

## SHORT NOTE

### Nesting period of the northern New Zealand dotterel (*Charadrius obscurus aquilonius*)

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The breeding season of the northern New Zealand dotterel (*Charadrius obscurus aquilonius*) is protracted. Marchant & Higgins (1993) state that eggs are laid from late August to early January, with 1st clutches usually laid in late August or September and eggs rarely laid after mid-January. However, there are few actual dates of 1st or late clutches recorded in the literature. McKenzie (1950, 1952, 1953) recorded 1st clutches at Mataitai, South Auckland (36°57'S, 175°06'E) on 11 September 1949, 10 September 1950, and 30 August 1951; he noted that in 1951 the 1st egg must have been laid on 29 August at the latest (McKenzie 1953).

We collected 1187 nest records from various sources and present their distribution by month; we also report 3 instances of very early nesting and 1 of late nesting that extend the known nesting period of the species.

Dates of nests were from: (a) Classified Summarised Notes and Annual Locality Reports of *Notornis* ( $n=110$  between 1940 and 2000); (b) the Nest Record Scheme of OSNZ ( $n=491$ , 1937-2000 except 1997-99, for which the cards are missing); (c) unpublished banding records of H.R. McKenzie, S.M. Reed, and G. Peterson ( $n=50$ , 1950-1981); and (d) unpublished records of JED ( $n=536$ , 1984-2001). Northern New Zealand dotterels may lay up to 3 replacement clutches in a season (Marchant & Higgins 1993). All our sources almost certainly include 1st and replacement clutches. The distribution of nests by month in this sample is shown in Fig. 1. The nesting peak covers the 3 months October-December, which together account for

82.5% of the records. Nests are also routinely found in September (8.3% of records) and in January (8.1%). August nests constitute 0.9% of the sample and February nests 0.2%.

We record here 3 very early nests (1 in 1998 and 2 in 2000) and 1 late nest (1996/97) not included in Fig. 1. On 11 September 1998, a newly-hatched chick was found in a nest at Mangawhai, North Auckland (36°06'S, 174°36'E) (Katrina Hansen pers. comm.); allowing a laying period of 7 days and incubation of 28-32 days (Marchant & Higgins 1993), this clutch would have been initiated between 4 and 8 August. At the time, this was the earliest initiation date that we had recorded.

In 2000, we monitored a pair of dotterels on the western side of Shoal Bay, Auckland (36°48'S, 174°46'E). On 27 August we located a nest containing 2 eggs, with a 3rd egg (apparently ejected) nearby. On 2 September at 1700 h both eggs were pipping and chicks could be heard calling inside the eggs; on 3 September at 1200 h 2 newly-hatched chicks were immobile in the nest. Allowing a laying period of 7 days and incubation of 28-32 days (Marchant & Higgins 1993), the clutch would have been started between 25 and 29 July. Also in 2000, a chick estimated to be 2-3 days old was seen at Auckland International Airport (37°01'S, 174°47'E) on 4 September (Ray Clough pers. comm.). The clutch size in this instance was unknown but was almost certainly 2 or 3, so the initiation date must have been within a few days of the Shoal Bay nest.

The latest nest that we have exact dates for was at Omaha Spit, North Auckland (36°20'S, 174°47'E), during the 1996/97 season. The 2 eggs were laid on 22 and 25 January 1997 and hatched on 23

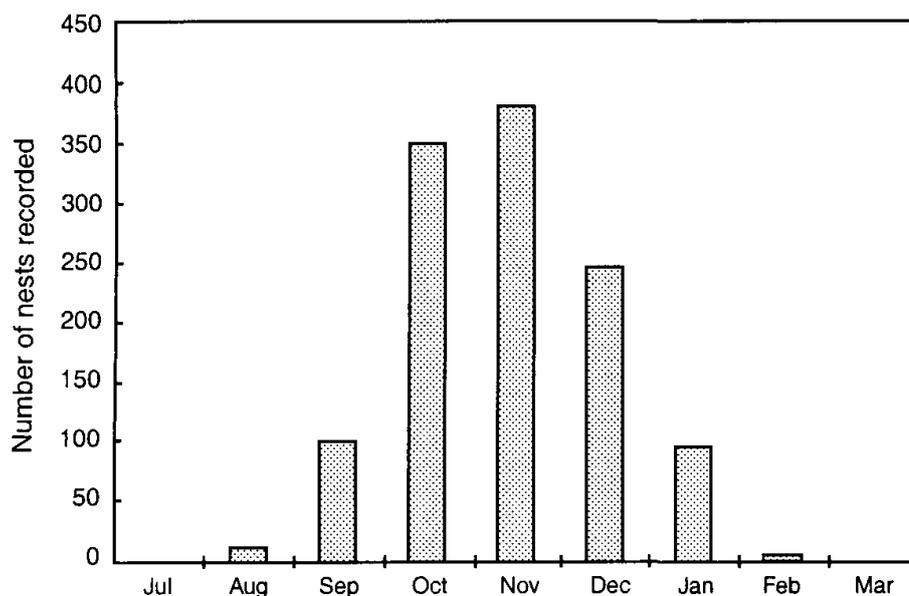


Fig. 1 Distribution of 1187 northern New Zealand dotterel (*Charadrius obscurus aquilonius*) nests by month. See text for data sources.

February; the chicks were present on 10 March but disappeared on 13 March when a storm caused large seas to wash over the spit.

These records extend the known nesting period for northern New Zealand dotterels, showing that they can lay over a period of nearly 6 months (from late July to late January) and that active nests can be present for nearly 7 months. Had the chicks from the Omaha Spit nest survived, and assuming a fledging period of 36-46 days (Dowding *et al.* 1999), they would have fledged in early April; in exceptional circumstances therefore, the entire breeding season may extend for a little more than 8 months.

Recent analyses of data from the Northern Hemisphere show a close correlation for many species (including shorebirds) between laying date and late winter / early spring temperatures, with birds breeding earlier when temperatures are above average (e.g., Kruk *et al.* 1996; Crick & Sparks 1999). It has been suggested that early warm weather results in the food needed for breeding being available earlier (Crick *et al.* 1997; McCleery & Perrins 1998). We note that mean winter temperature in Auckland in 2000 (the year two nests were initiated in late July) was 12.4°C, 1.3°C above average and the 2nd warmest since records began in 1867 (NIWA 2000). The winter of 1998 (when 1 nest was known to have been initiated in the 1st week of August) was the 3rd warmest since records began (S. Burgess, NIWA, pers. comm.). More data are clearly required, but our records raise the possibility that some northern New Zealand dotterels may nest earlier in years when winter or early spring are warmer than normal.

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