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SHORT NOTE

Re-laying following egg failure by common diving petrels (*Pelecanoides urinatrix*)

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The c.130 species of albatrosses and petrels (Procellariiformes) all lay a single egg during each breeding attempt (Marchant & Higgins 1990; Warham 1990). There are few documented instances of members of the order laying a replacement egg following egg failure, and all but 1 of these examples has been from storm petrels (Hydrobatidae). Boersma *et al.* (1980) reported 29 nests of fork-tailed

storm petrels (*Oceanodroma furcata*) where 2nd eggs were laid an average of 3 weeks after removal of the 1st egg (from a sample of 36 nests from which eggs were removed). In 1 nest, the same female laid a 3rd egg after the 2nd egg was removed. Both members of the pair were marked at only 1 of the 29 nests where replacement eggs were laid so the parentage of the replacement egg could not be confirmed, but at least 1 of the mates remained the same at a further 11 nests. Other examples of storm petrels apparently re-laying following egg failure include: British storm

petrel (*Hydrobates pelagicus*), $n = 2$ (Gordon 1931; David 1957); Leach's storm petrel (*O. leucorhoa*), $n = 27$, though only 1 instance was well-documented (Gross 1935; Wilbur 1969; Morse & Buchheister 1979); Madeiran storm petrel (*O. castro*), $n = 8$ (Allan 1962; Harris 1969); and Wilson's storm petrel (*Oceanites oceanicus*), $n = 1$ (Beck & Brown 1972).

The only documented instance of a member of the family Procellariidae (*c.*75 species) re-laying following egg failure was of a Manx shearwater (*Puffinus puffinus*) (Harris 1966), although Harris (1969) referred to another unpublished report of a Manx shearwater re-laying. Robey & Ricklefs (1983, 1984) suggested that subantarctic diving petrels (*Pelecanoides urinatrix exsul*) and South Georgian diving petrels (*P. georgicus*) may be able to re-lay if they lose an egg early in incubation. Their suggestion was based on the spread of hatch dates recorded on Bird Island, South Georgia, and not on following identified individuals. Their comments notwithstanding, we are unaware of any reported examples of re-laying by diving petrels.

Here we report 2 instances of common diving petrels (*P. urinatrix urinatrix*) laying replacement clutches during the 2005 breeding season, at colonies 500 km apart.

Mana I, Wellington Diving petrels have recolonised Mana I Scientific Reserve (217 ha; 41°06' S 174°46' E) off the west coast of Wellington, southern North I, New Zealand since 1997; 2 colonies have become established by translocations of chicks from colonies elsewhere, by acoustic attraction, and by natural recolonisation (Miskelly & Taylor 2004; Miskelly *et al.* 2005; Miskelly & Taylor 2007). On 13 Sep 2005 CM accidentally damaged a freshly-laid egg in Burrow 32 while capturing the breeding pair to check their band numbers. The female of this pair was previously unbanded, but the male was the same bird that had used the burrow since its discovery in 2002. This was the 1st egg recorded at the colony in 2005. The banded male was in the burrow when it was next checked on 9 Oct 2005, and the banded female was incubating a 2nd egg in the burrow on 6 Nov 2005.

The burrow was empty on 2 Dec 2005, so this 2nd breeding attempt also failed. No other diving petrels were found near this isolated burrow in 2005. The egg found on 6 Nov was the latest recorded at the colony in 2005. The only other egg present on 6 Nov was hatching on that date, and was laid by an adult female mated to a 1-year-old male (Miskelly & Taylor 2007). The minimum interval between the 2 eggs laid in Burrow 32 was about 4 weeks, but it could have been as long as 7 weeks.

Bethells Beach, Auckland Diving petrels have been found every year since 1989 on Kauwahaia Island (0.7 ha; 41°06' S 174°46' E) off Bethells Beach, on the

western coast of Auckland, North I, New Zealand, but breeding was not recorded on the island until the 2004 season. The pair in Burrow 1 was captured for the 1st time and banded on 12 Jul 2005. On 22 Aug 2005 the banded male was on a fresh egg, and the banded female was captured at the burrow entrance; her greatly extended cloaca indicated that she had laid recently. The egg (labelled with permanent marker pen, GT) was incubated intermittently at night until at least 29 Aug, but was left unattended during the day. This egg was found abandoned in the burrow during the day when GT visited next on 28 Nov 2005. It contained a tiny embryo, and had apparently been abandoned very early in incubation. Also on 28 Nov, a new burrow, not present in Aug, was found to have been excavated 30 cm from the previous entrance, and with its nest chamber connected to the old nest chamber by a short tunnel. The new chamber contained a chick estimated to be about 28 days old. Both birds of the banded pair from Burrow 1 were found accompanying the chick (which had just been fed) that night. We estimate that the chick hatched from an egg laid *c.*10 Sep, i.e. *c.*3 weeks after the original egg was laid.

These records confirm that diving petrels (*Pelecanoides*) can lay again following failure of an egg.

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