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Birds of Motuhoropapa I, Noises Group, Hauraki Gulf, North Is, New Zealand

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Abstract Bird observations made during visits to Motuhoropapa Island between Nov 2004 and Sep 2006 have been compiled and compared to a bird list published in 1985. Variable oystercatcher (*Haematopus unicolor*) and paradise shelduck (*Tadorna variegata*) were recorded on the island for the 1st time, and tui (*Prosthemadera novaeseelandiae*) and morepork (*Ninox novaeseelandiae*) were recorded breeding. The island has now been free of introduced rats since 2002; the implications of the absence of rodents for birds on the island are discussed.

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INTRODUCTION

Introduced mammal species are considered one of the major threats to New Zealand bird species (O'Donnell 1996) and much time, money, and effort have been invested in removing introduced mammals from islands (Towns & Broome 2003). New Zealand has a long history of applied research on introduced mammal species and the islands of the Noises Group in the Hauraki Gulf have been studied over many years (e.g., Moors 1985; Russell *et al*. 2005). The Noises Group consists of 4 main islands (Otata, 21.8 ha; Motuhoropapa, 9.5 ha; Maria, 2.0 ha; and David Rocks, 2.0 ha) and a number of islets, each <1 ha. The group lies *c*.24 km north-east of Auckland (360°42′S, 174°58′E ; Fig. 1). All the islands are forested and they are considered to have some of the best indigenous vegetation cover of any of the inner Gulf islands, with a flora consisting of plants typical of both inner and outer gulf islands (Cameron 1998). The Noises islands were visited regularly between 1977 and 1983 during a study of Norway rats (*Rattus norvegicus*) on the islands, particularly Motuhoropapa I (Moors 1985). Cunningham & Moors (1985) collated bird observations made during this time, and combined them with unpublished earlier reports dating back to the 1930s.

The island has had at least 6 invasions of Norway rats between 1981 and 2002 but has been free of rats since 2002 (Russell *et al*. 2005; Clout & Russell 2006). In 2004 Motuhoropapa once again became the focus of a study investigating the behaviour of individual radio-collared male Norway rats that were sequentially released, tracked, and removed (Russell *et al*. 2005; authors' unpubl. data). Ornithological observations were made between Nov 2004 and Sep 2006, and these are recorded here as a complement to the 1985 bird list (Cunningham & Moors 1985). Bird observations from Otata I were provided by the Neureuter family. These observations were made when the family was in residence on the island in Dec and Jan each year.

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SPECIES OBSERVATIONS

Tui *Prosthemadera novaseelandiae*

Tuis were recorded as resident on Motuhoropapa in the sampling periods described in Cunningham & Moors (1985) but breeding was not recorded. Tuis were observed regularly in Oct 2005 and were heard calling late at night and again at dawn from the same sites, suggesting that they were resident. In Feb 2006, 2 juvenile tuis, identified by their browner colouration (Heather & Robertson 1996), were observed near the hut. Juvenile tuis in Auckland remained near their nest during their 1st summer after fledging (Bergquist 1985) so the presence of juveniles on Motuhoropapa I suggests that they were probably hatched on the island; this is the 1st breeding record for tui on Motuhoropapa I.

During Feb and Mar 2006, the juvenile tuis were seen regularly around the hut and drinking from a dripping tap on the water tank. Tuis were observed

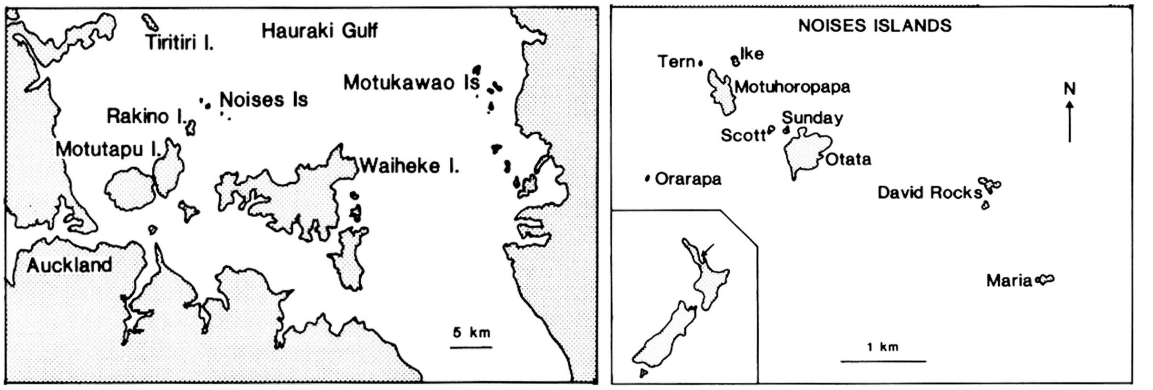

Fig. 1 Location of the Noises and Motukawao Is in Hauraki Gulf, North Is, New Zealand, and map of the Noises group (From Moors (1985), with permission).

feeding on kohekohe (*Dysoxylum spectabile*) flowers and five-finger (*Pseudopanax arboreus*) fruit in Mar 2006. The tui population on neighbouring Rangitoto I increased following the eradication of brush-tailed possums (*Trichosurus vulpecula*) and wallabies (*Macropus bennetti*), perhaps in response to greater abundance of flowers on the island (Spurr & Anderson 2004). maturation The forest trees on Motuhoropapa I have recovered in the 20 years since browsing mammals were removed and the intensity of flowering has probably increased accordingly: the kohekohe flowered heavily there in 2006. There is a large, permanent breeding population of tuis on Otata I.

North Is kaka *Nestor meridionalis*
North Island kaka have been recorded only once previously on Motuhoropapa , in 1962 (Cunningham & Moors 1985). On Oct 17 and Oct 18 2005 kakas flying over the island were heard calling at *c*.0200, but were not observed on the island during the day. The birds possibly came from a population established in Man-O-War Bay on Waiheke I (M. Lee, *pers. comm*.). Kaka visit Otata I each summer but are not resident there.

Morepork *Ninox novaeseelandiae*
Cunningham & Moors (1985) recorded moreporks twice on Motuhoropapa I, in Apr 1978 and in Apr 1979, though they did not record breeding. On Oct 16 2005 a morepork nest containing 4 eggs was found near Sandy Point, in a scraped-out hollow under a pohutukawa (*Metrosideros excelsa*) tree, and *c*.50m from a Norway rat den. The sitting bird left the nest when approached but returned shortly afterwards. Juveniles (identified by their "scruffy" appearance and remnant down) were seen near the nest, and on the opposite side of the island near the hut in Feb 2006. These observations suggest that young fledged successfully from the nest found in Oct. Moreporks can breedi on small islands (East & Williams 1984; Diamond 1984; Anderson 1992) so the presence of breeding moreporks on Motuhoropapa I is not surprising. Invertebrates make up most of morepork diet (Haw *et al*. 2001), so a combination of forest maturation and the absence of predators may have led to higher numbers of invertebrates on Motuhoropapa I, in turn favouring morepork breeding success. Moreporks are seen regularly on Otata I and may be resident there.

Variable oystercatcher *Haematopus unicolor*
Cunningham & Moors (1985) did not record variable oystercatchers on Motuhoropapa I. In Oct 2005, alarm calls attributed to a variable oystercatcher were heard at night near the southern point of the island. A single bird was seen flying between Motuhoropapa I and Ike Islet in Mar 2006 and a bird was heard calling at Sandy Point in the same month. Variable oystercatchers have bred on Otata and Scott islands since at least the mid-1990s. They have been reported recently in larger than usual numbers at key sites monitored by the Ornithological Society of New Zealand (Adrian Riegen, *pers. comm*.) and may be increasing on the Hauraki Gulf islands too.

Paradise shelduck *Tadorna variegata*
Paradise shelducks had not been previously recorded on any island of the Noises group (Cunningham & Moors 1985). On 25 Nov 2004 a lone female was observed in bushes on Ike Islet. On 19 Apr 2005, 12 were recorded on the Knob, an open peninsula on the eastern side of the island. A pair was also recorded during a visit to the island on 21 Sep 2005. Paradise shelducks frequent pasture (Barker *et al*. 2005) so the habitat on Motuhoropapa is unlikely to remain suitable for them as the forest regenerates. The birds may have alighted on the Knob to rest during transit between feeding areas in the Hauraki Gulf, and their presence may simply represent a general increase in the species in the northern North Is (Robertson *et al*. 2007).

Grey-faced petrel *Pterodroma macroptera gouldi*
Cunningham & Moors (1985) reported *c*.75 petrel burrows on Motuhoropapa I, grouped in small colonies of 10-20 burrows. Most of these colonies were still present, and grey-faced petrels were heard commonly on the island during their breeding season. Between 11 and 19 Sep 2006, 34 adults were banded on Motuhoropapa I as part of a Department of Conservation study (led by Graeme Taylor) of these birds in colonies around the North Is. Birds were either captured by hand from the ground after landing or removed from burrows. Between 15 and 17 Nov 2006, 3 further adults and 4 chicks were banded and other chicks were heard calling from inaccessible burrows. The number of burrows (*c*.75) and their occupancy rate do not appear to have changed significantly since the work by Cunningham & Moors (1985). No previously _ banded birds were found on either occasion despite the presence of >400 banded birds on Tiritiri Matangi I, only 10.3 km to the northwest I (M. Galbraith, *pers comm*.). Grey-faced petrels make long foraging trips and banded, unpaired females are found commonly at other colonies other than where they were banded (G. Taylor, *pers. comm*.), so birds from elsewhere will probably eventually be found on Motuhoropapa I. A study of the movements of petrels between colonies, particularly the remnant populations on small coastal islands, would provide valuable information on their population.

Other species
Members of the Auckland Botanical Society visited the island in 1993 (Cameron 1998) and recorded fantail (*Rhipidura fuliginosa placabilis*), grey warbler (*Gerygone igata*), silvereye (*Zosterops lateralis*), blackbird (*Turdus merula*), and tui. All these species were recorded by Cunningham & Moors (1985) and were also recorded in the recent visits to the island. Grey warblers and fantails were breeding on Motuhoropapa: a juvenile grey warbler (identified by its dull grey legs) was observed around the hut in Nov 2005 and a nest containing 3 juvenile fantails was recorded in Mar 2006.

Greenfinches (*Carduelis chloris*) were recorded by Cunningham & Moors (1985) and were observed on 19 Apr 2005. Likewise, welcome swallows (*Hirundo tahitica neoxena*) were still common on around cliffs. A colony (15-20 pairs?) of southern black-backed gulls (*Larus dominicanus*) breeds regularly on the north-eastern point of the island. White-fronted terns (*Sterna striata*) bred on Ike Islet, and Australasian gannets (*Morus serrator*) regularly flew past the island at dawn and dusk.

The rocky, wave-exposed, Tern Islet was visited briefly on 25 Nov 2004 and large amounts of the food remains of gulls were observed. Large shoals of bait fish frequently congregate off Motuhoropapa I, with associated flocks of feeding seabirds. White-fronted terns, Australasian gannets, and small petrels or shearwaters or both were commonly seen feeding on these shoals.

A reef heron (*Egretta sacra*) was observed on the island in Nov 2005 and an Australasian harrier (*Circus approximans*) circled the island in same month. Little blue penguins (*Eudyptula minor*) were seen frequently on the island at night, sometimes near the summit.

The bird diversity on Otata I was similar to that observed on Motuhoropapa I. Forest birds seemed to be increasing there and kingfishers and welcome swallows were common Any increases may result from increased breeding success in the 5 years following the eradication of rats. Seabirds, especially black-backed gulls, have, however, apparently declined over the past 40 years for unknown reasons.

DISCUSSION

The vegetation on Motuhoropapa I has now been relatively undisturbed for >100 years (Cunningham & Moors 1985; Cameron 1984) so it now has some of the best indigenous forest cover of any island in the inner Hauraki Gulf (Cameron 1984). In addition, Motuhoropapa I has been predator-free (apart from controlled experimental releases and removals of Norway rats (Russell *et al*. 2008) since 2002. The island has also never been invaded by ship rats, which are arboreal and have a more significant effect on forest bird species than do Norway rats (Atkinson 1985; Towns & Broome 2005). A combination of these factors has allowed 2 species (morepork; tui), that were formerly present, to resume breeding. Grey-faced petrels have persisted on Motuhoropapa I despite the past presence of Norway rats and the current absence of rats should favour successful breeding.

Two bird species (paradise shelduck and variable oystercatcher) that were previously unrecorded, were observed but both are unlikely to have been resident. There is insufficient open habitat on the island for a resident population of paradise shelducks, and variable oystercatchers were not recorded often enough to be confirmed as resident. Otata I may provide better habitat for variable oystercatchers as they have bred there since at least the mid-1990s.

Since 1999, introduced predators have been systematically eradicated from most of the islands in the inner Hauraki Gulf (Clout & Russell 2006) including Browns, Motuihe, and Rakino islands, and the Noises Group. Introduced predators persist on the 2 largest islands (Motutapu; Rangitoto) but an eradication campaign on these islands is planned (R. Griffiths, *pers. comm*.). Predator-free islands can protect endangered native species and as the forest on these islands matures, birds may colonise from other island sanctuaries such as Tiritiri Matangi I

and Little Barrier I. Rats were removed from Rakino I in 2002 and bellbirds (*Anthornis melanura*) were observed on the island in 2006 (J. McKenzie, *pers. comm*.), probably after dispersing from Tiritiri Matangi I. Birds would similarly be expected to colonise Motuhoropapa I from neighbouring island reserves if it remains free of introduced predators. Bellbirds can colonise small islands (Diamond 1984), but have not yet been recorded on the Noises. The presence of tuis on the island may have led to competitive exclusion of bellbirds.

Trends in bird diversities on Otata I as reported by Rod Neureuter seem to be very similar to those observed on Motuhoropapa I, which is to be expected from their proximity, and similar vegetation and histories of predator invasion.

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