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SHORT NOTE

Breeding records for variable oystercatchers (*Haematopus unicolor*) at Long Bay Regional Park and Okura Estuary, Auckland

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The variable oystercatcher (*Haematopus unicolor*) is an endemic shorebird that nests on sandy beaches, shell banks, and rocky shores around the coasts of New Zealand (Heather & Robertson 1996). The national population has grown steadily from 2000 birds in 1970 to an estimated 6000 birds in 2006 (Bell 2010). This note reports the breeding success of a local population of *H. unicolor* on the northern fringes of Auckland City at Long Bay Regional Park and an adjacent site on the Okura River.

Up to 7 territories were monitored over 4 years between the 2006/7 and 2011/12 seasons. Two territories were located on a shell bank covered in low coastal scrub and with mangroves along the western edge. Nests were simple scrapes located just above the high tide mark amongst the *Salicornia* and driftwood debris. Five territories were located on rocky shores. Two of the five nest sites were on large rock slides which both protected them from the highest tides and provided the sitting bird with clear views of any approaching danger. All other nests were located on rock ledges at the base of cliffs apart from one nest made on top of a fallen pine in the 2011/12 season. One of the shell bank teritories was occupied by a banded bird fitted with a unique colour band combination in each of the 4 years this territory was monitored. No other bird was banded, but one female laid distinctive eggs which lacked pigmentation, and so was probably the same bird in each of the 2 seasons this territory was active.

The pairs in this population were loosly associated with their territories throughout the year, but took up permenant possession in Sep or Oct prior to breeding. Breeding results are summarised in Table 1. Eggs (1-3, average 2.0, n = 16) were first laid during Nov and any early nesting failure was usually followed by a replacement clutch. One bird incubated the eggs while the second bird fed and maintained a watch for potential intruders. The sitting bird unobtrusively vacated the nest when an intruder approached and only showed itself when some distance away from the nest site. Both birds then approached the intruder whilst uttering loud alarm calls and performing distraction displays, such as trailing a wing, to draw the intruder away from the nest site. The banded bird in territory 1 attacked humans who approached the nest or young.

By Dec the first clutch of eggs hatched and the adults and young abandoned the nest site. The shell bank pair hid their chicks in the scrub and mangroves and the young birds were rarely observed until they were fully feathered and feeding in the open with

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Table 1. Summary of breeding records of variable oystercatchers nesting at Long Bay Regional Park and the Okura Estuary in relation to location of nest site.

Location of nests	Mean clutch size	Mean brood size	Number successful nests
Shell bank	2 (n = 7)	1.4 (n = 5)	4
Rocky shore	2 (n = 9)	1.2 (n = 9)	6

their parents. The pairs on the rocky shore remained on their territory and the young were usually visible feeding or resting on the wave cut platform when the tide was out. As the chicks matured they became more independent, but kept within range of the adults. The light stone-coloured down of the young chicks gradually darkened and was replaced by feathers within 2-3 weeks. Their beak, which was uniformly dark at birth, gradually became orange, but the legs remained grey and did not attain the coral colour of the adults before the young birds dispersed.

Nest failure rates on the shell bank and within the boundaries of the Regional Park were broadly similar (43% and 40%, respectively) which was surprising given that dogs, which are banned from the Regional Park, are a potentially major predator of eggs and young at the shellbank. Other predators include mustelids (stoat [*Mustela erminea*] tracks were observed once at the northern end of the rocky shore), black-backed gulls (*Larus dominicanus*), and harriers (*Circus approximans*). From my observations, predation rates were greatest at the egg stage and when the chicks were newly hatched, but once the young were able to leave the nest mortality rates declined (Table 1). This is in contrast to the study by Rowe (2008) where predation of young away from the nest was much higher. Breeding success rates (number of young fledged per pair) reported in the literature range from between 0.40 and 0.54 (Hansen 2005), 0.47 (Rowe 2008), 0.63 (Marchant & Higgins 1993), to 0.88 (Fleming 1990). In this study, a total of 18 young were fledged from 17 nesting attempts giving an estimated breeding success rate of 1.06 fledged young per pair. Comparisons between reported breeding success rates may not be comparable because of different definitions of fledging. Also, the number of observations in this study is small. A breeding success rate of 1.06 young fledged per pair is in excess of that needed to account for the reported rate of population growth which indicates that there is probably significant mortality of young birds before they reach breeding age.

Bell (2010) discussed the possibility that the availability of suitable breeding sites may become a limiting factor impacting on the continued expansion of *H. unicolor* populations. Several observations indicate that nest site availability may be limited for the population in this study. In the 2010/11 season there were 2 nest sites established within 15 m of one another on the shell bank. This was quite unusual because pairs are aggressively territorial, but in this instance the second pair did not attempt to nest until the first pair had hatched their young and were not tied so closely to the nest site. In addition, the northern- and southern-most territories on the rocky shores produced only single egg clutches and no young in 4 nesting attempts. It would appear that these sites may be only marginally viable for nesting. These nests may, for example, be more prone to predation or destruction during storms or big tides. There have been several new rock falls in the northern-most rocky shore territory and it will be interesting to see if any of these are used as nest sites in the future, and whether this improves the breeding success of the resident pair. Karepiro Bay between Dacre Point and Dacre Cottage could also provide suitable nesting territories in this area, but dogs would need to be excluded and potential nesting areas protected from disturbance.

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