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SHORT NOTE

Breeding success of northern New Zealand dotterel (tūturiwhatu, *Anarhynchus obscurus aquilonius)* and variable oystercatcher (tōrea pango, *Haematopus unicolor)* at an Auckland coastal site 2018–2025

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The northern New Zealand dotterel (tūturiwhatu, *Anarhynchus obscurus aquilonius*) and variable oystercatcher (tōrea pango, *Haematopus unicolor*) are two endemic shorebirds that are classified as Threatened (Nationally Increasing) and At Risk (Recovering) respectively (Robertson *et al.* 2021). The population estimate for tōrea pango is 6000–7000 individuals (Dowding & Chamberlin 2025) and for tūturiwhatu was *c.* 2700 in 2023 (Dowding *et al*. 2024). Tūturiwhatu numbers have increased in recent decades in large part due to the efforts of volunteers who manage coastal breeding sites by undertaking pest control, protecting breeding sites, and educating the public about the threats that some human activities pose to ground-nesting birds (Dowding 2020).

Shorebird nest monitoring was part of a long-term study of a local avifauna at a coastal site on Auckland's North Shore undertaken to describe, protect, and promote the value of the area's avifauna to decision makers and the general public. For example, detailed distributional and abundance data for a wide range of species were used in a successful appeal against a proposed housing development and, more recently, to persuade Auckland Council to employ contractors to live-trap cats. Regular updates about when birds are breeding, number of chicks hatched, and how many fledge are provided to the public through the Friends of Okura Bush website (https://okurabush.org.nz/).

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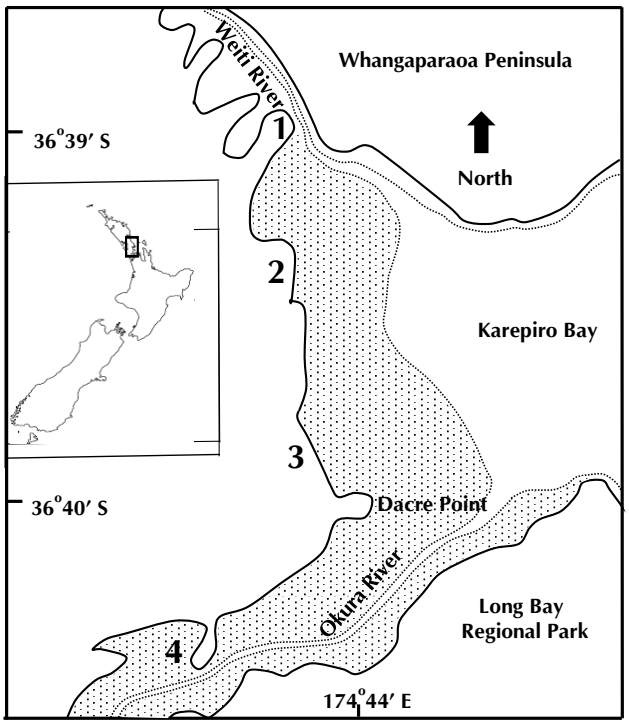

Figure 1. Locality map of the study area. 1 = Weiti chénier, 2 = coast between Weiti and Karepiro, 3 = Karepiro Beach, 4 = Okura chénier. Stippled area represents the approximate extent of tidal mudflats.

Tūturiwhatu and tōrea pango nest monitoring was carried out between 2018 and 2025 along a 4 km stretch of coastline on Auckland's east coast between the urban centres of Long Bay and the Whangaparaoa Peninsula (Fig. 1). This locality is an important part of Auckland's green infrastructure and provides habitat for a range of endemic and native birds. Habitat diversity is high and includes chéniers, a brackish lagoon, saltmarsh and wetlands, cliffs and rock platforms, sandy beaches and dunes, small creeks, and extensive mudflats found between the confluence of the Weiti and Okura rivers. Most of this coastline is under the stewardship of Auckland Council, which recognised its biodiversity value by designating it as a Significant Ecological Area in its 2016 Unitary Plan, banning dogs at all times and, since February 2023, live-trapping cats on the Weiti chénier (Fig. 1: site 1) and Karepiro Beach (Fig. 1: site 3). Volunteer trappers have carried out pest and weed control throughout the area since 2014.

As winter flocks of tuturiwhatu and tōrea pango disperse at the end of winter and the beginning of spring, several pairs take up breeding territories within the study area, where their breeding success was monitored between 2018 and 2025 (Table 1). Tūturiwhatu bred at sites 1, 3, and 4 while tōrea pango also bred along the rocky shore at site 2 (Fig. 1). Three of the tūturiwhatu were identifiable by either a unique colour band combination or 3-letter flags, allowing determination of breeding site fidelity. YR-OM is a captive-reared female who is a now 27 years old and has bred at site 1 for at least 10 years and probably all her life, only being recorded away from this site once (John Dowding, *pers. comm.*). The sites were visited a total of 133 times during the study period, generally monthly outside the breeding season (March–August) and fortnightly during the breeding season. First clutches were usually laid between the end of October and early December, although in 2023 a pair laid in mid-September. Nests were monitored and the number of chicks present recorded each visit. Chicks were categorised as fledged when they could fly.

Breeding success for both species varied from year to year, especially for tūturiwhatu (Table 1) which had consistently larger 95% confidence intervals around the number of chicks fledged, number of pairs breeding, and productivity. Overall, the average productivity for tōrea pango (0.87, range 0–2) was similar to that reported by Michaux (2013) and Dowding & Chamberlin (2025). Average tūturiwhatu productivity (0.60, range 0–1.4) lies within the range reported for Coromandel (Dowding 2006; Ogden & Dowding 2013) and Bay of Plenty (Wills *et al*. 2003) populations, but lower than that reported by Neate *et al*. (2011) for mammalian predator-free Motuihe Island in the Hauraki Gulf.

Unsurprisingly, the number of tūturiwhatu chicks fledged was in part a function of the number of breeding pairs. For the four years when nesting was not affected by northeasterly storms, there is a strong positive correlation between the number of nesting pairs and number of chicks fledged ($R^2 = 0.995$). All other things being equal, the more breeding pairs there are the greater the potential to produce chicks. The availability of suitable nesting sites can limit the number of breeding pairs. For example, tidal scouring of the Okura chénier (site 4) over the 2024 winter resulted in erosion and the loss of this site as suitable breeding habitat. The dynamic nature of the coast here is such that potential breeding sites will vary with time. However, the major factors influencing productivity were storm surges that washed out nests, and predation of young or adults. All three tūturiwhatu breeding sites were susceptible to inundation during king tides or when northeasterly storms coincided with nesting; these were major causes of nest loss. For instance, in the last breeding season (2024-25) all five nesting attempts by the two pairs of tūturiwhatu on Karepiro Beach were washed out. Predation was a factor in the loss of two nests with a swamp harrier (kāhu, *Circus*

Table 1. Results of variable oystercatcher/tōrea pango and northern New Zealand dotterel/tūturiwhatu breeding over a 7 year period. Averages with 95% confidence intervals.

	Variable oystercatcher/tōrea pango			NZ dotterel/tūturiwhatu			
Season	**Fledged**	**Pairs**	**Productivity**	**Fledged**	**Pairs**	**Productivity**	**Comments**
2018/19	0	3	0.00	1	6	0.16	NE storms during breeding season
2019/20	4	5	0.80	1	5	0.20	NE storms during breeding season
2020/21	2	4	0.50	1	2	0.50	Covid restrictions limited number of visits
2021/22	4	4	1.00	2	3	0.67	Covid restrictions limited number of visits
2022/23	6	3	2.00	6	5	1.20	
2023/24	3	4	0.75	11	8	1.40	
2024/25	4	4	1.00	0	5	0.00	NE storms during breeding season Probable cat predation, kahu predation
Average	3.3	3.9	0.87	3.1	4.9	0.60	

approximans) recorded on a trail camera at one nest and the body of an adult (probably killed by a cat) found at another nest. This latter example was within a recently planted native area in the Weiti housing development. It is becoming increasinglly common for tūturiwhatu to nest at inland sites in the Auckland region (Dowding 2020). Given the susceptibility of Karepiro Beach nest sites to inundation, use of inland breeding sites may be beneficial for the local population.

The breeding population of tōrea pango was relatively stable and their average productivity was less variable. The data presented by Dowding & Chamberlin (2025) included details of breeding on the Weiti chénier (site 1) during the 1994-95 to 1998-99 seasons. Three pairs used this site during their study period. Only a single pair now regularly nests there; however, two other pais have taken up territories along the coast immediately south of the chénier. Dowding & Chamberlin (2025) reported an average productivity of 0.83 for these three pairs, which was the same as the average productivity recorded in this study. Dowding & Chamberlin's (2025) average productivity across all sites was 0.42 compared to 0.87 in this study, perhaps an indication of the effectiveness of local management efforts.

While the failure of the tūturiwhatu pairs to produce any fledglings in the 2024-25 season was particularly disappointing, it should be viewed in context. Tūturiwhatu typically nest just above the mean high tide mark, where nests are vulnerable to inundation (a factor in three of the seven seasons), and they and their eggs and young have many native and introduced predators. Their breeding strategy and long-term survival is based on the longevity of individual birds and the ability of females to lay multiple clutches each season. At this site the maximum number of clutches recorded was three with a maximum of three eggs per clutch. When conditions are suitable, tūturiwhatu are capable of a rapid increase in numbers, which offsets poor breeding years. According to Dowding & Davis (2007) the threshold for successful management of this species is an average productivity of 0.50, which was exceeded by the annual average in this study (0.60). Continued management of mammalian predators and minimisation of human disturbance are important factors in maintaining this success. However, the expected negative effects of climate change on both sea-level rise and the frequency and severity of storms during the breeding season will be harder to mitigate, and may degrade these sites as breeding habitat.

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