

Hirakimata toutouwai/North Island robin (*Petroica longipes*) survey, Aotea/Great Barrier Island, March 2022

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Introduction

Toutouwai, or North Island robins (*Petroica longipes*), were once widespread throughout forested areas in the North Island, Aotearoa New Zealand. However, they have declined since human settlement because of the extensive loss of their forested habitats and the introduction of exotic mammalian pests, especially ship rats (*Rattus rattus*). They are now mainly confined to colder and wetter forests in the central North Island, along with large natural populations on Kapiti Island and Hauturu o Toi/Little Barrier Island (Heather and Robertson 2015).

Toutouwai have also been extensively translocated to protected islands, and mainland sanctuaries, under varying levels of pest management. Translocation outcomes have been variable. Some sites maintain large thriving translocated populations while others are small with low or little population growth. Some have failed, despite small numbers of individuals persisting for 10-20 years (Miskelly and Powlesland 2013, Richardson et al 2014).

Toutouwai were translocated to Aotea/Great Barrier Island with releases at the Little Windy Hill Sanctuary in 2004, 2009 and 2012 and Glenfern Sanctuary in 2005, 2009, 2012 (Miskelly and Powlesland 2013). Despite excellent pest control, and successful breeding at both sites, these translocations ultimately failed. By 2016 there were no longer toutouwai present at either site. However, there have been consistent reliable reports of toutouwai since 2007 from Wildlife Management International teams working in the black petrel (*Procellaria parksoni*) breeding colony on Hirakimata, the highest point on Aotea. There is also a population of North Island tomtits (*Petroica macrocephalus toitoi*) on Hirakimata, along with consistent reports of red-crowned kākārīki (*Cyanoramphus novaezelandiae*) and korimako/bellbirds (*Anthornis melanura*). Therefore, funding was obtained from the Aotea Great Barrier Community Board to undertake a toutouwai survey of Hirakimata, while also keeping records of other species uncommon on Aotea.

Methods

I walked into Hirakimata from Aotea Road along the Palmers Track on the evening of the 23 of March. I based myself at the DOC research hut (“The Rats Nest”) just off Kaiaraara Track. I walked the main tracks, along with research tracks and pest lines, playing toutouwai calls and looking and listening for birds. When a toutouwai was located I recorded its location on GPS and fed it with mealworms. If I felt that it was immediately catchable, I would bait a Potter Trap (Figure 1) with a mealworm and attempt to catch the bird. Captured birds were immediately removed from the trap and placed in a black cotton bag. They were then weighed and removed from the bag. An individual four band combination was placed on each bird, consisting of a BP numbered metal band on the lower right leg and three Davic plastic colour bands, two on the left, one on the right, above the metal band. The birds natural wing chord was measured to the nearest 0.5 mm, and the tarsus was measured to the



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nearest 0.1 mm. These measurements, along with plumage characteristics and behaviour, were used to sex the bird. Each bird also underwent a brief physical exam to assess general health and condition. They were then released at the point of capture.

Birds that were shy and reluctant to approach the trap were fed and the location recorded. They were revisited the following day when they were usually captured. When toutouwai were heard at a distance in difficult, or inaccessible locations, an approximate location was noted on a map of the area.

Notes were kept on other species encountered while surveying for toutouwai, specifically miromiro, kākāriki and bellbirds.



Figure 1. A Potter Trap used to catch toutouwai on Hirakimata.



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Results

On the 24 of March the wind was blowing 35-45 knots out of the southwest with periodic squally showers. These conditions made it difficult to either find or catch toutouwai, so I walked the main tracks looking for birds, feeding any that I encountered with mealworms. The wind persisted through the 25 of March, but the rain eased, and I was able to catch birds. The conditions on the 25 and 26 of March were much better for catching with low to moderate winds (5-20 knots) and generally fine conditions.

Twenty birds were encountered during the four-day survey, including adult and juvenile females and males (Table 1). Twelve birds were captured and banded (Appendix 1), five were seen but not captured, and three males calling from difficult to access locations were heard but not seen (Table 1). Of the birds seen but not captured one was a banded male bird (PM-GP) translocated from Pureora to Glenfern in 2012.

All birds appeared healthy and in good condition.

Miomiro/North Island tomtits were abundant and frequently encountered during the survey. Red-crowned kākārīki were heard on three occasions between the Palmers and Kaiaraara Track, within 1 km of Hirakimata. No bellbirds were heard or seen.

Table 1. Toutouwai captured, seen and heard on Hirakimata, March 22-17, 2022.

| | Adults | | Juveniles | | Unknown sex | Total |
|---------------|--------|------|-----------|------|-------------|-------|
| | Female | Male | Female | Male | | |
| Banded | 2 | 5 | 3 | 2 | | 12 |
| Seen | 2 | 2 | | | 1 | 5 |
| Heard | | 3 | | | | 3 |
| Total | 4 | 10 | 3 | 2 | 1 | 20 |

Discussion

Despite the translocations to Windy Hill and Glenfern failing a small population of toutouwai has established on Hirakimata. I encountered 20 birds over a four-day period, banding 12 of them. I will have missed some birds, especially females, which are generally more cryptic at the end of the breeding season, and some juveniles, which are not site attached and sometimes shy. Therefore, I estimate that the population on Hirakimata is >20 birds.

It is especially encouraging that adult females were encountered as females are very vulnerable to predation while nesting (Parlato and Armstrong 2012, 2013). Indeed, a characteristic of toutouwai populations under pressure from ship rats (*Rattus rattus*) is that the sex ratio is heavily skewed toward male birds. The combination of a colder and wetter climate at elevation on Hirakimata, along with cat (*Felis catus*) and rat control to protect black petrels, likely affords some protection to the small toutouwai population. Small populations are inherently vulnerable to range of threats, including



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increased numbers of predators, extreme weather and other stochastic events, inbreeding, and genetic drift (Caughley 1994). However, assuming some protection from rats and cats remains in place the toutouwai population on Hirakimata should persist.

Some birds are almost certainly dispersing downslope to unmanaged areas. Males that disperse could likely persist for many years, whereas females are unlikely to survive through the breeding season (Parlato and Armstrong 2012, 2013). However, these dispersing birds could be further protected by expanding pest control as resources allow. This would allow the expansion of the Hirakimata toutouwai population, along with miromiro, kākārīki and bellbirds.

Ultimately, as the area under pest control increases, threatened bird species, along with lizard, invertebrate and plant species, will be able to expand their local ranges. This might also allow for the reintroduction of several missing species, including popokatea (*Mohoua albicilla*) and kōkako (*Callaeas wilsoni*) and, if a pest free Aotea can be achieved, even the most pest sensitive bird species such as North Island tīeke (*Philesturnus rufusater*), hīhi (*Notiomystis cincta*) and kākāpō (*Strigops habroptilus*). Hirakimata is an outstanding remnant of mixed podocarp forest and Aotea more generally contains many rare species and ecosystems. The removal of key pest species, especially ship rats and cats, will allow the motu to be restored to an ecosystem resembling its former ecological glory.

Acknowledgements

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Appendices

Appendix 1. Toutouwai captured and banded on Hirakimata, March 24-27, 2022

| Date | Time | Location | Metal band number | Band combination | Sex | Age | Notes |
|----------|------|----------|-------------------|------------------|-----|-----|--|
| 25/03/22 | 0949 | Hut | BP20510 | RY-KM | M | A | Mate present |
| 25/03/22 | 1114 | TW2 | BP20509 | RB-KM | F | J | Another bird present |
| 25/03/22 | 1454 | TW5 | BP20508 | RO-KM | M | A | Mate present |
| 25/03/22 | 1549 | TW5 | BP20507 | RG-KM | M | J | Same area as above bird |
| 26/03/22 | 0809 | Hut | BP20506 | RR-KM | F | A | Fight, fight, fight. "Judy" |
| 26/03/22 | 1019 | TW2 | BP20505 | YB-KM | F | A | Also a fighter |
| 26/03/22 | 1157 | TW7 | BP20504 | YO-KM | M | J | Another bird calling in area |
| 26/03/22 | 1321 | TW8 | BP20503 | YG-KM | F | J | On territory with a male bird |
| 27/03/22 | 0937 | TW4 | BP20501 | YY-KM | M | A | |
| 27/03/22 | 1216 | TW10 | BP16901 | BB-KM | M | A | Mist net after escaping from the Potter Trap |
| 27/3/22 | 1456 | TW11 | BP16902 | BG-KM | M | A | |
| 27/3/22 | 1749 | TW13 | BP16903 | GG-KM | F | J | A second bird was n the same area |

Appendix 2. GPS coordinates of banded and sighted toutouwai

| GPS point | Coordinates | Sighting details |
|-----------|----------------------|--|
| Hut | -36.1842 175.4105 | RY-KM, RR-KM |
| TW2 | -36.1834 175.4092 | RB-KM, YB-KM |
| TW3 | -36.1826 175.4138 | Pair on track |
| TW4 | -36.1849 175.4116 | YY-KM, female sighted here |
| TW5 | -36.1839 175.4136 | RO-KM, RG-KM |
| TW6 | -36.1837 175.4147 | Unbanded male |
| TW7 | -36.1839 175.3982 | YO-KM |
| TW8 | -36.183 175.4073 | YG-KM |
| TW9 | -36.1857 175.4124 | Female bird, escaped from Potter Trap |
| TW10 | -36.1831 175.4094 | BB-KM, another unbanded bird in the area |
| TW11 | -36.186 175.41296 | BG-KM |



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| | | |
|------|-----------------------|---------------------------|
| TW12 | -36.1831 175.41227 | PM-GP and unbanded female |
| TW13 | -36.181 175.41652 | GG-KM |



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