 29 November 2022), making it at least 29 years old. The next oldest birds in the Southern Seabird Demographic Database, Chizé, were recaptured 22 and 20 years after they were banded as adults; these three long-lived birds represent 0.09% of the 3,283 common diving petrels banded on the island, of which 2.5% reached a minimum 16 years of age (Karine Delord, *ibid*).

Compared to other petrel species, diving petrels start breeding at a young age, and have comparatively short lives. Most diving petrels on Mana Island breed at 2-years-old, and several have bred at 1-year old (Miskelly & Taylor 2007; authors, *unpubl. data*). In contrast, most genera of procellariids start breeding when four or more years old (Croxall 1981; Warham 1990; Brooke 2004), and many species have been recorded at more than 36 years of age (Table 2). The longevity of procellariids requires long-term commitment to demographic monitoring programmes to reveal their lifespans, often exceeding the working careers and funding streams of individual scientists (Ollason & Dunnet 1988; Wooller *et al.* 1989, 1992).

**Table 2.** Longevity records from nine genera of procellariid petrels. Birds listed with '+' ages were banded as adults or independent juveniles, and so their estimated ages are minima based on minimum ages of return for each species. ABBBS 2022 = Australian Bird & Bat Banding Scheme (https://www.environment.gov.au/cgi-bin/biodiversity/abbbs/ abbbs-search.pl), accessed: 25 November 2022.

Common name	Scientific name	Max. age (years)	Reference
Northern giant petrel	Macronectes halli	$40^{1}$	ABBBS 2022
Northern fulmar	Fulmarus glacialis	40+	G.M. Dunnet in Brooke 1990
Cape petrel	Daption capense	40+	Sagar 2022
Grey-faced petrel	Pterodroma gouldi	41+	Taylor 2022
Fairy prion	Pachyptila turtur	24+2	Graeme Loh, pers. comm.
Westland petrel	Procellaria westlandica	37+	Waugh & Bartle 2022
Short-tailed shearwater	Ardenna tenuirostris	38 <sup>3</sup>	Szabo 2013
Manx shearwater	Puffinus puffinus	55+	Clark <i>et al</i> . 2004
Common diving petrel	Pelecanoides urinatrix	29+	Karine Delord, pers. comm.

<sup>1</sup>Banded as a chick; Amelia Cook, ABBBS, pers. comm. 25 November 2022.

<sup>2</sup>Likely an underestimate, as at least six birds from the same (initial) cohort of 86 birds were alive in 2022.

<sup>3</sup>ABBBS has a bird recovered 48 years after it was banded; however, as it was a skeleton/dried out corpse, its date of death is uncertain.

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