

# Kiwi Link

**HVA Annual Report**

**July 2023**



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## Background

The vision of Kiwi Link is “Flourishing flora and fauna, with abundant kiwi roaming safely between Taraunui and Ngunguru Ford by 2036”.

Community-led conservation groups involved in Kiwi Link have worked together since 2017 to protect and restore native biodiversity between Taraunui and Ngunguru Ford in eastern Whangarei. This project is named the ‘Kiwi Link’, as the primary goal is to rebuild kiwi populations and connect the kiwi strongholds of the Whangarei Heads peninsula and the Tutukaka Coast.

From 2017- 2021 Kiwi Link operated as a Community Pest Control Area (CPCA) with Northland Regional Council (NRC). Upon its completion, Kiwi Link formed a new five-year agreement with NRC, upgrading to a High Value Area (HVA).

The Kiwi Link project area has now increased to 15,000 hectares and brings together 11 groups and projects keen to work together to maximise operational efficiencies and ecological gains.

This report summarises the results and achievements of the Kiwi Link HVA from July 1 2022 – June 30 2023.



## Activities

Over the past 12 months

Kiwi Link has:

- Worked together as communities and land managers to restore native flora and fauna between Taraunui and Ngunguru Ford.
- Deployed new predator traps and bait stations to expand and fill gaps in the ever-growing predator control network.
- Coordinated animal and plant pest operations with willing landowners for maximum efficiency and effectiveness.
- Protected and grown the small remnant kiwi populations.
- Tracked the survival, dispersal and breeding success of released kiwi.
- Implemented robust outcome monitoring measures to track progress towards goals.
- Supplied landowners with resources to help them operate at their full potential.
- Ensured all community-led conservation projects involved could sustain professional predator control.
- Motivated and empowered further landowners to actively participate in environmental stewardship/kaitiakitanga.
- Increased collaboration with tāngata whenua, Kiwi Coast, NRC, Department of Conservation, QEII National Trust and neighbouring projects to progress the creation of NZ's first kiwi corridor.

Animal and plant pest species controlled through the Kiwi Link project area included:

Animal pests
Possums
Rodents
Mustelids
Feral cats
Feral pigs
Myna
Magpies
Hedgehogs
Wasps

Plant pests
Asparagus sp.
Banana Passionfruit
Elaeagnus
Glyceria maxima
Jasmine
Moth plant
Pampas
Small and large-leaved privet
Taiwan Cherry
Tradescantia
Wild ginger
Wilding pine
Woolly nightshade

## Kiwi Link Groups and Projects

Initially, in 2017, Kiwi Link involved eight projects working together over 13,624ha. The combined project area has now increased to approximately 15,000 hectares.

Map 2 shows the location of the group and project areas.

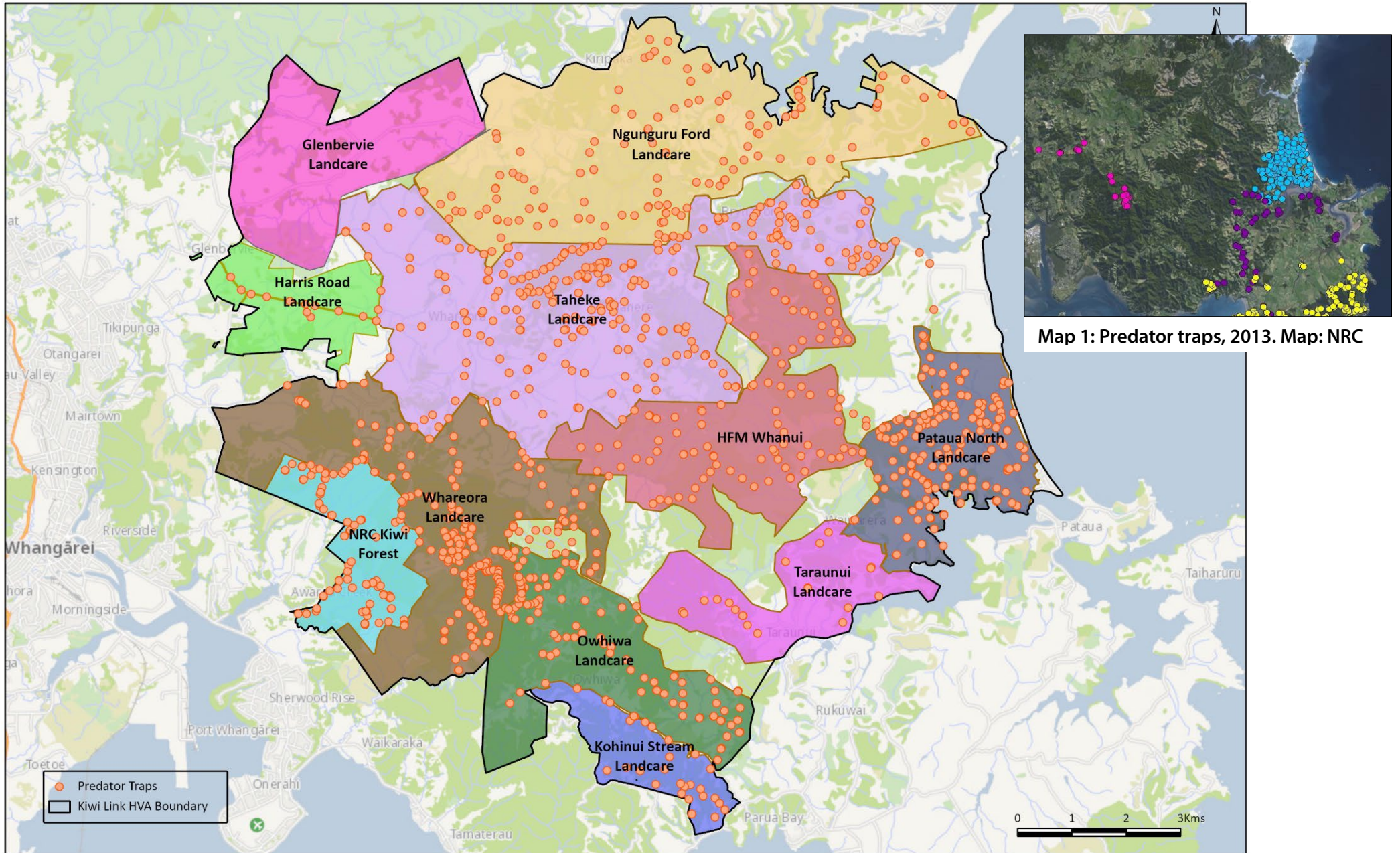
As Kiwi Link grows, it seeks to further strengthen relationships with hapū and iwi and work in partnership to support and enable kaitiakitanga throughout the area. The growing relationships with Ngāti Kahu o Torongare, Ngāti Korora, Ngāti Takapiri and Ngātiwai are greatly cherished. It is hoped that we can continue to deepen these connections and work further with tāngata whenua as opportunities emerge.

This has grown to a coordinated network of 11 community-led groups and conservation projects:

Community-led groups and conservation projects
Glenbervie Landcare
Harris Rd Area Landcare
Kohinui Stream Landcare
Manulife Whanui Project
Ngunguru Ford Landcare
NRC Mt Tiger Forestry Block
Owhiwa Landcare
Pataua North Landcare
Taraunui Landcare
Taheke Landcare
Whareora Landcare



Pataua North kiwi crossing sign, April 2023. Photo: Derek Barnston



Map 2: Kiwi Link HVA Groups & Predator Traps, 2023. Map: Biospatial

## Financial Summary

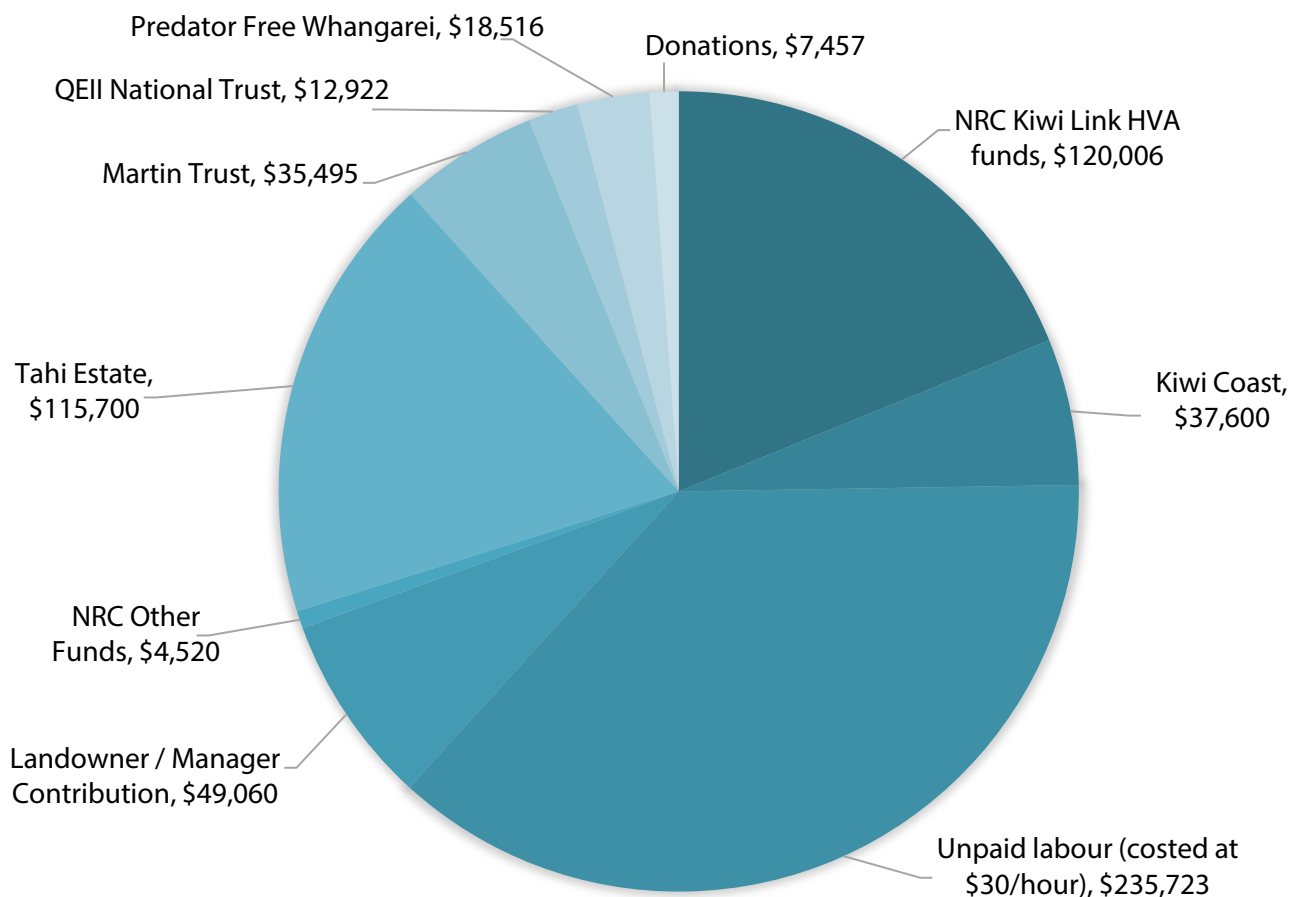
A breakdown of expenditure of the NRC's \$120,00 contribution to the Kiwi Link HVA over the past financial year is provided in Appendix 1.

NRC's investment of \$120,000 was increased sixfold, with a total of \$636,999 resourcing Kiwi Links operations and activities (see Table 1).

Unpaid labour by the landowners involved was the single largest contributor, totalling \$235,723 or 37% of the total project value. The Kiwi Coast Trust also supplied resources and support worth \$37,600.

Other contributions were made by the QEII National Trust, DOC, Manulife Forestry, Martin Trust, Airzone, Tahi Estate and generous local sponsors keen to help and be involved (see Figure 1).

Figure 1: Kiwi Link Financial Summary & Contributions 2022 - 2023



**Table 1: Kiwi Link HVA Financial Summary & Contributions 1 July 2022 - 30 June 2023**

<b>Activity</b>	<b>NRC Kiwi Link HVA funds</b>	<b>Kiwi Coast</b>	<b>Unpaid labour (costed at \$30/hour)</b>	<b>Landowner / Manager Contribution</b>	<b>NRC Other Funds</b>	<b>Tahi Estate</b>	<b>Martin Trust</b>	<b>QEII National Trust</b>	<b>Predator Free Whangarei</b>	<b>Donations</b>	<b>Totals</b>
Administration / Project Management	\$10,988	\$10,250	\$4,550	\$7,560	-	-	\$1,050	\$300	-	\$500	<b>\$35,198</b>
Animal Pest Control - labour	\$51,885	\$1,500	\$153,172	\$25,950	-	\$21,000	\$14,282	\$3,500	\$9,279	-	<b>\$280,568</b>
Plant Pest Control - labour	-	-	\$37,770	-	\$4,520	\$19,000	\$16,341	-	-	-	<b>\$77,631</b>
Pest Control Products - toxins, traps, herbicides	\$32,411	\$3,300	\$4,191	\$3,000	-	\$1,700	\$608	-	\$9,237	-	<b>\$54,447</b>
Planting	-	-	\$4,700	\$540	-	\$74,000	\$3,214	-	-	-	<b>\$82,454</b>
Engagement, Education and Communications	\$6,077	\$10,200	\$4,890	-	-	-	-	-	-	-	<b>\$21,167</b>
Monitoring	\$18,645	\$12,350	\$26,450	\$12,010	-	-	-	\$9,122	-	\$6,957	<b>\$85,534</b>
<b>TOTALS</b>	<b>\$120,006</b>	<b>\$37,600</b>	<b>\$235,723</b>	<b>\$49,060</b>	<b>\$4,520</b>	<b>\$115,700</b>	<b>\$35,495</b>	<b>\$12,922</b>	<b>\$18,516</b>	<b>\$7,457</b>	<b>\$636,999</b>

See Appendix 2 for further details.



## Objectives

Kiwi Link HVA has progressed all five key objectives:

### 1 Enable groups to carry out efficient and effective integrated animal and plant pest control

Kiwi Link budget priority was given to ensuring professional predator trappers under contract to Kiwi Coast were resourced to complete all trapping rounds for each project to complement the unpaid work of the many landowners involved.

Continuing to build the skills and the capacity of landowners was also seen as a priority. Resources provided to groups included traps, lures, toxins, bait stations, herbicides, monitoring tools and safety equipment as requested. The Kiwi Link Coordinator provided technical and health and safety advice to all landowners and group leads as products were received or distributed.

Thanks to increased funding from NRC, all landowner requests for animal and plant pest control products were met.



Sue Grocott, Whareora Landcare, removes a possum from a Flipping Timmy, May 2023. Photo: Wendy Bown

### 2 Complete a continuous predator control network

The Kiwi Link predator trap network targeting feral cats and mustelids (weasels, stoats and ferrets) has been continually expanded, linked and infilled since the project began.

Comparing predator traps in the area in 2013 (Map 1) to those currently in place (Map 2) shows the impressive progress made to date.

There is now an extensive collaborative predator trap network covering the 15,000ha project area. Predator traplines of neighbouring projects are back-to-back in many places, ensuring predators have optimal opportunity to encounter devices across the landscape.

Kiwi Link HVA forms the core of the Predator Free Whangarei (PFW) 60,000ha predator control network. PFW helped to boost the Kiwi Link part of the network with an additional \$9237 of pest control products and professional predator control labour. The main uses of the PFW funds by Kiwi Link groups over the last year was the establishment of new predator traplines, installation of new bait station lines and support of landowner-led ground-based secondary toxin operations.

Controlled pulses of toxins with secondary poisoning effect (sodium fluoroacetate and brodifacoum) are crucial for the control of stoats that have learnt to avoid traps, rendering trapping ineffective. Using a secondary toxin once every 3 – 5 years at key locations through Kiwi Link ensures that predator control remains effective and biodiversity goals can be achieved.

## 3 Coordinate animal and plant pest control operations to maximise efficiencies and biodiversity gains

Each winter, special emphasis is put on a coordinated pest knockdown with willing landowners via a controlled toxin pulse to back up the ongoing trapping and ensure it remains effective. Different toxins continue to be pulsed and cycled for maximum success.

In 2022 the knockdown focussed on the removal of trap shy pests with brodifacoum, as it had been five years since a secondary toxin was last cycled through the bait stations. A single pulse of 400g of brodifacoum was placed in fixed bait stations for three weeks, after which any remaining toxin was scheduled for removal. This was generally unnecessary however, as most areas reported the toxin was fully consumed in the first week.

The majority of the toxin was deployed by landowners provided with PPE, health and safety advice and technical support. Over 400 mini-philproof bait stations were filled across the network.

This coordinated pest knockdown demonstrated the strength of Kiwi Link – where landowners are enabled to effectively control the pests on their properties, for the benefits of biodiversity across the 15,000ha project area.

The removal of trap-shy pests, especially predators such as stoats, will have greatly increased the breeding success of native wildlife. As stoats predate 95% of kiwi chicks in areas where there is no, or ineffective, management of mustelids, such operations are critical to rebuilding Kiwi Link's kiwi population.

## 4 Rebuild Robust and Resilient Kiwi Populations

Kiwi Link utilised a multi-pronged approach to rebuild kiwi numbers and ensure populations are genetically robust.

Firstly, the breeding success and survival of existing kiwi were protected and enhanced with intensive professional predator control and the winter toxin operation.

Kiwi Link also worked with Backyard Kiwi, Kiwi Coast, DOC and Northland Regional Council to support kiwi releases into Owhiwa, Pataua North and Taheke. Unfortunately, some of the permitted kiwi releases were unable to be implemented due to the rāhui placed on the Motuora Island kiwi crèche by Ngati Manuhiri.

However, seven kiwi from the Matakoho-Limestone Island creche were still able to be released into Owhiwa. The subsequent monitoring of some of these kiwi via leg-fitted radio transmitters has enabled their survival, dispersal and breeding success to be followed (see Appendix 4).

The fresh genetics brought into Kiwi Link by the released kiwi will help to ensure the genetic robustness and long-term viability of the area's kiwi populations.

The opportunities generated by the telemetry monitoring to share kiwi stories, increase understanding of the need for quality pest control and engage local landowners in dedicated dog control are also key ways of ensuring Kiwi Link kiwi will thrive into the future.

## 5 Objective 5: Improve Coordination and Effectiveness of Plant Pest Control

A potential negative effect of animal pest control is an increase in plant pests as browsing of foliage decreases and more pest plant seeds are dispersed by an increased number of birds. Groups involved in Kiwi Link continued their plant pest control, targeting the most pervasive weeds as a priority.

In the past 12 months alone, landowners and managers contributed \$77,631 of plant pest control labour. This demonstrates the huge amount of effort going into the Kiwi Link area to keep invasive plant pests at bay.

The work of these landowners was helped by a new “Weedy Workbin” which was lent out to landowners with tools, plant pest control products and health and safety equipment. Landowners tackled Taiwan Cherry, ginger, climbing asparagus, pampas, banana passionfruit, jasmine, moth plant, queen of the night, privets and woolly nightshade.



Banana passionfruit before control. Photo: Whareora Landcare

Following the advice of NRC Biosecurity officers, Whareora Landcare also received additional support via an NRC Biofund to engage contractors to remove *Elaeagnus* at an ongoing hotspot that needed attention to prevent further spread.

Unfortunately, the unusually wet summer led to the ongoing postponement and eventual cancellation of planned community “weedy working bees”. The persistent wet and slippery conditions were deemed unsafe for groups of community volunteers to work with pest control tools on steep slopes. Weather forecasts on the planned days predicting further rain also meant that any herbicides used would have been ineffective.

It is hoped that the weedy working bees can resume in the 2023/2024 summer as they have proven to be an effective way to control large weed infestations on private property where landowners need help and are a great way of bringing people together.

## Communication & Engagement

Kiwi Link communications and engagement have increased significantly over the last 12 months.

A new dedicated [Kiwi Link](#) website and Facebook page were completed in April. Together, these communication tools are helping to promote the work and achievements of the Kiwi Link HVA and enable landowners within the project area to find information about how to get involved or access resources.

Kiwi Link also worked with Northland Regional Council to record a video to help showcase and promote the project (yet to be published).

“Chookie” one of the monitored Owhiwa kiwi has also joined Kiwi Coast’s [“Follow a Kiwi”](#) program, with his story now being shared internationally every month.

Kiwi Link website home page ([www.kiwilink.org.nz](http://www.kiwilink.org.nz))



**Kiwi Link Website Now Live!**

## Monitoring

All scheduled monitoring has been completed.

### Animal Pests

All Kiwi Link projects recorded their trap catches and submitted their results to Kiwi Coast as part of the annual collation of Northland data.

During 2022, Kiwi Link groups and projects trapped a further 8,086 animal pests (Table 2). Collating the trap catch data gathered since Kiwi Link began shows that a total of 45,044 pests have been trapped since 2017 (Table 3).

The removal of 45,044 roaming animal pests has improved forest health and helped to restore birdsong to the once near-silent forests across the Kiwi Link area.

Special mention needs to be made of the 'pig sniper' Chris Venmore who has volunteered countless evenings to silently shoot feral pigs at key private properties. Chris shot 33 of the 66 feral pigs removed from Kiwi Link in 2022. This has made a noticeable difference, with very few landowner reports of feral pig damage to forests, paddocks and properties over the last year despite the ideal wet and muddy pig conditions.

Huge thanks also to the NRC Biosecurity team for coordinating feral pig control across the network and working with local and professional hunters to ensure high Health and Safety standards, Kiwi Aversion Training for the hunting dogs and Kauri Dieback Disease spread prevention measures were all rigorously observed.

**KIWI LINK 45,044 ANIMAL PESTS GONE!**



**Table 2: 2022 Kiwi Link Total Collective Pest Control Results**

<b>Group or Project</b>	<b>Possums</b>	<b>Rats</b>	<b>Ferrets</b>	<b>Stoats</b>	<b>Weasels</b>	<b>Feral Cats</b>	<b>Wild Rabbits &amp; Hares</b>	<b>Feral Pigs</b>	<b>Magpie</b>	<b>Myna</b>	<b>Hedgehog</b>	<b>Mice</b>	<b>Other catches</b>	<b>Total</b>
Glenbervie Landcare	34	8	0	1	1	1	0	0	0	0	10	0	0	<b>55</b>
Glenbervie Pest Control	11	3	0	1	0	0	3	0	0	0	2	0	0	<b>20</b>
Harris Road Area Landcare	70	314	0	0	1	0	39	0	2	0	2	0	0	<b>428</b>
Kohinui Stream Landcare	254	277	0	4	1	0	68	2	15	12	18	49	0	<b>700</b>
Mangahui Rd Landowners	51	46	0	1	0	1	1	0	0	0	3	5	1	<b>109</b>
Manulife Whanui Project	11	153	0	10	5	5	0	0	0	1	16	0	14	<b>215</b>
Ngunguru Ford Rd & Sandspit	144	249	0	21	20	11	3	0	0	0	34	1	2	<b>485</b>
NRC Mt Tiger Block	7	64	0	2	10	7	1	0	0	0	4	0	0	<b>95</b>
Owhiwa Landcare	864	373	0	8	6	26	79	41	5	5	9	32	6	<b>1454</b>
Pataua North Landcare	376	361	0	26	12	5	10	0	0	1	58	2	7	<b>858</b>
Taraunui Landcare	2	38	0	2	1	0	0	0	0	0	3	0	0	<b>46</b>
Taheke Land Care	853	703	0	8	19	14	22	6	0	0	53	0	0	<b>1678</b>
Whareora Landcare	995	582	0	18	17	20	22	17	12	3	18	230	9	<b>1,943</b>
<b>Totals</b>	<b>3,672</b>	<b>3,171</b>	<b>0</b>	<b>102</b>	<b>93</b>	<b>90</b>	<b>248</b>	<b>66</b>	<b>34</b>	<b>22</b>	<b>230</b>	<b>319</b>	<b>39</b>	<b>8,086</b>

Note: Trap catch results only - actual tally will be higher as does not include pests controlled with toxins

Table 3: Kiwi Link Total Collective Pest Control Results, 2017 – 2022

Year	Possums	Rats	Ferrets	Stoats	Weasels	Feral Cats	Wild Rabbits & Hares	Feral Pigs	Magpie	Myna	Hedgehog	Mice	Other catches	Total
<b>2016</b>	*project began October 2016 - no pest control data for this year													
<b>2017</b>	3,692	2,379	1	164	127	48	111	71	11	115	210	291	17	<b>7,237</b>
<b>2018</b>	2,535	2,607	0	178	134	46	69	99	26	76	183	208	83	<b>6,244</b>
<b>2019</b>	2,641	2,761	0	125	103	58	186	224	30	74	210	162	22	<b>6,596</b>
<b>2020</b>	3,843	2,313	0	106	95	67	395	144	7	66	230	102	4	<b>7,372</b>
<b>2021</b>	4,795	3,584	0	86	66	98	259	135	31	23	293	118	21	<b>9,509</b>
<b>2022</b>	3,672	3,171	0	102	93	90	248	66	34	22	230	319	39	<b>8,086</b>
<b>Grand Totals</b>	<b>21,178</b>	<b>16,815</b>	<b>1</b>	<b>761</b>	<b>618</b>	<b>407</b>	<b>1,268</b>	<b>739</b>	<b>139</b>	<b>376</b>	<b>1,356</b>	<b>1,200</b>	<b>186</b>	<b>45,044</b>

Note: Trap catch results only - actual tally will be higher as does not include pests controlled with toxins



## Kiwi

Kiwi are monitored in two ways across the Kiwi Link project:

- annual kiwi call listening to measure presence and population trends
- by following a small number of kiwi fitted with transmitters to measure breeding, activity and dispersal.

All Kiwi Link projects participated in the 2023 Annual Kiwi Call Count Survey, either with human listeners or with Kiwi Listening Devices (KLDs).

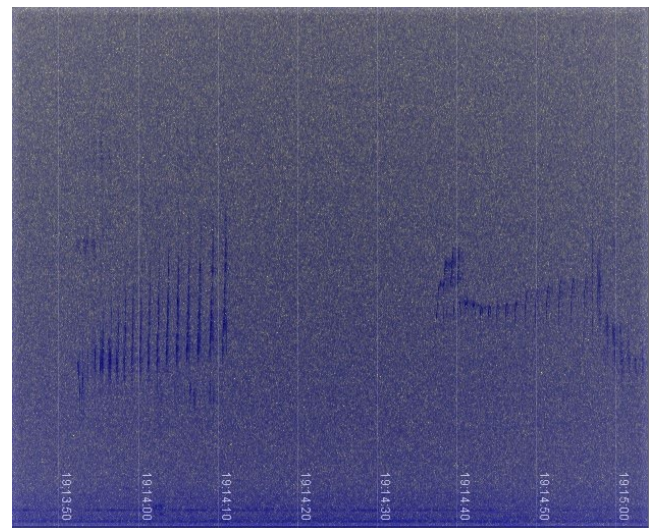
While the 2023 data is now with the DOC for analysis, the most recent Northland Brown Kiwi Call Count Report (2022) included the Kiwi Link data as a cluster for the first time. The following was noted for the Kiwi Link data:

**“The mean number of calls/hr for the stations in this cluster have typically been fewer than 5 calls/hr, but in 2022 one station (Station 347) had a mean of 7.6 calls/hr heard. There is an expectation that this kiwi population is in a period of growth. It will be interesting to monitor the kiwi calls to see if they follow the expected trend.”**

Despite a record number of KLD failures (related to the very wet monitoring period and timer battery failures), Kiwi Link analysis of the 2023 KLD data shows that kiwi are increasing within the Kiwi Link HVA, with a record 7 kiwi calls per hour recorded at the Manulife Whanui “Mussell” site. Kiwi are also now present at new sites where previously they were unable to be detected. Results are presented in Appendix 3.

KLD monitoring also suggests that the number of breeding kiwi pairs now established within Kiwi Link is also on the rise. This was indicated by the increased number of kiwi duets that were recorded in 2023, which signify breeding kiwi pairs.

Huge thanks to Dr Karen Verdurmen for analysing hundreds of hours of kiwi listening data for Kiwi Link sites and providing such meticulous results.



KLD spectrogram of female – male kiwi “duet”, Franklin Rd, 2023.



## Monitoring of Radio Transmitted Kiwi

A number of kiwi fitted with transmitters that have either been previously released or have naturally dispersed into the Kiwi Link area continue to be monitored by Carl Dowd at Pataua North and Backyard Kiwi Project Manager Todd Hamilton (see Appendix 4). This monitoring confirmed the successful nesting of Owhiwa kiwi “Chookie”, who produced three healthy chicks during the last season.

Together the various kiwi monitoring methods being utilised across the Kiwi Link HVA shows that the kiwi population is both increasing and dispersing successfully. To help keep dispersing kiwi safe, new signage was created for the Pataua North where kiwi have been crossing the roads.

However, uncontrolled dogs remain the biggest threat to adult Northland kiwi and can quickly undo years of hard work. In an area such as Kiwi Link, where every breeding adult is critical to the success of the small and scattered kiwi population, the commitment of communities to exemplary dog control is crucial. A stark reminder of this was a kiwi – Tumanako - released by Taheke Landcare, and later found dead in the Ngunguru Forest Block. A subsequent necropsy by Massey University found a dog was responsible for the death.



Chookie the kiwi with Accredited Kiwi Handler Todd Hamilton, February 2023. Photo: Todd Hamilton

## Pāteke

Pāteke are the rarest mainland duck in New Zealand. Congregations of pāteke at Northland flock sites have been counted annually in February since 1988 to monitor population trends.

Kiwi Link groups have worked each year with specialist staff at DOC, the Pāteke Recovery Group and NorthTec to assist with the flock counts and investigate new sites in the Kiwi Link area.

Analysis of the 2023 Pāteke Flock Count data confirmed that the endangered endemic nocturnal ducks have continued to flourish on Northland’s east coast where intense predator control has been sustained. This year the flock count total was 625, a slight increase from last year (see Figure 2).

DOC Senior Biodiversity Ranger, Nigel Miller analysed the results and stated the data showed:

“...a positive indication of pāteke population trends, particularly since predator control started”.

“The small increase this year is a result of a couple of good breeding seasons driven by wet springs, but offset to some degree by the same wet conditions discouraging birds from joining flocks at all. So, hopefully the actual population is far greater than the numbers show.”

Mike Camm from the Pāteke Recovery Group added:

“What is rewarding right now in the middle of their breeding season, is the large number of successfully fledged juvenile families of 4, 5, and 6, still with their parent pairs on small ponds and streams from Ngunguru to Sandy Bay.”

“No doubt due to a combination of factors like a suitable breeding climate, plentiful food supply and suppressed predator numbers. A real testament to the benefit of the large-scale landscape predator trapping being undertaken”.

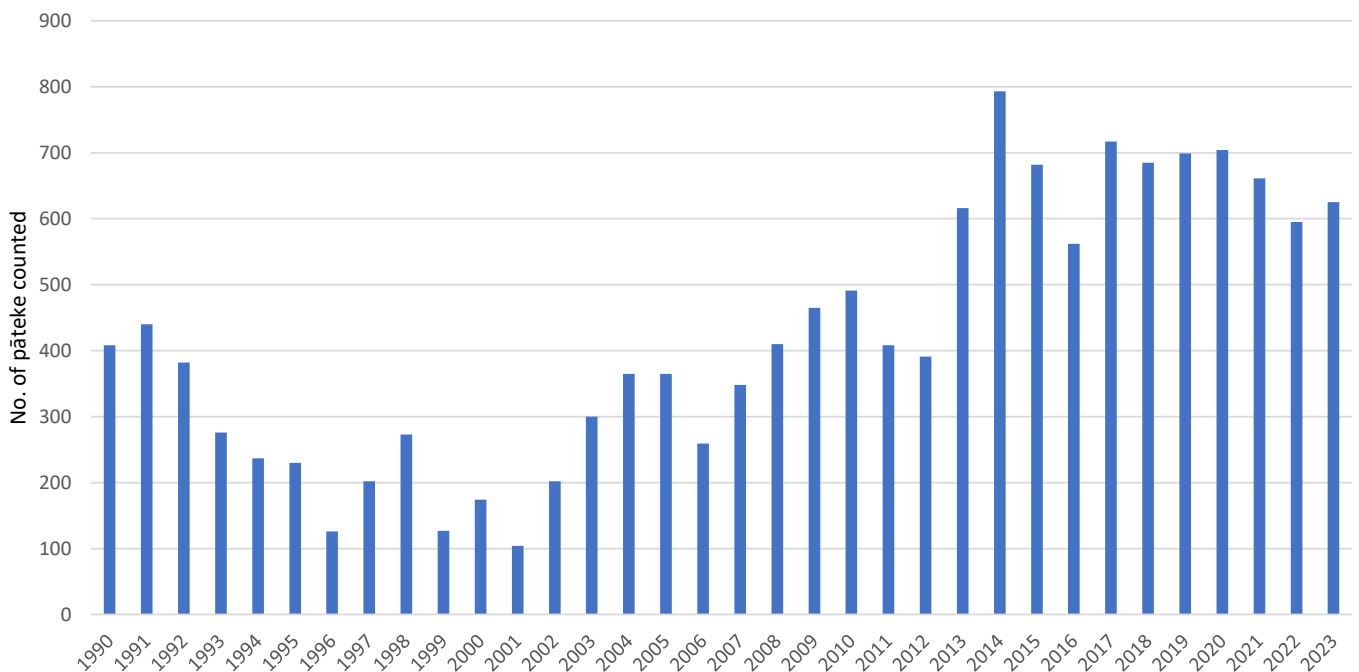


Figure 2: Northland Pāteke Flock Count Data. Source: Department of Conservation, 2023

## Five Minute Bird Counts

One of the aims of the Kiwi Link is to have flourishing fauna across the management area. To track progress towards this goal, annual targeted Five Minute Bird Counts have been carried out for the past five years, using special methodology developed by Dr Dai Morgan.

Eight key native bird species were monitored: tui, kingfisher/kotare, waxeye/ riroriro, kukupa, tomtit/miromiro, fantail/piwakawaka, kākā and bellbird/korimako.

Each year the results are analysed by Dr Morgan as shown in Figure 3, with the latest data indicating that these bird species are indeed increasing across the Kiwi Link HVA.

Dr Morgan stated:

“Despite a relatively wet spring, there was an overall trend which indicated that most of the monitored species increased in their relative abundance across the Kiwi Link HVA. Some of the species had small reductions in abundance, with the most notable being tui; however, all of the changes (both increases and decreases) were within the margins of error.

From these data, it appears that the mammalian predator control being done across the Kiwi Link HVA continues to have a steady and positive impact on the bird species that are being monitored”.

Increased observations of kākā have also been received during the year from Taraunui, Kohinui, Owhiwa and Mt Tiger landowners. Excitingly, a flock of four kakariki – rarely spotted on the New Zealand mainland – were also observed and photographed in the 2023 winter in the Owhiwa area.

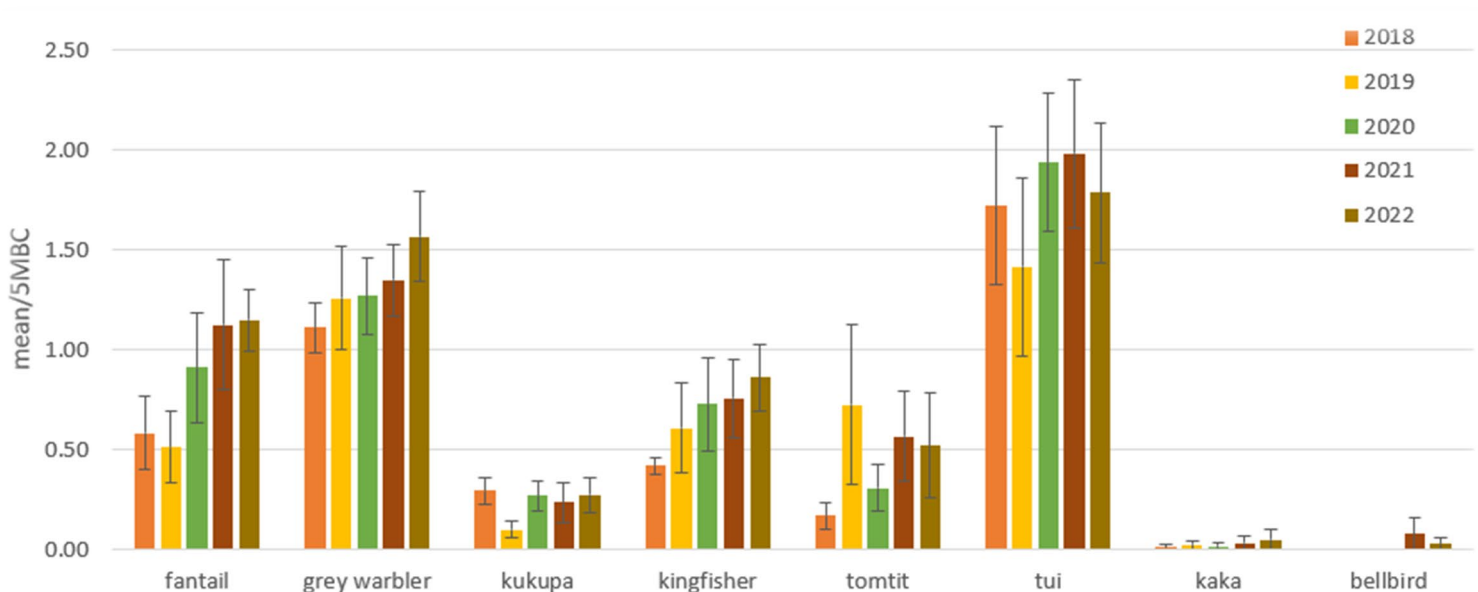


Figure 3: Mean abundance (SE) of key bird species across Kiwi Link Sites (2018-2022)

## Pekapeka / Bats

NRC and Ngāti Kahu o Torongare's announcement of long-tailed bat (pekapeka touroa) presence in the Mt Tiger/Taika block in 2022 and a Manulife Forestry survey confirming bat presence in the Whanui block encouraged further monitoring to investigate additional sites within the Kiwi Link HVA.

With the support of Kiwi Coast and following advice from NRC and DOC bat experts, acoustic monitors were deployed at a range of sites across Kiwi Link during January – February 2023. As Kiwi Link had not carried out bat monitoring before, the monitoring was regarded as a trial. The recommended methodology was tested to see if any bats could be detected, learn the best way to deploy the devices, investigate a range of sites and potential habitats and building data analysis capability.

As prior to 2022 pekapeka had only previously been reported locally a couple of decades ago from the Glenbervie area, expectations of bat detection were low. Surprisingly, and much to the delight of Kiwi Link landowners, long-tailed bats were detected at numerous sites. Map 3 shows where bats were detected during bat surveys conducted by Kiwi Link, NRC and Manulife Forestry.

The data compilation confirmed the NRC Taika block as the key hub for long-tailed bats, with 545 bat passes recorded at one of the NRC monitoring sites in 2022. Kiwi Link's 2023 monitoring detected good numbers of bat passes at upper catchment stream sites, especially those close to the Taika site. However, as distance increased from the 'hub' towards the coast fewer and fewer bats were detected. For example, no bats were detected at Pataua North, and only a single bat pass was detected at the Kohinui site. No short-tailed bats were confirmed by NRC or Kiwi Link, although some possible detections were recorded by both.

As long-tailed bats have a threatened status of 'nationally critical' their presence in good numbers across a range of sites within the Kiwi Link HVA is significant.

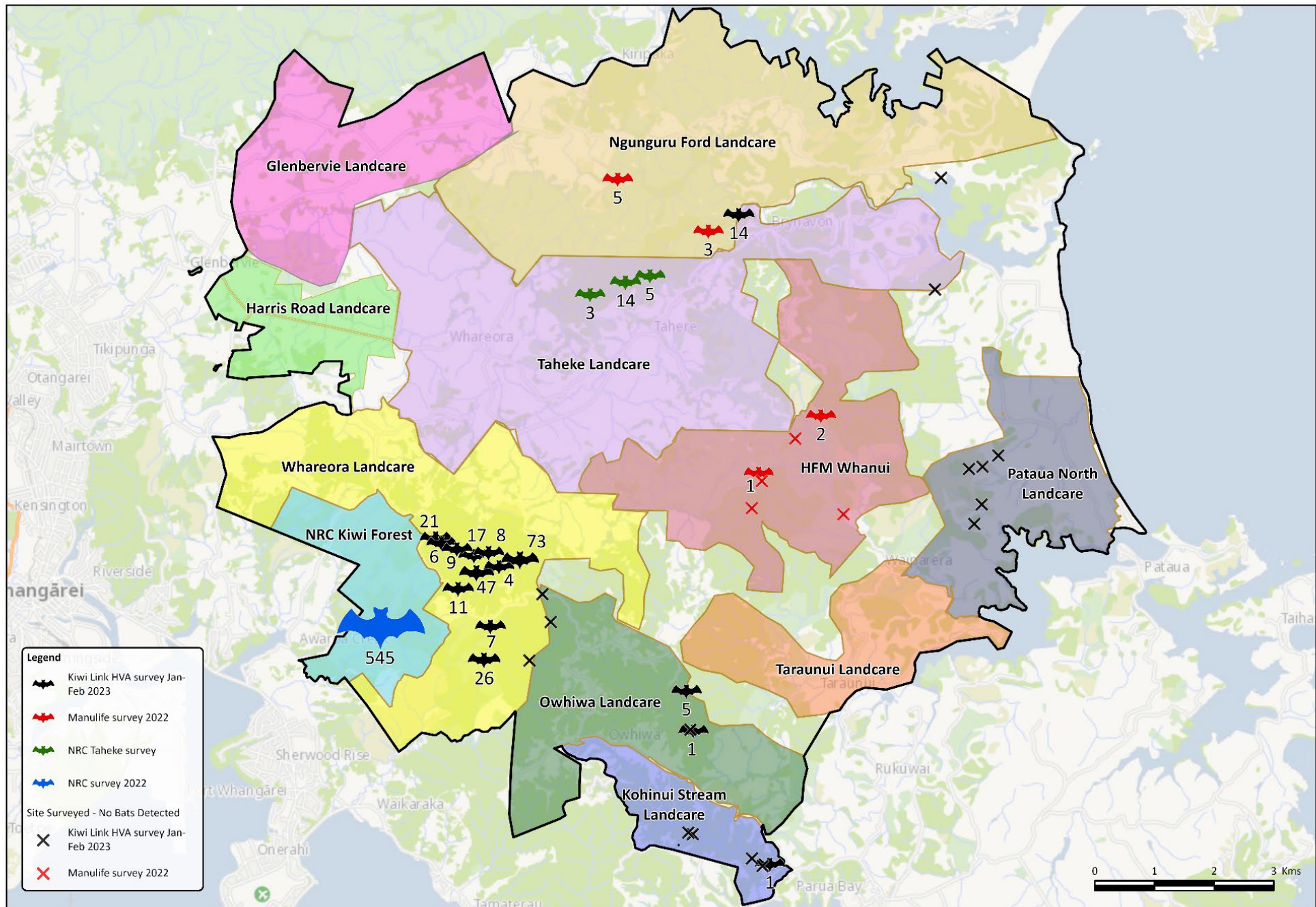
As this was an initial trial to investigate bat monitoring methodology, it cannot be regarded as a comprehensive bat survey of the Kiwi Link HVA. However, the surprisingly good results have inspired Kiwi Link to continue to work with NRC and DOC and Ngāti Kahu o Torongare to further investigate pekapeka presence and determine if any additions or changes need to be made to the existing pest control program to ensure they can thrive in the area.



Long-tailed bat Photo: DOC



Jan Marshall, Kohinui Stream Landcare, deploys a bat monitor. Photo: Kiwi Link



Map 3: Kiwi Link Pekapeka – Bat Presence 2023. Map: Biospatial

## Summary

Over the past year the Kiwi Link HVA has been a success with good progress made towards all five objectives. All groups involved have worked well together, carrying out animal and plant pest control and monitoring over 15,000 hectares.

In addition to funds provided during the 2022/23 financial year by NRC and Kiwi Coast Trust, local land managers, businesses and private landowners contributed \$479,393 of unpaid labour and resources. This significant contribution demonstrates the outstanding commitment and dedication of the groups and projects involved to reinvigorate their native forests, wildlife and kiwi.

New predator traps and bait stations installed into key gaps thanks to additional funds from Predator Free Whangarei have further linked traplines of neighbouring groups together into a growing combined predator control network. As Kiwi Link lies at the heart of the PFW 60,000ha mustelid suppression zone, it has a critical role to play in this project.

The removal of 45,044 roaming animal pests over the past seven years has improved forest health and helped to restore birdsong to the once near-silent forests.

Kiwi are going from strength to strength within the Kiwi Link HVA as evidenced by increasing kiwi calls, rising number of breeding pairs and monitoring of kiwi survival, dispersal and breeding success.

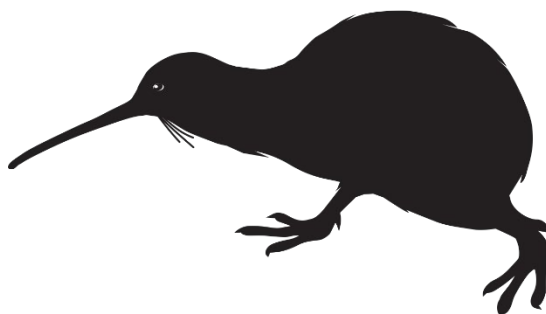
Additional monitoring data, including five-minute bird counts, show upward trends in populations of a range of other native species. Increasing observations of key species such as kākā and korimako / bellbird bring hope that such species will return in strength. These results can be attributed to the ongoing hard work carried out by the many local landowners and land managers involved.

The 2023 kākāriki observations and pekapeka detections are highlights that exceed the expectations held when Kiwi Link began. They inspire fresh motivation and renewed determination to protect and restore the significant biodiversity values within Kiwi Link.

The achievements of the Kiwi Link HVA will also be resulting in a beneficial 'halo' effect for the adjoining Whangarei Heads and Tutukaka biodiversity strongholds. Less pests will be re-invading these areas and native wildlife will be spilling into them.

Kiwi Link thanks NRC for the continued support and resources over the past seven years. The strong working relationship formed with NRC Biosecurity officers and managers has provided a strong foundation for the success of the project.

Huge thanks are also due to all the private landowners, professional predator trappers and land managers who have been servicing traps, filling bait stations, counting birds and collecting data for the past seven years (and more!). The immense community effort and leadership remains the key to success. Without it, our local native forests and wildlife would have remained in decline.



## Appendix 1: Kiwi Link NRC HVA Expenditure July 1 2022 - June 30 2023

<b>Income</b>	
Northland Regional Council HVA funds	<b>\$120,000</b>
<b>Operating Expenses</b>	
Animal pest control products	\$24,816
Communications	\$3,539
Coordination, administration & financial management	\$10,988
Kiwi corridor monitoring	\$2,427
Kiwi monitoring - Tracking & KLD analysis	\$5,914
Mapping	\$250
Monitoring equipment	\$1,136
Monitoring indicator species – e.g., bats	\$6,200
Network Planning & Implementation	\$2,288
Plant pest control	\$1,695
Professional predator trapping labour	\$50,602
Specialist community project support, e.g., Conservation Dogs	\$2,968
Trapper training and mentoring	\$1,283
Trialling new pest control technology	\$5,900
<b>Total Operating Expenses</b>	<b>\$120,006</b>
<b>Net Surplus or Deficit</b>	
	<b>-\$6</b>

Appendix 2: Kiwi Link HVA Financial Contributions, July 1 2022 – June 30 2023 Note: all figures exclude GST

	NRC Kiwi Link HVA funds	Kiwi Coast	Unpaid labour (costed at \$30/hour)	Contribution by Landowner / manager	NRC - other funds	Tahi Estate	Martin Trust	QEII National Trust	Predator Free Whangarei	Donations	Totals
<b>Administration / Project Management</b>	\$10,988	\$10,250	\$4,550	\$7,560	\$0	\$0	\$1,050	\$300	\$0	\$500	\$35,198
Glenbervie Landcare			\$180								
Harris Rd Area Landcare			\$300								
Manulife - Whanui & Ngunguru Blocks			\$0	\$1,560							
Kohinui Landcare			\$300								
Ngunguru Ford Landcare			\$150								
NRC - Mt Tiger Pines Block			\$0	\$6,000							
Owhiwa Landcare			\$300				\$1,050				
Pataua North Landcare			\$720								
Rukuwai Landcare			\$500								
Taheke Landcare			\$1,650								
Taraunui Landcare			\$150								
Whareora Landcare			\$300							\$500	
<b>Animal Pest Control - labour</b>	\$51,885	\$1,500	\$153,172	\$25,950	\$0	\$21,000	\$14,282	\$3,500	\$9,279	\$0	\$280,568
Glenbervie Landcare			\$4,500								
Harris Rd Area Landcare			\$46,800								
Kohinui Landcare			\$18,522								
Mangahui Landowners			\$5,580								



Manulife - Whanui & Ngunguru Blocks			\$0	\$6,000							
Ngunguru Ford Landcare			\$1,800								
NRC - Mt Tiger Pines Block			\$0	\$19,950							
Owhiwa Landcare			\$13,560				\$14,282				
Pataua North Landcare			\$870			\$21,000					
Rukuwai Landcare			\$6,000								
Taheke Landcare			\$15,120								
Taraunui Landcare			\$5,500								
Whareora Landcare			\$34,920								
<b>Plant Pest Control - labour</b>	<b>\$0</b>	<b>\$0</b>	<b>\$37,770</b>	<b>\$0</b>	<b>\$4,520</b>	<b>\$19,000</b>	<b>\$16,341</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$77,631</b>
Glenbervie Landcare			\$2,250								
Harris Rd Area Landcare			\$600								
Kohinui Landcare			(reported via WNHRT)								
Mangahui Landowners			\$1,800								
Ngunguru Ford Landcare			\$900								
Owhiwa Landcare			\$3,720				\$16,341				
Pataua North Landcare			\$1,740			\$19,000					
Rukuwai Landcare			\$4,500								
Taheke Landcare			\$9,900								
Taraunui Landcare			\$1,560								
Whareora Landcare			\$10,800		\$4,520						
<b>Pest Control Products - toxins, traps, herbicides</b>	<b>\$32,411</b>	<b>\$3,300</b>	<b>\$4,191</b>	<b>\$3,000</b>	<b>\$0</b>	<b>\$1,700</b>	<b>\$608</b>	<b>\$0</b>	<b>\$9,237</b>	<b>\$0</b>	<b>\$54,447</b>

Mangahui Landowners			\$250								
NRC - Mt Tiger Pines Block			\$0	\$3,000							
Owhiwa Landcare			\$0				\$608				
Pataua North Landcare			\$0			\$1,700					
Taheke Landcare			\$3,666								
Whareora Landcare			\$275								
<b>Planting</b>	<b>\$0</b>	<b>\$0</b>	<b>\$4,700</b>	<b>\$540</b>	<b>\$0</b>	<b>\$74,000</b>	<b>\$3,214</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$82,454</b>
Pataua North Landcare			\$2,240	\$540		\$74,000					
Kohinui Landcare			\$600								
Ngunguru Ford Landcare			\$300								
Owhiwa Landcare			\$0				\$3,214				
Rukuwai Landcare			\$1,200								
Whareora Landcare			\$360								
<b>Engagement, Education and Communications</b>	<b>\$6,077</b>	<b>\$10,200</b>	<b>\$4,890</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$21,167</b>
Harris Rd Area Landcare			\$450								
Kohinui Landcare			\$300								
Pataua North Landcare			\$1,440								
Rukuwai Landcare			\$1,560								
Taheke Landcare			\$360								
Whareora Landcare			\$780								
<b>Monitoring</b>	<b>\$18,645</b>	<b>\$12,350</b>	<b>\$26,450</b>	<b>\$12,010</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$9,122</b>	<b>\$0</b>	<b>\$6,957</b>	<b>\$85,534</b>
Glenbervie Landcare			\$150								
Harris Rd Area Landcare			\$330								

Manulife - Whanui & Ngunguru Blocks			\$0	\$1,000							
Kohinui Landcare			\$750								
Ngunguru Ford Landcare			\$600								
NRC - Mt Tiger Pines Block			\$0	\$11,010							
Owhiwa Landcare			\$450							\$6,957	
Pataua North Landcare			\$21,540								
Rukuwai Landcare			\$650								
Taheke Landcare			\$1,050								
Whareora Landcare			\$930								
<b>TOTALS</b>	<b>\$120,006</b>	<b>\$37,600</b>	<b>\$253,723</b>	<b>\$48,520</b>	<b>\$4,520</b>	<b>\$115,700</b>	<b>\$35,495</b>	<b>\$12,922</b>	<b>\$18,516</b>	<b>\$7,457</b>	<b>\$636,999</b>

### Appendix 3: Kiwi Call Monitoring Results 2020 - 2023

Group/ Project Name Site Name	2020					2021					2022					2023				
	Total no. calls	M	F	Duets	Calls p/h	Total no. calls	M	F	Duets	Calls p/h	Total no. calls	M	F	Duets	Calls p/h	Total no. calls	M	F	Duets	Calls p/h
Glenbervie Landcare - Lisa's House	not surveyed	-	-	-	-	not surveyed	-	-	-	-	1	1	0	0	0.02	0	0	0	0	0
Glenbervie Landcare – Daileys Farm	not surveyed	-	-	-	-	not surveyed	-	-	-	-	0	0	0	0	0.00	0	0	0	0	0
Harris Rd Landcare - Easterbrook Farm	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0
Kohinui Stream Landcare - Kauri Villas	not surveyed	-	-	-	-	5	2	3	1	0.08	4	4	0	0	0.08	1	1	0	0	0.01
Mangahui - Gibson & Forrester	not surveyed	-	-	-	-	34	26	8	2	0.57	24	21	3	0	0.48	not surveyed	-	-	-	-
Manulife Whanui - Oyster	49	43	6	5	1.75	35	28	7	7	1.75	101	74	27	17	1.80	68	46	22	12	2.4
Manulife Whanui - Toheroa	3	3	0	0	0.11	16	14	1	2	0.80	26	18	8	3	0.46	49	41	8	5	1.75
Manulife Whanui - Mussell	72	54	18	12	2.57	44	35	9	8	2.20	198	158	40	29	3.54	198	147	51	36	7.07
Ngunguru Ford Road Landcare - Steve McQuoids	26	22	4	3	0.37	faulty KLD	-	-	-	-	15	10	5	3	0.30	faulty KLD	-	-	-	-
NRC Mt Tiger Block - Site 1 - Original	7	6	1	0	0.18	14	12	2	0	0.23	16	12	4	1	0.32	not surveyed	-	-	-	-
NRC Mt Tiger Block - MT21	0	0	0	0	0.00	18	15	3	3	1.20	21	15	6	nd	2.63	18	13	5	4	2.25
NRC Mt Tiger Block - MT22	0	0	0	0	0.00	5	4	1	1	0.29	2	2	0	0	0.25	2	2	0	0	0.25
NRC Mt Tiger Block - MT25	3	3	0	0	0.03	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0
NRC Mt Tiger Block - MT26	0	0	0	0	0.00	1	1	0	0	0.08	9	5	4	nd	1.13	4	2	2	2	0.5
NRC Mt Tiger Block - MT29	15	10	5	4?	0.13	30	19	11	8	2.00	16	10	6	nd	2.67	0	0	0	0	0
Owhiwa Landcare - Mullooly	3	0	3	1	0.04	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0
Owhiwa Landcare - Bob & Carol	17	14	3	2	0.24	8	8	0	0	0.10	23	13	10	6	0.46	22	11	11	8	0.44
Owhiwa Landcare - Kerry Martins: watertanks	not surveyed	-	-	-	-	not surveyed	-	-	-	-	37	17	20	8	0.74	6	4	2	0	0.75

Group/ Project Name Site Name	2020					2021					2022					2023				
	Total no. calls	M	F	Duets	Calls p/h	Total no. calls	M	F	Duets	Calls p/h	Total no. calls	M	F	Duets	Calls p/h	Total no. calls	M	F	Duets	Calls p/h
Owhiwa Landcare -Kerry Martins: back fence	not surveyed	-	-	-	-	not surveyed	-	-	-	-	77	49	28	10	1.54	39	27	12	9	4.87
Pataua Nth Landcare - Kumara Pit	no data	-	-	-	-	human listening	-	-	-	2.25	22 (H)	-	-	-	3.4	not surveyed	-	-	-	-
Pataua Nth Landcare - Ohuatahi	no data	-	-	-	-	human listening	-	-	-	2.67	34 (H)	-	-	-	4.1	faulty KLD	-	-	-	-
Pataua Nth Landcare - Sue's bus	no data	-	-	-	-	human listening	-	-	-	2.88	no data	-	-	-	-	16	8	8	5	2
Pataua Nth Landcare - Kauri Forest	no data	-	-	-	-	no data	-	-	-	-	no data	-	-	-	-	4	2	2	1	0.5
Taheke Landcare - Saparelli	23	18	5	4	0.33	not surveyed	-	-	-	-	35	25	10	8	0.70	24	19	5	0	0.48
Taheke Landcare - Taheke Scenic Reserve	not surveyed	-	-	-	-	not surveyed	-	-	-	-	23	8	15	3	0.46	18	6	12	3	0.36
Taheke Landcare - Norman Boundary	not surveyed	-	-	-	-	not surveyed	-	-	-	-	13	9	4	2	0.26	faulty KLD	-	-	-	-
Taraunui Landcare - Lifshutz	8	8	0	0	0.16	25	20	5	2	0.42	16	16	0	0	0.27	7	7	0	0	0.1
Whareora Landcare - MSR 1	0	0	0	0	0.00	0	0	0	0	0.00	1	0	1	0	0.02	0	0	0	0	0
Whareora Landcare - MSR 2	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0
Whareora Landcare - MSR 3	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0
Whareora Landcare - Holwell Ridge	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0
Whareora Landcare - Simon & Sue	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0
Whareora Landcare - Brodie's Place	not surveyed	0	0	0	0.00	0	0	0	0	0.00	not surveyed	-	-	-	-	0	0	0	0	0
Whareora Landcare - Waikaraka Walkway Cedar	not surveyed	-	-	-	-	not surveyed	-	-	-	-	88	65	23	20	1.47	76	58	18	12	1.52
Kohinui Stream Landcare - Redwoods	not surveyed	-	-	-	-	not surveyed	-	-	-	-	not surveyed	-	-	-	-	0	0	0	0	0
Kohinui Stream Landcare - Villa Fence	not surveyed	-	-	-	-	not surveyed	-	-	-	-	not surveyed	-	-	-	-	0	0	0	0	0

## Appendix 4: Update of Radio Transmitted Kiwi in or near the southern end of the Kiwi Link area.

Todd Hamilton, Kiwi Coast  
Accredited Kiwi Handler, July 2023

**Chookie** – An adult male released in 2021. He has remained in the Martins' dog free Forestry block on Owhiwa Road and found a mate. After successfully hatching two chicks in December 2021 he has gone on to nest three times in the 2022-23 season. He hatched a single chick (named Kiki) in September 2022 and 2 more chicks in December 2022. He started another nest in May 2023 that is due to hatch in July.

**Malaika** – She was released at Parua Bay in 2019. After travelling 10km north to the Whanui forestry block she made her way back to settle at Martins' Forestry block east of Owhiwa Road. She looks to have possibly paired up with Chookie. As she is almost 6 years old, fully grown and well settled we removed her transmitter in April 2023. She had done great work for kiwi recovery in the Kiwi Link area as we were able to radio track her and tell locals of her travels into areas where until recently there have been very few kiwi.

**Teina** – He was released at Parua Bay in 2019 and moved his way into the Kiwi Link area. He is still well settled at Martins' Forestry block east of Owhiwa Road. Despite having female kiwi near him once again he did not show any nesting activity this season and has fattened up to a very heavy 3550g. This is fat for an adult male kiwi.

**Pepi** – Is a wild hatched and grown kiwi (he had no ID chip) that was found with Ross (a male kiwi released at Parua Bay in 2018 who had moved to Pepi Road) in November 2021. He is a male kiwi and finding two males together is very unusual. He was radio transmitted enabling us to follow his travels up to Te Rongo Road, back down to the bush near the Parua Bay boat ramp and then back up to Pepi Road before we lost contact with him for 3 months.

He had headed NW and in May 2023 he turned up on the ridge behind the Waikaraka village that runs into Franklin Road. He has presumably been looking for a female mate in this low kiwi density area. Unfortunately, his transmitter band broke and he dropped his transmitter so we are unable to follow his travels further.

**Wally** – This male was released way back in 2008 at Kauri Mt and turned up in 2018 at Campbell Road with a tracked Parua Bay released female. Although not in the Kiwi Link area he continues to produce chicks very nearby. Once again, this guy made a super nesting effort with back to back to back nests (3 in a row!) producing 3 chicks this season.

**Beach Girl** – This adult female was rescued from the DOC Motuora Island kiwi crèche during the 2020 drought and released at Taraunui Road. She is now in good health and 2500g in weight after being a very skinny 1500g on rescue. She has moved NW to the Halses' property on Ross Road and has been settled there.

**Valentine** – a young female kiwi released in 2021 who wandered around the pine blocks east of Owhiwa road, then over to Taraunui Road before returning to the pines on Owhiwa Road. She had remained settled in safe area of pampas and pines there for over a year so we removed her transmitter.

### Kiwi released in 2022-23 Season:

**Hope** – This young female was transferred from Limestone Island via the Parua Bay School in November 2022. She was released in a large Owhiwa Road pine block that is dog free and has had a controlled kiwi saver/1080 bait-station toxin pulse to clear out trap-shy stoats. She was 1 year old and 1875g on release. She has remained in the pine block and has grown to 2150g.

**Murdoch** – Transferred via Parua Bay public kiwi release event to Owhiwa Road in March. This 7 year old adult male headed north to regenerating bush at the end of Ross Road and in July his radio data stream showed that he was starting to nest – so he is well settled!

**Maia II** – A 2 year old female. Released March 2023 at Owhiwa Road and after walking north to Ross Road she returned to an area of bush near her release site.

**Om** – An adult female released March 2023. She has headed north from her Owhiwa Road release area to bush north of Ross Road.

**Fetu Mama** – A young, probably male kiwi, released in March 2023. He has headed west of his release area to be on the Owhiwa Road Ridge.

**Humphries** – A 2 year old male kiwi transferred from Limestone Island via Whangarei Heads School to Owhiwa Road in June 2023. After heading into the native bush north he has returned to the pampas and pines of his release site.

**Te Motu Manu Hine** – A 2 year old female transferred via the Whangarei Heads School to Owhiwa Road in June 2023. She has moved east of her release site but has remained in the large pine block area.

**Fish** – This young kiwi was hit by a car at the Whangarei Heads. Luckily it was his tough rear end that got hit not his fragile chest and head. He was given a health check and then released with a transmitter away from roads and dogs at Owhiwa road. His health and activity were monitored and he appears to have made a full recovery, so much so that he has walked northwards to an area of bush west of Ross Road.





Report prepared by Ngaire Sullivan, Kiwi Link HVA Coordinator, July 2023.  
Design by Abby Davidson Design.