

Hirakimata toutouwai/North Island robin (*Petroica longipes*) survey, Aotea/Great Barrier Island, May 2023

Kevin A. Parker, Parker Conservation Ltd
k.parker@parkerconservation.co.nz

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 2015).

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 kākāriki (*Cyanoramphus novaezelandiae*) and korimako/bellbirds (*Anthornis melanura*). Therefore, I surveyed Hirakimata in 2022, estimating the toutouwai population at c.20 birds. I also banded 12 birds during this survey. This report describes a repeat survey in May 2023.

Methods

I walked into Hirakimata from Aotea Road along the Palmers Track on the afternoon of the 14 of May. 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. I also visited all the sites where I saw and/or caught birds in 2022.

When a toutouwai was located I recorded its band combination, its location on GPS and fed it with mealworms. If it was unbanded, I would bait a Potter Trap (Figure 1) with a mealworm and attempt to catch the bird.



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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 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.

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



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



Results

Weather conditions were variable throughout the trip, generally cold, windy and with some rain every day, which made surveying and catching difficult at times. However, there were frequent good weather windows, and fifteen birds were encountered during the four-day survey, 14 of which were seen, including adults and juveniles, females and males (Table 1).

Five of the toutouwai were birds banded in 2022, along with a banded male bird (PM-GP) translocated from Pureora to Glenfern in 2012. All these birds were in the same locations that they were captured and banded at in 2022. Two new birds were also captured and banded, a juvenile male and a juvenile female (Appendix 1).

Of the six unbanded birds two were almost certainly adult females. I spent a full day and a half trying to catch these two birds. They were quite happy to approach me and take mealworms, but they were extremely wary of the trap, and I was unsuccessful. Two of the unbanded birds were also very shy, and I only got a glimpse of them. Two unbanded birds were a pair that I located late on the last day, but the conditions were poor, and I did not have time to capture them. The remaining bird was a male that I did not see, but heard singing some distance off track south of Palmers Track below Hirakimata.

All birds appeared healthy and in good condition.

Miromiro/North Island tomtits were abundant and frequently encountered during the survey. Two to three red-crowned kākārīki were also resident around the hut and summit and I saw and heard them every day. No bellbirds were heard or seen.

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

	Adults		Juveniles		Unknown sex and age	Total
	Female	Male	Female	Male		
Banded¹	1	5	1	1		8
Unbanded	2	1			3	6
Heard		1				1
Total	4	10	3	2	1	15

¹including birds banded in May 2023

Discussion

Despite the unsuccessful translocations to Windy Hill and Glenfern a small population of toutouwai has established on Hirakimata. I encountered 15 birds over a four-day period in May 2023, including six of 13 banded birds from the 2022 survey, two new banded birds, and seven unbanded birds.

I could not locate seven of the birds banded in 2022, including four juveniles and three adults, five of which were females. However, I will have missed some birds, especially females, which are generally



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cryptic and shy outside the breeding season, and some juveniles, which are not site attached and can also be shy, especially females. I also surveyed Hirakimata a little later this year, and it is likely that some juvenile birds have either dispersed, or otherwise lost to the population.

I still think that there are $c. \geq 20$ birds on Hirakimata. However, it is also possible that this small population fluctuates year on year, with females being especially vulnerable to predation while nesting (Parlato and Armstrong 2012, 2013). With a relatively short survey it is impossible to say whether some have been lost to predation over the nesting season, or if they are just being shy and cryptic which, as noted above, is typical of female toutouwai, with sightings often skewed toward male birds.

Small populations are inherently vulnerable to a range of threats, including increased numbers of predators, extreme weather and other stochastic events, inbreeding, and genetic drift (Caughley 1994). However, 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. Assuming at least some protection from rats and cats continues, the toutouwai population on Hirakimata is more likely to persist.

Some birds are almost certainly dispersing downslope to unmanaged areas, such as the male calling south of Palmers Track below Hirakimata. 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 for the expansion of the Hirakimata toutouwai population, along with miromiro, kākāriki 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 albigilla*) and kōkako (*Callaeas wilsoni*) and, if a pest free Aotea can ever 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 and May 14-18, 2023

Date	Time	Location	Metal band number	Band combination	Sex	Age	Seen in 2022	Seen in 2023
25/03/22	0949	Hut	BP20510	RY-KM	M	A	Y	Y
25/03/22	1114	TW2	BP20509	RB-KM	F	J	Y	N
25/03/22	1454	TW5	BP20508	RO-KM	M	A	Y	Y
25/03/22	1549	TW5	BP20507	RG-KM	F	J	Y	Y
26/03/22	0809	Hut	BP20506	RR-KM	F	A	Y	N
26/03/22	1019	TW2	BP20505	YB-KM	F	A	Y	N
26/03/22	1157	TW7	BP20504	YO-KM	M	J	Y	N
26/03/22	1321	TW8	BP20503	YG-KM	F	J	Y	N
27/03/22	0937	TW4	BP20501	YY-KM	M	A	Y	Y
27/03/22	1216	TW10	BP16901	BB-KM	M	A	Y	N
27/3/22	1456	TW11	BP16902	BG-KM	M	A	Y	Y
27/3/22	1749	TW13	BP16903	GG-KM	F	J	Y	N
16/05/23	1206	TW13	BP27601	GG-GM	M	J	Y	Y
16/05/23	1232	TW12	BP27602	WG-GM	F	J	Y	Y

Appendix 2. GPS coordinates of banded and sighted toutouwai

GPS point	Coordinates	2022 sightings	2023 sightings
Hut	-36.1842 175.4105	RY-KM, RR-KM (pair)	RY-KM
TW2	-36.1834 175.4092	RB-KM, YB-KM	
TW3	-36.1826 175.4138	Pair on track	



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TW4	-36.1849 175.4116	YY-KM, female sighted here	YY-KM, female sighted here
TW5	-36.1839 175.4136	RO-KM, RG-KM	RO-KM, RG-KM
TW6	-36.1837 175.4147	Unbanded male	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	Unbanded female
TW10	-36.1831 175.4094	BB-KM, another unbanded bird in the area	
TW11	-36.186 175.41296	BG-KM	BG-KM
TW12	-36.1831 175.41227	PM-GP and unbanded female	PM-GP and mate WG-GM (banded 2023)
TW13	-36.181 175.41652	GG-KM	GG-GM (banded 2023)
TW14	-36.109501 175.245806	N/A	Unbanded bird
TW15	-36.109127 175.246584	N/A	Unbanded pair



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