

Forest birds recolonising Wellington

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Abstract Kaka (*Nestor meridionalis*), red-crowned parakeet (*Cyanoramphus novaeseelandiae*), whitehead (*Mohoua albicilla*), tomtit (*Petroica macrocephala*), and bellbird (*Anthornis melanura*) have all recently been reintroduced to sites in or near Wellington city. Prior to or concurrent with these translocations, unmarked individuals of all five species were detected in forested reserves on Wellington peninsula. Based on the number of birds seen, and frequency of sightings, we suggest that red-crowned parakeets, whiteheads and bellbirds have established resident populations in some reserves independent of translocations. We attribute these successful re-establishments to the effective control of possums (*Trichosurus vulpecula*) and rats (*Rattus* sp.) undertaken by Greater Wellington Regional Council and the Department of Conservation.

Miskelly, C; Empson, R.; Wright, K. 2005. Forest birds recolonising Wellington. *Notornis* 52(1): 21-26.

Keywords Kaka; *Nestor meridionalis*; red-crowned parakeet; *Cyanoramphus novaeseelandiae*; whitehead; *Mohoua albicilla*; tomtit; *Petroica macrocephala*; bellbird; *Anthornis melanura*; recolonisation; translocation; Wellington

INTRODUCTION

Wellington city and its environs have had a depauperate native forest bird fauna for over a century, following destruction of forest cover, and introduction of a suite of mammalian predators. Native forest birds are now returning to the city due to a variety of restoration initiatives, particularly reintroductions to the predator-fenced Karori Wildlife Sanctuary, and to Matiu/Somes Island in Wellington Harbour (Table 1), and effective mammal pest control in forest reserves.

There is increasing evidence that several bird species were in the process of naturally recolonising the Wellington peninsula prior to or concurrent with reintroduction programmes. We here report sightings of five species that were present in low numbers before reintroduction programmes commenced: North Island kaka (*Nestor meridionalis septentrionalis*), red-crowned parakeet (*Cyanoramphus novaeseelandiae novaeseelandiae*), whitehead (*Mohoua albicilla*), North Island tomtit (*Petroica macrocephala toitoi*), and bellbird (*Anthornis melanura*). None of these species was recorded as present on the

Wellington peninsula during 1969-79 (Bull *et al.* 1985), and, with the exception of vagrant kaka, all were assumed to be locally extinct. Indigenous forest birds already present on Wellington peninsula were: New Zealand falcon (*Falco novaeseelandiae*) (non-breeding), kererū (*Hemiphaga novaeseelandiae*), shining cuckoo (*Chrysococcyx lucidus*), morepork (*Ninox novaeseelandiae*), kingfisher (*Halcyon sancta*), grey warbler (*Gerygone igata*), fantail (*Rhipidura fuliginosa*), silvereye (*Zosterops lateralis*), and tui (*Prothemadera novaeseelandiae*).

SPECIES ACCOUNTS

Kaka

Within the Wellington region, kaka survived in good numbers on Kapiti Island, and a remnant population persisted in Tararua Forest Park. Occasional birds visit Wellington, e.g. one on Tinakori Hill, central Wellington 11-25 Jan. 1992; one at Pukerua Bay on 31 June 1993, two there in Dec. 2003, and one there on 23 Nov. 2004; two behind Eastbourne on 18 Jan. 2001 and one there on 12 May 2002; one in Wellington Botanic Gardens on 24 May 2001; and two in Karori Wildlife Sanctuary on 9 June 2002 (Fig. 1a). Six captive-reared kaka were released in Karori Wildlife Sanctuary in August 2002 (Table 1), and an unbanded kaka was seen associating with

Table 1 Forest bird species released at Karori Wildlife Sanctuary and on Matiu/Somes Island. Dates of first releases for species discussed here were: kaka 23 Aug. 2002; red-crowned parakeet 7 June 2003; whitehead 21 Aug. 2001; tomtit 8 Aug. 2001; bellbird 24 Aug. 2001.

Species	Release site	Release dates	No. released
Little spotted kiwi <i>Apteryx owenii</i>	Karori	2000 & 2001	40
North Island weka <i>Gallirallus australis greyi</i>	Karori	2000	9
Kereru <i>Hemiphaga novaeseelandiae</i>	Karori	2002-04	9
North Island kaka <i>Nestor meridionalis septentrionalis</i>	Karori	2002-04	11
Red-crowned parakeet <i>Cyanoramphus novaeseelandiae novaeseelandiae</i>	Matiu/Somes I.	2003 & 2004	31
Whitehead <i>Mohoua albicilla</i>	Karori	2001 & 2002	63
North Island tomtit <i>Petroica macrocephala toitoi</i>	Karori	2001-04	51
North Island robin <i>Petroica australis longipes</i>	Karori	2001 & 2002	76
Bellbird <i>Anthornis melanura</i>	Karori	2001-03	94
North Island saddleback <i>Philesturnus carunculatus rufusater</i>	Karori	2002	39

them on 7 Jan. 2003. This bird subsequently paired with a released female, but has not yet bred. Kaka from Karori Wildlife Sanctuary frequently visit surrounding suburbs, including Makara Peak/West Karori, Highbury, Kelburn, Wellington Botanic Gardens, Otari/Wilton's Bush, and Berhampore, and occasionally travel as far as Ngaio and Island Bay. One kaka reared in the sanctuary dispersed to Mount Bruce National Wildlife Centre, 100 km to the north-east, before returning.

Red-crowned parakeet

The only red-crowned parakeet population known to have survived in the Wellington region was on Kapiti Island, where they have increased markedly since rats were eradicated in 1996 (Miskelly & Robertson 2002). There were occasional reports from the Rimutaka and Tararua Forest Parks (Bull *et al.* 1985; Brockie 1992), but all confirmed reports from these sites in the last decade were of yellow-crowned parakeets (*Cyanoramphus auriceps*) (OSNZ & DoC records). With the exception of two confirmed sightings of yellow-crowned parakeets in the forests behind Eastbourne, east of Wellington Harbour (5 on 29 Oct. 2000, 2 in September 2002; Gail Abel pers. comm.), and a colour-banded yellow-crowned parakeet seen at Wellington Zoo in December 2004, all recent *Cyanoramphus* sightings near Wellington that have been identified to species were of red-crowned parakeets.

There have been three clusters of red-crowned parakeet (or unidentified *Cyanoramphus* parakeet)

sightings around Wellington since 2000: (i) Wellington suburbs (Karori, Wilton, Wadestown, Khandallah, Island Bay), (ii) west of Porirua city (Porirua Scenic Reserve, Colonial Knob Scenic Reserve, Pikarere farm, Titahi Bay), and (iii) Akatarawa Forest, with outlying records from Upper Hutt, Haywards, Pukerua Bay, Mana Island, Makara, Whitby, and Belmont (Fig.1b). Parakeets were present in all three main areas before red-crowned parakeets were released on Matiu/Somes Island in June 2003 (Table 1), but some recent sightings (particularly Maungaraki and Newtown) are likely to be birds from Matiu/Somes Island.

At least one red-crowned parakeet was present in Karori Wildlife Sanctuary from February 2003, with subsequent sightings of a single bird in Otari/Wilton's Bush on 13 Apr. 2003, and a parakeet (not identified to species) in Wadestown in May 2003. Following the first release on Matiu/Somes Island, there were further sightings of a *Cyanoramphus* parakeet at Highbury on 14 Oct. 2003, a red-crowned parakeet in Otari/Wilton's Bush in November 2003, and an unbanded pair of red-crowned parakeets nested unsuccessfully in Karori Wildlife Sanctuary in January-February 2004.

Two parakeets were seen in flight at Pikarere farm, west of Porirua Harbour, on 27 June 2001, and *Cyanoramphus* parakeets were subsequently heard in the adjacent Porirua Scenic Reserve on 3 July 2001, 13 Dec. 2002, 4 Dec. 2003, and 4 Mar. 2004, and in nearby Colonial Knob Scenic Reserve

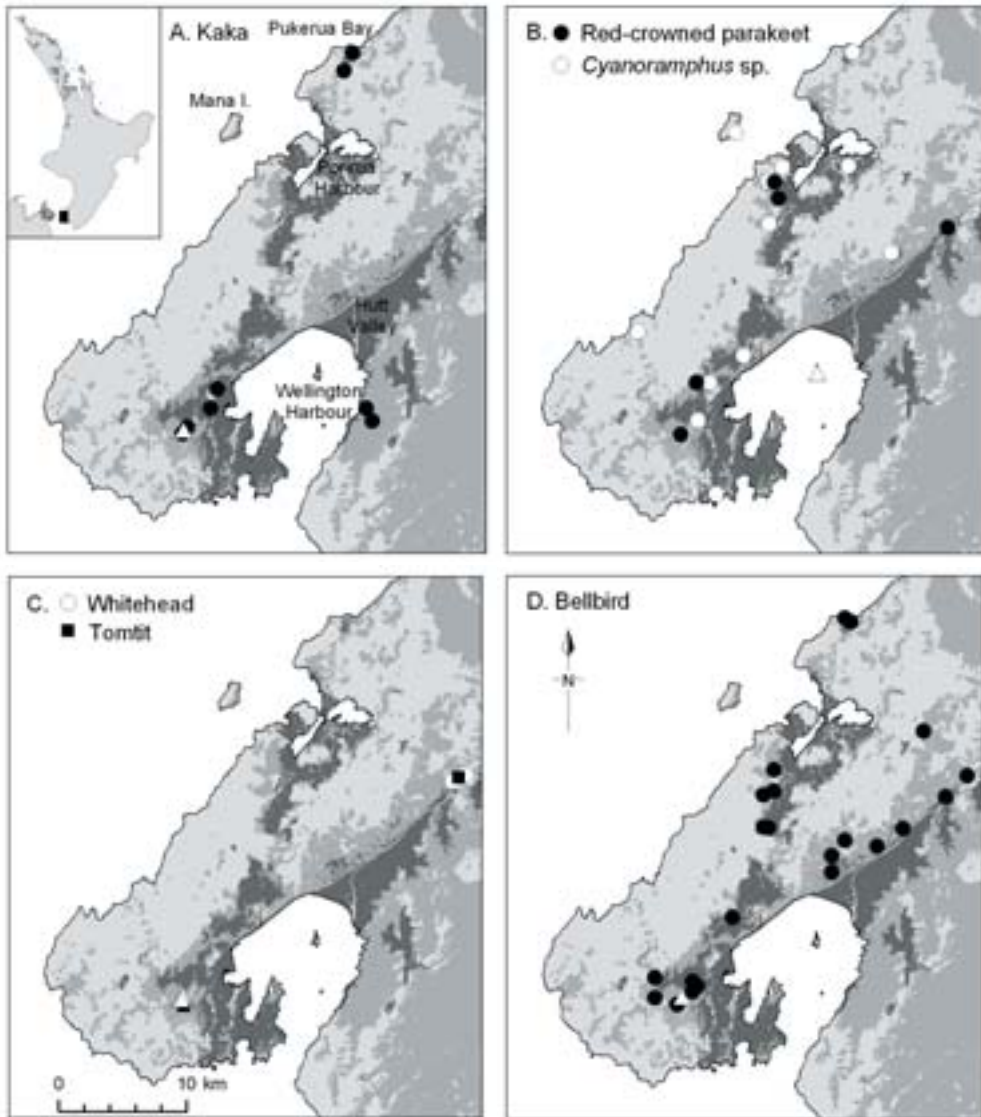


Figure 1 Sightings of kaka, red-crowned parakeets, unidentified *Cyanoramphus* parakeets, whiteheads, tomtits and bellbirds around Wellington. Dark grey = metropolitan and urban areas; mid grey = indigenous forest and shrubland. Whiteheads, tomtits and bellbirds are present in forests east of the Hutt valley and Wellington Harbour, but records east of the Hutt River are not shown for these species. Open triangles show release sites at Karori Wildlife Sanctuary (kaka, whitehead, tomtit and bellbird) and on Mātīu/Somes Island (red-crowned parakeet). Records of birds believed to have been sourced from released populations are not mapped. Inset shows location of study area.

on two days in early October 2004. A parakeet was also heard at Titahi Bay on 1 Dec. 2003. The identity of these birds was confirmed on 7 July 2004, when five red-crowned parakeets were seen in Porirua Scenic Reserve. Four red-crowned parakeets were also seen together (and one photographed) at another site within Porirua Scenic Reserve (1.5 km to the north) on four separate days during 27-31 Oct.

2004. On 3 Nov. 2004 two red-crowned parakeets were seen at the southern site, and three were seen at the northern site on 14 Nov. 2004.

Red-crowned parakeets are apparently established in Akatarawa Forest (just north-east of the area shown in Fig. 1B). At least four parakeets were seen together in western Akatarawa Forest in October 2001, and there were three sightings at two further

sites in January 2004; of these, one sighting was of a pair, and another of a single bird confirmed as a red-crowned parakeet.

Isolated sightings of unidentified *Cyanoramphus* parakeets included: one seen at Upper Hutt on 28 Jan. 2001, one heard at Speedys Stream, Belmont on 16 Mar. 2003, one seen three times on Mana Island in November 2003, and one heard at Whitby on 10 Nov. 2004. The Department of Conservation also received a report of "two green birds with a red spot on their heads, not much bigger than budgies" from Makara on 1 July 2004; these are presented as *Cyanoramphus* parakeets in Fig. 1b. Twenty-six yellow-crowned parakeets from Te Kakaho, Chetwode Islands, Marlborough Sounds, were released on Mana Island on 12 May 2004, and it is possible that some flew to the adjacent mainland.

Four days after the first release of red-crowned parakeets on Matiu/Somes Island (and following a strong southerly wind), three were seen at Maungaraki, 4.5 km north of the island, on 11 June 2003. Also, a parakeet was reported at Eastbourne in June 2003 (no details available). A colour-banded red-crowned parakeet that was present at Wellington Zoo, Newtown, for several months around July-August 2003 probably came from Matiu/Somes Island (unfortunately the band combination was not seen adequately to confirm this). Unidentified single parakeets were seen in flight at Island Bay in July 2003, and at Khandallah on 31 Dec. 2003; this latter bird was equidistant (5.5 km) from Karori Wildlife Sanctuary and Matiu/Somes Island, but only 3.5 km from Otari/Wilton's Bush.

Red-crowned parakeets can be held in aviaries under permit, and so it is possible that some of the sightings of this species were cage-escaped birds. We therefore contacted all 10 known licensed holders of native parakeets in Wellington, Lower Hutt, Upper Hutt and Porirua. One breeder reported in November 2004 that another former breeder had released five red-crowned parakeets at Te Marua "about three years ago"; this could be the source of the parakeet seen at Upper Hutt (about 3 km from Te Marua) on 28 Jan. 2001. Two holders of yellow-crowned parakeets reported wild kakariki visiting their properties. One at Pukerua Bay had an unidentified *Cyanoramphus* parakeet visit in 2001 and again in August 2004. The other (at Haywards, between Keith George Memorial Park and Dry Creek) reported at least 10 unbanded red-crowned parakeets visiting his property daily for supplementary food each winter from 2002. Some of these birds were so tame that he believed them to be cage escapes, although the only known such incident (the five Te Marua birds referred to above) was 14 km away.

We suggest that the majority of the *Cyanoramphus* parakeets seen around Wellington since 1999

are wild red-crowned parakeets that have self-colonised from Kapiti Island. This is supported by the increasing incidence of red-crowned parakeet sightings on the Kapiti coast, e.g. one road-killed near Otaki Forks on 1 Dec. 1999, two at Paraparaumu Beach on 1 Sep. 2001, two records from Waikanae in January 2004, two at Raumati South for 3 weeks in October 2004, an undated record of "kakariki" from Queen Elizabeth Park north of Paekakariki, and at least four found road-killed on State Highway 1 between Paekakariki and Otaki during 1999-2003. Some birds made it across, as a *Cyanoramphus* parakeet was seen flying over State Highway 1 north of Waikanae on 1 Dec. 2002, and pairs of red-crowned parakeets have regularly been seen in Paraparaumu Scenic Reserve since about 1999 (with a flock of 5-6 seen on 26 Mar. 2003).

Whitehead

Near to Wellington, whiteheads persisted in the Rimutaka and Tararua Forest Parks, in the forests behind Eastbourne, and in Akatarawa Forest (west of Upper Hutt). Whiteheads are also abundant on Kapiti Island. Whitehead flocks were present in Keith George Memorial Park (on the west bank of the Hutt River opposite Silverstream) on 7 Feb. 1997 and 14 Jan. 2005, and the adjacent Silverstream Scenic Reserve on 22 July 1999; both sites were south of their previously known range on the west bank of the Hutt River (Fig. 1c). Following their release in Karori Wildlife Sanctuary in August 2001 (Table 1), whiteheads have been sighted in the nearby Birdwood Street Reserve, Otari-Wilton's Bush, Wrights Hill Reserve, and George Denton Park/Polhill/Waimapihi Reserves, and have bred successfully in Birdwood Street Reserve and Wrights Hill Reserve. On 26 Dec. 2004 a colour-banded whitehead was seen at Porirua Scenic Reserve (21 km north-northeast of Karori Wildlife Sanctuary), and two unbanded whiteheads were seen there on 7 Jan. 2005. On 30 Jan. 2005 the colour-banded bird and an unbanded adult were seen feeding 2-3 fledglings. The banded bird is presumed to have come from Karori Wildlife Sanctuary via the almost contiguous forest reserves now receiving possum and rat control (see Discussion), but it is unknown whether all these birds were sourced from Karori.

Tomtit

Tomtits had a similar range to whiteheads around Wellington (Bull *et al.* 1985, and see above). A single unbanded male tomtit was first located within Karori Wildlife Sanctuary on 30 Apr. 2000, and one was heard singing there on 23 Nov. 2000 (Fig. 1c). Following the first release of tomtits in Karori Wildlife Sanctuary in August 2001 (Table 1), an unbanded male (possibly the same bird) was seen there on 14 Nov. 2002. Three tomtits were

seen and heard in Keith George Memorial Park on 14 Jan. 2005. From Karori Wildlife Sanctuary, locally-bred tomtits have subsequently bred in the adjacent Polhill Reserve, and a male was seen at Otari/Wilton's Bush in January and March 2004.

Bellbird

Bellbirds had a similar range to whiteheads and tomtits around Wellington (Bull *et al.* 1985, and see above), but are recolonising Wellington peninsula more rapidly than both these species. A few birds (possibly all males) were present around Karori and adjacent suburbs before the first releases in Karori Wildlife Sanctuary (August 2001), and bellbirds also appear to be recolonising the western Hutt hills and the Porirua Harbour basin (Fig. 1d). Two male bellbirds seen at Makara Peak in November 1999 had apparently been present around South Karori Road for the preceding two years. Possibly the same birds visited Karori suburb on 19 June 1999, Messines Rd and the Karori Wildlife Sanctuary in late 1999, George Denton Park and Highbury on 19-20 Jan. 2000, and Karori Wildlife Sanctuary in October 2000. Following translocations from Kapiti Island and Akatarawa Forest to the Karori Wildlife Sanctuary in August 2001 (Table 1), bellbirds were recorded in several nearby Wellington City Council reserves in 2001-04 (Johnston Hill Reserve, Otari-Wilton's Bush, Wilton station, Wrights Hill Reserve, George Denton Park/Polhill Reserve, Wellington Botanic Gardens, and Wellington Zoo) plus in suburban gardens in Karori, Te Aro and Crofton Downs. One banded bird was seen at Johnsonville (c.10 km from Karori Wildlife Sanctuary). However, an unbanded adult male at Khandallah Park and nearby Clark Street in June 2002 is unlikely to have come from the Sanctuary, as its plumage was too well developed for a bird raised during the 2001-02 breeding season (especially as no breeding attempts were detected in the sanctuary that year). There were further records of at least one bellbird in Khandallah Park in October 2003 and September 2004.

Bellbirds have recently spread south of the Akatarawa valley, down the western Hutt hills, with sightings of single birds at Silverstream Scenic Reserve on 22 July 1999 and Belmont Regional Park on 19 June 2002, and singles at Maungaraki in October 2003 and November 2004, Haywards in June 2004 (twice, a week apart), Belmont in December 2003 and on 28 Sep. 2004, and Kelson Bush on 21 Sep. 2004, and two birds at Korokoro Stream in September 2004. Bellbirds were common in Keith George Memorial Park on 14 Jan. 2005. A pair at Moonshine Road, Judgeford on 10 Aug. 2003 were the first known there for over 60 years; these birds were still present in October 2004 (Christine Jacobson pers. comm.). There were also sightings of single bellbirds in or near Pukerua Bay township in

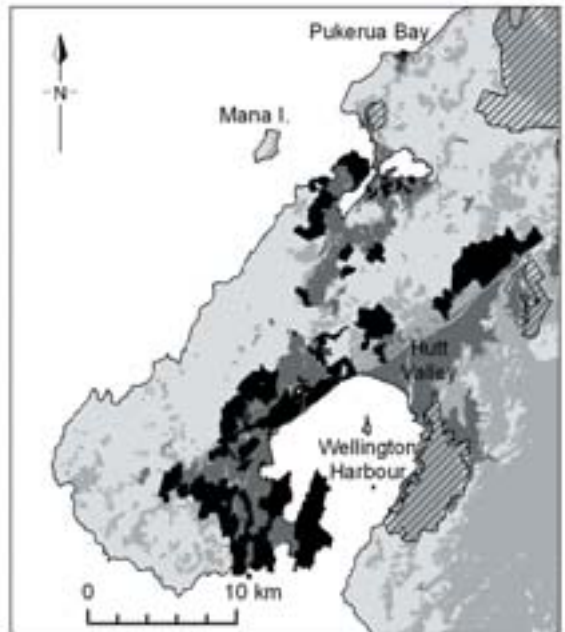


Figure 2 Forests receiving possum and rat control on Wellington peninsula. Black = forests receiving pest control; dark grey = metropolitan and urban areas; mid grey = indigenous forest and shrubland. Hatched areas show forests receiving pest control outside the area discussed in this paper.

August and October 2001, and one was heard there on 5 Oct. 2003.

A bellbird was heard at Redwood Bush, Tawa in April 2003, and subsequently bellbirds were found to have established within Porirua Scenic Reserve, 4 km to the north. One was heard there on 5 Aug. 2003, several were heard on 14 Aug. 2003, and one bird was seen on 20 Aug. 2003. On 31 Oct. 2003 bellbirds were also present in the adjacent Colonial Knob Scenic Reserve, they were seen in Spicer Botanic Gardens (next to Colonial Knob Scenic Reserve) on 14 Oct. 2004, and in late 2004 one was seen in a suburban garden in Tawa. Bellbirds are now well established in Porirua Scenic Reserve and Colonial Knob Scenic Reserve, but had not been recorded there during regular visits over the 20 years preceding 2003 (Ian Armitage pers. comm.). No banded birds have been seen in these reserves, and we suggest that these are more likely to have colonised from the north than be sourced from Karori Wildlife Sanctuary releases.

DISCUSSION

The successful establishment of bellbird, whitehead, and (apparently) red-crowned parakeet and tomtit in unfenced forest reserves on Wellington peninsula is a tribute to the effective animal pest control

undertaken in the reserves by the Department of Conservation and (especially) Greater Wellington Regional Council. Forest reserves greater than 30 ha in extent that are receiving sustained possum (*Trichosurus vulpecula*) control by the regional council include Whitireia Park, Porirua Scenic Reserve, Redwood Bush, Wilf Mexted Scenic Reserve, Ranui Heights Recreation Reserve, Porirua Park, Cannons Creek Park, Silverstream Scenic Reserve, Keith George Memorial Park, Dry Creek, Kelson Bush, Speedys Reserve, Percys Scenic Reserve, Korokoro Valley, Johnsonville Park, Khandallah Park, Kaiwharawhara-Ngauranga, Trellisick Park, Huntleigh Park, Otari-Wilton's Bush, Johnston Hill Reserve, Karori Park, Makara Peak, Wrights Hill Reserve, George Denton Park/Polhill/Waimapihi Reserves, Wellington Botanic Gardens, Brooklyn/Mt Albert Park, Mt Victoria townbelt, Miramar reserves, Houghton Bay Reserve, and Happy Valley East (total area 6,300 ha; Fig. 2). The Department of Conservation controls possums in 130 ha Colonial Knob Scenic Reserve, and also in 175 ha Paraparaumu Scenic Reserve further north. The main possum control method used in these reserves is brodifacoum bait, which is also effective for rat (*Rattus* sp.) control. In addition, predator control targeting stoats (*Mustela erminea*) commenced in Porirua Scenic Reserve in December 2003. Ship rats (*Rattus rattus*), stoats and possums are the major predators of forest birds on the New Zealand mainland (Innes & Hay 1991; Innes *et al.* 2004; Dilks *et al.* 2003).

In concert with the 252 ha predator-fenced Karori Wildlife Sanctuary, pest control in forests on the Wellington peninsula has produced a dramatic response in the indigenous forest bird community. For example, tui numbers have greatly increased in Wellington City Council reserves (Victoria Froude and Michael Oates pers. comm.) and in Karori Wildlife Sanctuary (CM unpublished data).

All five of the species discussed here, with the possible exception of tomtit and bellbird, are now well-established at their release sites (Table 1), and are likely to continue to spread into forested reserves on Wellington peninsula. The simultaneous self-colonisation of birds probably sourced from Kapiti Island and the more extensive forests north and east of the Hutt Valley will not only enhance the rate of recovery of Wellington's indigenous forest bird community, but will contribute to the genetic diversity of the founding stock. We suggest that it is important to document the rate of recolonisation by native forest birds into and between fragmented forest reserves, as the response of these birds to animal pest control may be applicable to restoration projects in many other parts of New Zealand.

ACKNOWLEDGEMENTS

Many of the sightings reported here are from the records of the Wellington Branch of the Ornithological Society; Wellington Conservancy, Department of Conservation; Karori Wildlife Sanctuary Trust; and Greater Wellington Regional Council. We thank the following observers for their records: Gail Abel, Hugh Acland, Richard Anderson, Ian Armitage, Alan Bagnall, Derek Batcheler, Ros Batcheler, Eleanor Bentley, Richard Bentley, David Bishop, Wayne Boness, Kerry Brown, Jason Christensen, James Cox, Philippa Crisp, Barry Dent, Claudia Duncan, Craig Dunlop, Geoff de Lisle, Dorothy Easter, Glen Falconer, Denise Fastier, Geoff Foreman, Frances Forsyth, Ron Freeston, Sue Freitag, Andrew Fuller, Stephen Fuller, Colin Giddy, Richard Gill, Ron Goudswaard, H. Griffiths, Annette Harvey, Noel Hellyer, Rachel Helson, Chris Horne, Stan Hunt, Christine Jacobson, Garry James, L. Kelynack, Simon Kennett, Stuart Kilmister, Jaap Knegtmans, Chris Loader, Jim Lynch, Nio Mana, Rhys Mills, Chris Milne, Brenda Neill, Stuart Nicholson, John Nunn, John Ombler, Clinton Purches, Peter Reese, Hugh Robertson, Linley Rodda, Tony Shaw, James Smith, Robyn Smith, Owen Spearpoint, Steve Sutton, Grant Timlin, Graeme Ure, Duncan Watson, Bill Watters, and Rex Williams. Records of bellbirds, red-crowned parakeets and whiteheads made by Ian Armitage, Barry Dent and Sue Freitag at Porirua Scenic Reserve and adjacent reserves were particularly invaluable. We also thank Michael Oates of Wellington City Council for providing copies of bird counts undertaken for the council by Pacific Ecologic Ltd, and Gail Abel for providing data collected by members of the Eastbourne Mainland Island Restoration Operation (MIRO). The maps were prepared by Andy Rae, Department of Conservation. This manuscript was improved by comments received from Kerry Brown, Ralph Powlesland and Murray Williams.

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