

Kiwi Link

Community Pest Control Area

Year 4 Report

July 2020



Background

Community-led conservation groups involved in Kiwi Link are working together to restore biodiversity over approximately 14,000 ha between Taraunui and Ngunguru Ford in eastern Whangarei. This project has been 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. The Kiwi Link Community Pest Control Area (CPCA) got underway with Northland Regional Council (NRC) in January 2017.

The vision of Kiwi Link is "Flourishing flora and fauna, with abundant kiwi roaming safely between Taraunui and Ngunguru Ford by 2026".

Kiwi Link enables the creation of New Zealand's first kiwi corridor as identified by the Kiwi Coast. Kiwi Link feeds into the strategic goals of the Kiwi Coast and is part of the 'first focus area' identified in the Kiwi Coast Strategic Plan (2017).

This report summarises the results and achievements of the Kiwi Link CPCA during its fourth year of operation from July 1 2019 – June 30 2020.

Goals

To achieve its vision the Kiwi Link will:

- Work together as communities and land managers to restore the native flora and fauna between Taraunui and Ngunguru Ford.
- Fill the remaining gaps to complete a continuous predator trapping network that will significantly reduce predators and assist native biodiversity to thrive.
- Coordinate animal and plant pest operations for maximum efficiency and effectiveness.
- Rebuild the small remnant kiwi populations and ensure their genetic viability by reducing key predators and translocating more and genetically diverse kiwi into the area.
- Carry out monitoring to inform decision making and track progress towards goals.
- Secure funds and resources to ensure all existing community-led conservation projects in the area continue to operate successfully.
- Motivate and empower further landowners to actively participate in environmental stewardship/ kaitiakitanga by holding joint community events and skill building workshops.
- Link in and coordinate with the Kiwi Coast and enable the creation of NZ's first kiwi corridor.



Professional Predator Trapper Todd Hamilton demonstrates the SA2 Feral Cat and Possum Trap at the Kiwi Link CPCA Possum and Rat Control Workshop, November 2019.

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

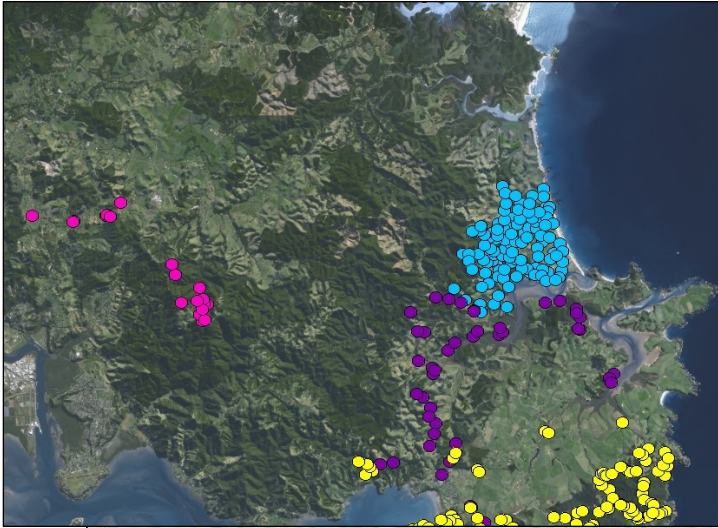
- Possums
- Rodents
- Mustelids
- Feral cats
- Feral Pigs
- Mynas
- Magpies
- Hedgehogs
- Banana passionfruit
- Elaeagnus
- Climbing asparagus
- Taiwan cherry
- Wild ginger
- Moth plant
- Glyceria maxima
- Woolly nightshade

Kiwi Link Groups and Projects

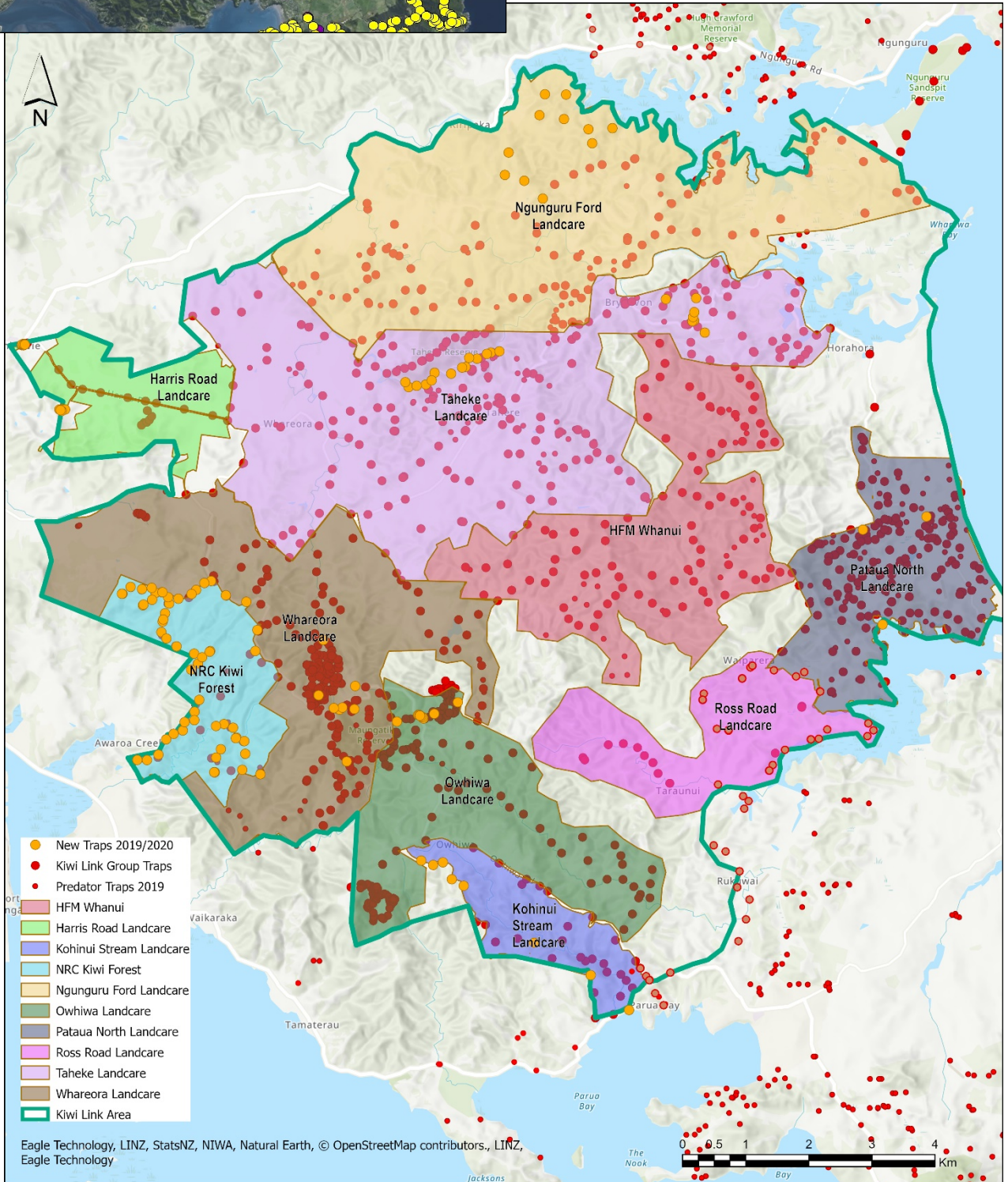
There are 10 projects working together as Kiwi Link over 14,133 hectares:

- Harris Rd Area Landcare
- HFM Whanui Project
- Kohinui Stream Landcare
- Ngunguru Ford Landcare
- NRC Mt Tiger Forestry Block
- Owhiwa Landcare
- Pataua North Landcare
- Ross Road Landcare
- Taheke Landcare
- Whareora Landcare

Map 2 shows the location of the project areas.



Map 1: Predator traps, 2013 (Map: NRC)



Map 2: Predator traps as at June 30, 2020. (Map: A. Duxfield)

Objectives

Kiwi Link CPCA progressed all five key objectives in Year 4:

[Objective 1: Enable the groups to continue their existing work](#)

Resources provided to groups included traps, lures, toxins, bait stations, weed spray, monitoring and safety equipment as requested. For the second year running, demand exceeded budget constraints and not all products requested were able to be supplied.

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.

In November 2019 a 'Rat and Possum Control' Workshop was held to help build the skills and capacity of private landowners to carry out successful pest control on their blocks. The workshop was attended by 30 keen landowners from across the Kiwi Link CPCA.

[Objective 2: Fill the gaps to complete a continuous predator control trapping network](#)

The Kiwi Link predator trap network targeting feral cats and mustelids (weasels, stoats and ferrets) was further expanded, linked and infilled.

In July 2016, there were 672 predator traps being operated within the Kiwi Link area by a mix of unpaid community volunteers, paid community-based professionals and trained staff from NRC and DOC. An additional 150 predator traps were deployed into key gaps during the year. This increased the total number of predator traps to 1,704 and further linked traplines of neighbouring groups, growing the collective trapping network.

Comparing predator traps in the area in 2013 (Map 1) to those in place at June, 2020 (Map 2) shows the progress made to date.



Flyer for the Kiwi Link Rat and Possum Control Workshop, November 2019

Objective 3: Establish a combined bait station network

Further bait stations were supplied to landowners to infill and expand the bait station network within the Kiwi Link area. In addition to the popular mini-philproof bait stations, Pied Piper bait stations were added into the networks of a number of blocks, and have proven a successful means of preventing possums and other non-target animals from consuming rat toxin.

Toxins continue to be pulsed and cycled each year, to avoid a build-up of bait shy animals. Each winter special emphasis is put on a coordinated possum and rat knockdown with willing landowners across the Kiwi Link as far as practically possible, and as resourcing allows. In 2019 the knockdown targeted possums with cyanide and rats with pindone.

A number of landowners continued rat control after the knockdown with diphacinone or pindone, many resourcing the toxins themselves once Kiwi Link supplies were exhausted.



Kerry Martin with Malaika the monitored kiwi in the Williams Forest Block, Owhiwa June 2020 (Photo: Todd Hamilton)



Mt Tiger forest pig damage, July 2019.



Maungatika stoat catch.

Objective 4: Rebuild Kiwi Populations

Kiwi Link CPCA continued its multi-pronged approach to building kiwi numbers and genetics during the year.

Firstly, the breeding success and survival of existing kiwi were protected and enhanced with intensive professional predator control. Secondly, dog owners continued to be engaged in the need for good dog control to ensure kiwi longevity. Kiwi aversion training workshops for hunting and farm dogs were held at Taheke and Pataua North.

In addition, Kiwi Link CPCA worked in with Backyard Kiwi, Kiwi Coast, Department of Conservation and Northland Regional Council to support a further kiwi release at Parua Bay in February 2020.

Releasing kiwi near the border of the Kiwi Link CPCA, gives them the opportunity to disperse into the area. This helps to supplement the small existing kiwi population scattered across the Kiwi Link CPCA and help boost genetic variability to ensure long-term population viability.

Over four hundred people attended the public Backyard Kiwi release, which provided a great opportunity for locals to see kiwi up close and learn about the crucial importance of good dog control.

The four kiwi released by Backyard Kiwi - Kohi, Hancock, Taonga and Malaika - were fitted with transmitters and subsequently tracked by Backyard Kiwi Project Manager Todd Hamilton (See Appendix 1).

Unfortunately, due to the Covid-19 pandemic Pataua North Landcare's scheduled public kiwi release was unable to be held.

In addition, in late May 2020 a malnourished adult female kiwi, was released by Backyard Kiwi into a wetland on Taraunui Road after being rescued from the drought stricken Motuora Island kiwi creche. Subsequent monitoring

shows she has settled in well and recovered significant weight and condition.

With Taheke Landcare continuing to progress their kiwi translocation proposal, the kiwi population of the Kiwi Link area may receive a significant boost in 2021.

Objective 5: Plant pest control

A potential negative effect of animal pest control is an increase in plant pests. Groups involved in Kiwi Link continued their plant pest control, targeting moth plant, Elaeagnus, wild ginger, climbing asparagus, woolly nightshade, Taiwan Cherry and glyceria.

Meet a Kiwi Event

Unfortunately, the Kiwi Link CPCA annual 'Meet a Kiwi Event' was unable to be held due to the Covid-19 pandemic. It is hoped that this event will resume in 2021.



Kohi the kiwi with Robyn Bigelow from Kohinui Landcare on his release day, February 2020 (Photo: Carolyn Comdon).

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 data. The results show that a further 6,596 animal pests were trapped by the groups and projects involved in Kiwi Link during 2019 (Table 1).

Collating the trap catch data gathered since the Kiwi Link CPCA began shows that a total of 20,077 pests have been trapped since 2017 (Table 2).

As stoats kill 95% of kiwi chicks before they reach one year old, the 467 stoats trapped will have increased the likelihood of kiwi chick survival. As stoats are known to range large distances, this may have also assisted kiwi chick survival rates in the neighbouring strongholds of Tutukaka and Whangarei Heads.

Landowners across the Kiwi Link CPCA remain concerned about feral pigs, illegal pig hunting activity, pig damage to native forest health and the risk posed by hunters and pigs in spreading Kauri Dieback Disease (KDB). NRC have continued to monitor the feral pig population and coordinate the collaborative Pig Control Plan developed in 2019 by Good Wood Aotearoa, NRC, Kiwi, Coast, Department of Conservation (DOC), Whangarei District Council (WDC), local Landcare Group representatives, and professional pig hunters. However, a funding application to the DOC Community Funds by Kiwi Coast in 2019 to bring additional resources in to help support the Coordinated Pig Control Plan was unsuccessful.

Northern Rata Photopoint Monitoring

Photopoint Monitoring of indicator species such as northern rata, a favourite of possums, helps to demonstrate the outcomes achieved from sustained pest control within the Kiwi Link CPCA. Photos taken of the same tree in 2011 and 2019 (see below) shows a noticeable improvement in foliage and flowering effort, resulting in an increased food source for nectar loving native birds such as tui and bellbird.



Table 1: Kiwi Link Groups & Projects Collated Pest Control Results Jan - Dec 2019

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

Group or Project	Possums	Rats	Ferrets	Stoats	Weasels	Feral Cats	Wild Rabbits & Hares	Feral Pigs	Magpie	Myna	Hedgehog	Mice	Other catches?	Total
Awa Way	12	50	0	0	0	0	0	0	0	0	0	0	0	62
Harris Road Area Landcare	406	253	0	2	5	0	12	0	0	0	2	0	5	685
HFM Whanui Project	4	128	0	20	11	5	1	99	0	0	7	0	0	275
Kohinui Landcare Group	485	497	0	6	0	1	78	1	15	28	13	141	0	1,266
Ngunguru Ford Landcare	80	129	0	5	7	5	2	0	0	0	18	0	0	246
Owhiwa Landcare	511	390	0	18	14	5	57	64	4	42	18	10	13	1166
Pataua North Landcare	72	292	0	17	22	7	5	0	0	0	64	0	0	479
Ross Rd Landcare	2	42	0	6			1	0	0	0	12	0	0	63
Taheke Land Care Totals	551	628	0	21	35	26	25	9	2	2	65	2	0	1366
Taraunui Pest Control	10	11	0	0	0	0	0	0	0	0	0	4	1	26
Whareora Landcare	508	341	0	30	9	9	5	51	9	2	11	5	3	983
Totals	2,641	2,761	0	125	103	58	186	224	30	74	210	162	22	6,596

Table 2: Kiwi Link Total Collective Pest Control Results, 2017 – 2019

Year	Possums	Rats	Ferrets	Stoats	Weasels	Feral Cats	Wild Rabbits & Hares	Feral Pigs	Magpie	Myna	Hedgehog	Mice	Other catches	Total
2017	3,692	2,379	1	164	127	48	111	71	11	115	210	291	17	7,237
2018	2,535	2,607	0	178	134	46	69	99	26	76	183	208	83	6,244
2019	2,641	2,761	0	125	103	58	186	224	30	74	210	162	22	6,596
Grand Totals	8,868	7,747	1	467	364	152	366	394	67	265	603	661	122	20,077

Kiwi

All Kiwi Link projects participated in the Annual Kiwi Call Count Survey, either with human listeners or with Kiwi Listening Devices (KLDs) at less accessible sites or where no kiwi are known to be present. Results are presented in Appendices 2 and 3.

Analysis completed to date of the 2020 KLD data suggests that kiwi numbers are increasing at some sites within the Kiwi Link CPCA. Kiwi were recorded for the first time at a long-monitored site in the upper Rukuwai Stream valley in the Owhiwa Landcare, delighting the landowners involved.

Male – female kiwi “duets” were recorded within the HFM Whanui, NRC Mt Tiger and Owhiwa Landcare project areas. As duets indicate breeding pairs of kiwi, this is good news for the Kiwi Link’s growing kiwi population.

Monitored kiwi

Transmitted kiwi were tracked moving from release sites at Whangarei Heads and Pataua North through the Kiwi Link CPCA within the Owhiwa, Kohinui, Ross Rd and HFM Whanui Projects. Ross the kiwi also remained fairly settled on the outskirts of the Kiwi Link CPCA on Pepi Road (Appendix 3).

Additional predator traps were deployed and dedicated landowner engagement was carried out to help ensure the safety of these dispersing kiwi.

Unfortunately, two monitored kiwi died during the year. Kohi the kiwi was struck by a car and killed on Owhiwa Rd, at 11pm - the night before the Covid19-pandemic lockdown would have significantly reduced road traffic.

Pakiri the kiwi was also found dead in the HFM Whanui area, possibly killed by dogs.



Cam McInnes tracks Jemima the kiwi in the HFM Whanui block (Photo: Rolf Fuchs, NRC).



Greg the kiwi. (Photo: Anne Stewart, Pataua Nth Landcare).

Pateke

Pateke (brown teal) are the rarest mainland duck in New Zealand. Kiwi Link groups work each year with Kiwi Coast, specialist staff at the Department of Conservation (DOC) and NorthTec to assist with the Annual Northland Pateke Flock Counts and investigate new sites.

The Annual Pateke Flock Count Survey was completed in February 2020, with Pataua North Landcare counting 92 pateke on ponds and further suspected to be in the many drains and streams. NorthTec re-surveyed the Horahora Estuary where they observed pateke for the first time in 2018 and were pleased to observe two birds at this site in 2020.

Analysis of the flock count data confirmed that pateke are flourishing in eastern Northland, particularly at sites with sustained and intensive predator control. The 2020 survey recorded the third highest flock count on record (Figure 1) and birds counted at new sites indicates that their distribution continues to expand.

Nigel Miller (DOC Senior Biodiversity Ranger and National Pateke Recovery Group Leader), noted:

“Pateke numbers remain stable across Northland, despite the extremely dry conditions.

Notable increases have occurred at the margins of the regional distribution where good predator control is in place such as the Purerua Peninsula and Pataua North.

The combination of good pateke habitat and extensive predator control continue to be the recipe that will return pateke to Taitokerau”.

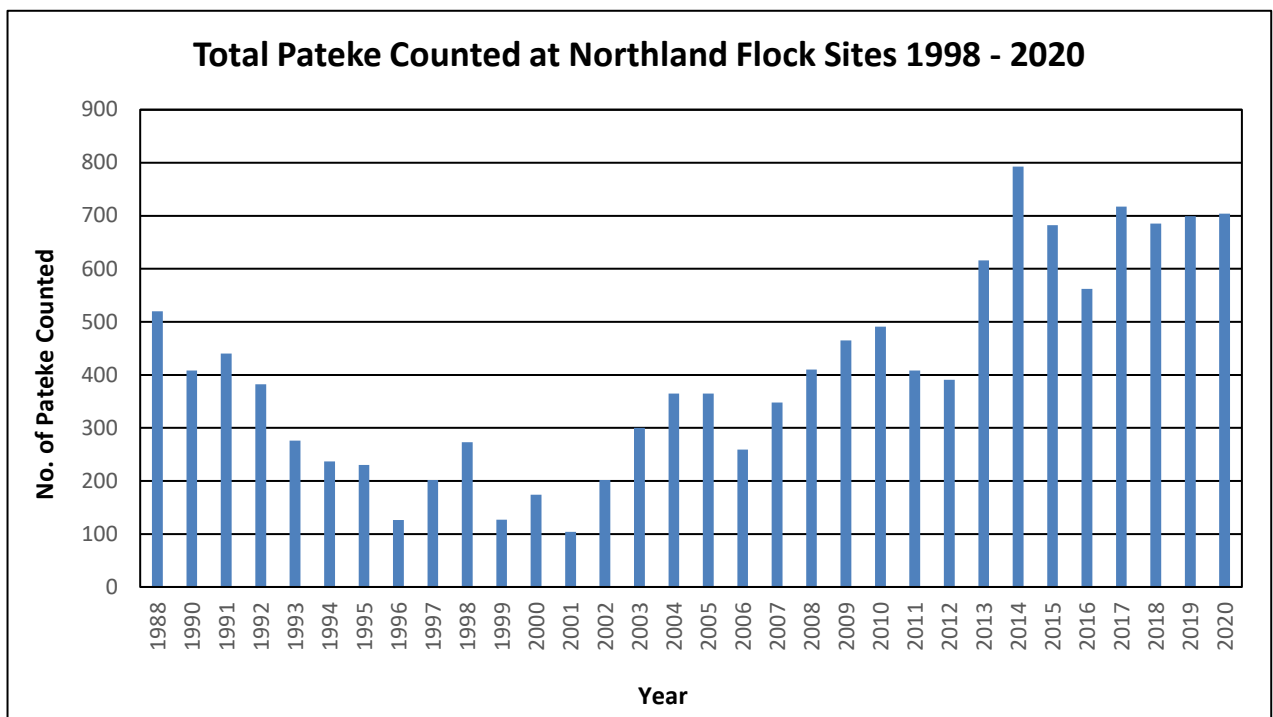


Figure 1: Northland Pateke Flock Count Data (Source, Dept of Conservation, 2020)

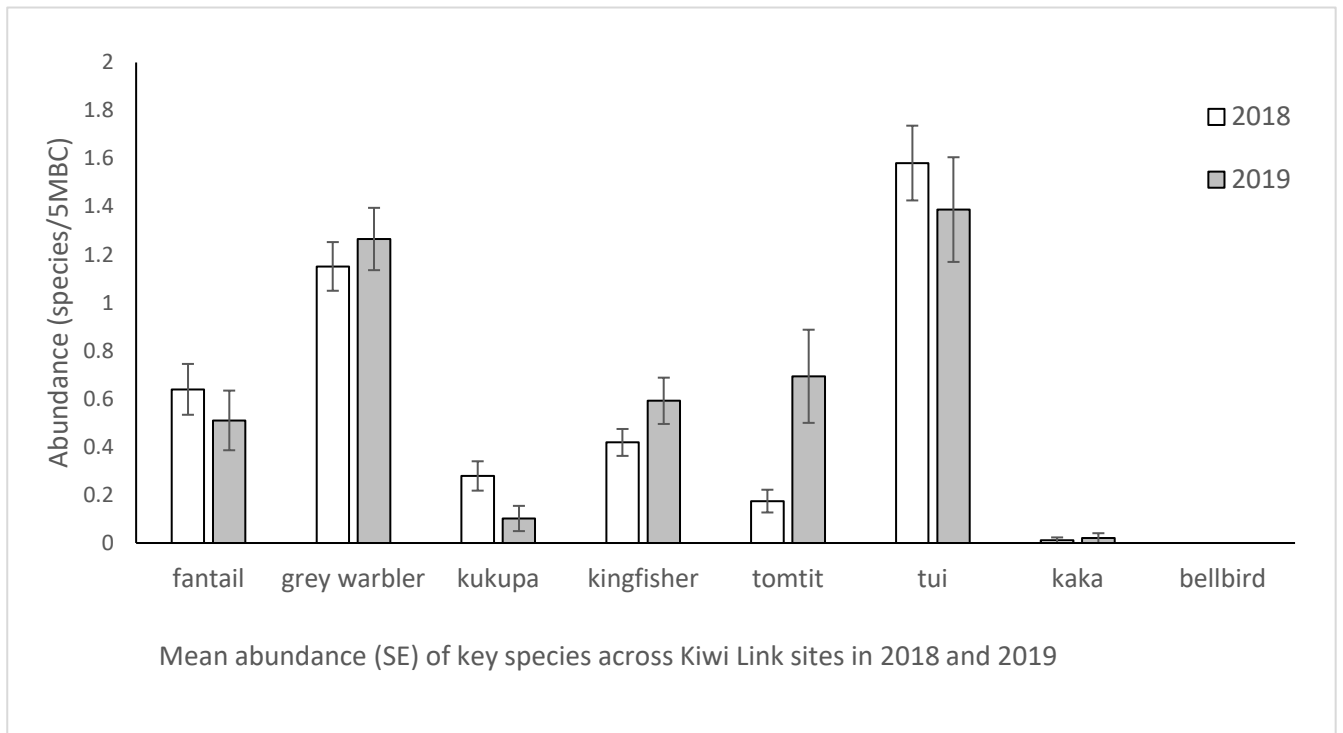


Figure 2: Mean Number of Targeted Bird Species Counted by Project, November 2019

Five Minute Bird Counts

Targeted Five Minute Bird Counts were carried out for the second year, using special methodology developed by Dr Dai Morgan, NorthTec Conservation Management Tutor. Eight key native bird species were monitored: tui, kingfisher/kotare, waxeye/ riroriro, kukupa, tomtit/miromiro, fantail/piwakawaka, kaka and bellbird/korimako.

The results were analysed by Dr Morgan as shown in Figure 2. With just two years of data, no trends in abundance of key bird species can yet be identified. While there has been a slight increase from 2.67 to 2.80 (Appendix 4), this is not considered to be statistically significant. It is attributable to the one kaka sighting made by Kohinui Landcare, the first time this species has been recorded during monitoring, although these birds are becoming increasingly well known to landowners in the Kohinui, Owhiwa and Mt Tiger areas.

In addition to the Five Minute Birdcount monitoring, bellbird were observed for the first time in early 2020 on Mt Tiger. A female

bellbird was observed on Mt Tiger Road property, and two weeks later, a male was observed on an Owhiwa Road property.

As kaka and bellbird are rare on the Northland mainland, their increasing presence in the Kiwi Link area is an exciting development. They are an encouraging sign that landowner efforts to control animal pests and restore native forests are reaping the desired results.

Financial Summary

A total of \$459,918 resourced Year 4 activities and events of the Kiwi Link CPCA (see Table 3). In addition to the \$70,000 NRC CPCA funds, unpaid labour by the landowners involved amounted to \$158,188. The Kiwi Coast Trust also supplied resources and support worth \$52,263.

Other contributions were made by Hancock Forest Managers, the Martin Trust, NorthTec and Tahi estate.

Table 3: Financial Summary: Kiwi Link Group/Project Resources and Unpaid Labour 1 July 2019 - 30 June 2020

Activity/Fund Source	NRC Kiwi Link CPCA Funds	Kiwi Coast	Unpaid labour (\$20/hour)	Contribution by Landowner/Manager	DOC	Hancock Forest Management	Martin Trust	Tahi	Other sources	Totals
Administration/Project Management	7,333	12,667	11,500	8,300	960	1,040	2,500			44,300
Animal Pest Control - labour	42,417		101,800	7,600	1,000	6,000	6,568	19,356		184,741
Plant Pest Control - labour			12,760				2,457	6,229	12,580	34,026
Pest Control Products - toxins, traps, herbicides	12,189	33,050	1,159		420		3,294	3,607	3,893	57,612
Planting			15,499				2,340	78,885		96,724
Engagement, Education and Communications	2,459	2,000	3,920					576	5,902	14,857
Monitoring	4,901	3,906	10,970	2,000					2,000	23,777
Workshops and Training	702	1,000	580	100	1,500					3,882
TOTALS	70,000	52,623	158,188	18,000	3,880	7,040	17,159	108,653	24,375	459,918

NB: All figures exclude GST

Summary

The fourth year of the Kiwi Link CPCA 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 14,133 hectares.

In addition to resources provided by NRC and Kiwi Coast Trust, landowners, land managers and local businesses contributed over \$333,415 of unpaid labour and direct contributions showing their commitment and dedication to their native forests, wildlife and kiwi.

New predator traps deployed into key gaps have linked further traplines of neighbouring groups together into a growing combined predator trapping network between Whangarei Heads and Tutukaka.

The removal of 20,077 roaming animal pests will have benefitted not only the local native forests and wildlife, but also that of the adjoining Whangarei Heads and Tutukaka biodiversity strongholds.

Building capacity of Kiwi Link landowners to carry out their own outcome monitoring continued to be successful, with groups carrying out floral photopoint, kiwi, pateke and Five Minute Birdcount monitoring.

Kiwi are going from strength to strength throughout the Whangarei Heads – Kiwi Link – Tutukaka Coast area. The confirmed movement of translocated kiwi between the Whangarei Heads peninsula and through the Kiwi Link CPCA shows the kiwi corridor is beginning to work.

The Predator Free Whangarei project poised to get underway will help amplify existing efforts and boost the projects involved towards pest eradication.



Appendix 1: Backyard Kiwi Monitoring of Radio Transmitted Kiwi that have moved into the Kiwi Link Area.

Todd Hamilton, Backyard Kiwi Project Manager, June 2020

Monitoring by Backyard Kiwi of radio transmitted kiwi has shown that kiwi are moving into the Kiwi Link Area from the Whangarei Heads:

- 2003: **Vinnie** was released by DOC at the Nook and travelled north to the middle of Campbell Road before dropping his transmitter.
 - 2007 Adult female **Melville** travelled North from Timperly Rd and was located by DOC right at the end of Taraunui Rd in the Pataua North area on 30/10/2007 before contact was lost.
 - 2006 Adult male **Darwin** walked from southern Manaia to Lamb Road and settled there. He did not breed until 2011 but since then has successfully hatched over 20 chicks - most of them transponded (ID chipped). One of those chicks "**James**" was found drowned in a lifestyle block stock trough at Owhiwa Rd in January 2014.
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In 2018 five kiwi were released by Backyard Kiwi north of the Parua Bay village.

- One, **Rukuwai**, headed east to the Kerr road/ Kauri Mt area but the others have all remained in the Kiwi Link area or on its border:
- **Harikoa** –after time on Taraunui Road she is now half way down Campbell Road.

- **Mokopuna** is a female who headed to the north end of Campbell Road and found a mate "**Wally**" (who unknown to us had walked out of the BYK area in 2009). This pair have had at least one successful nest together.
 - **Mia** was in the pines north of her Parua Bay release spot when her transmitter failed
 - **Ross** - an adult male, headed west and after spending time in the Kohinui Valley and Parua Bay is now settled at Pepi Road. He is the most westerly of the known kiwi.
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In February 2019 four more kiwi were released north of the Parua Bay village.

- **Teina** - an adult male who headed NW and has settled in the large pine block on the east side of Owhiwa Road.
- **Malaika** - a young female spent time at Taraunui Road before heading over to the same pine block on Owhiwa road as Teina
- **Awhi** - an adult female- travelled south to the Parua Bay village, then east as far as Kohinui Valley (opposite the pub) where she spent several months before walking back to her release site in the pines at Taraunui Road. She then headed North-East and is currently down the end of Campbell Road.
- **Pakiri** - a young kiwi headed north and spent time at Ross road and the northern end of Taraunui road before turning up in the Whanui pine plantation. This guy was found dead late last year- possibly killed by a dog.

In February 2020 a further five kiwi were released by BYK north of the Parua Bay village

- **Hancock** – an adult female has work her way towards the top end of the Kohinui valley (between Franklin Road and Owhiwa Road)
- **Taonga** – another adult female who was fitted with a temporary transmitter was tracked to the pines east of Owhiwa Road.
- **Kohi**- an adult male named by Kohinui Landcare was proving to be a great kiwi ambassador by first moving down Taraunui Road and then heading across to Owhiwa Road. Unfortunately, he was run over there on the last night before the covid lockdown.
- **Jemima**- a young female kiwi just kept heading north until she settled in the Whanui Pine plantation on the Pataua North Road.
- **Kaitiaki**- This girl had headed westward to Owhiwa Road before using the quiet roads of the lockdown period to head through the Parua Bay village area and then south to Mt Manaia.

In late May 2020 **Beach Girl**, a malnourished adult female, was released into a wetland on Taraunui Road after being rescued from a drought stricken Moturoa island. She has settled in well and recovered significant. There will be other kiwi without radio transmitters that have moved from the Backyard Kiwi managed area into the Kiwi Link area as the estimated population at the Whangarei Heads has grown from approximately 80 in 2001 to over 900 in 2019 and the kiwi there expand outwards.

Appendix 2: Kiwi Link CPCA Kiwi Listening Device Results July 2019 – June 2020

Group/ Project Name	Site Name	Location	Start Date	Finish Date	Easting	Northing	Start Time	Finish Time	Span in hours	Total no. calls recorded	M	F	No. of duets
Hancock Forest Management	Oyster	Whanui Forest	11/05/2020	18/05/2020	1771533	6048344	18:00	22:00	28h	49	43	6	5
Hancock Forest Management	Toheroa	Whanui Forest	11/05/2020	18/05/2020	1731365	6047152	18:00	22:00	28h	3	3	0	0
Hancock Forest Management	Mussell	Whanui Forest	11/05/2020	18/05/2020	1732093	6048344	18:00	22:00	28h	72	54	18	12
Harris Rd Landcare	R Easterbrook	Harris Rd	20/05/2020	2/06/2020	1724091	6049649	18:00	4:00	70h	0	0	0	0
Ngunguru Ford Road Landcare	McQuoids	Ngunguru Ford	15/05/2020	26/05/2020	1732878	6053691	18:00	4:00	70h	26	22	4	3
Ngunguru Ford Road Landcare	Robbies Driveway	Ngunguru Ford	15/05/2020	26/05/2020	173737	6052541	18:00	4:00	70h	2	0	2	0
NRC Mt Tiger Forest	Trapline 1	Mt Tiger Forest	13/06/2020	16/06/2020	1725897	6045680	18:00	4:00	38h	7	6	1	0
Owhiwa Landcare	Mullooly	Owhiwa Rd	20/5/20 28/5/20	26/5/20 3/6/20	1729124	6043295	18:00	4:00	70h	3	0	3	1
Owhiwa Landcare	Simon & Sue	Mt Tiger Rd	12/06/2020	20/06/2020	1728639	6045678	18:00	4:00	70h	0			
Owhiwa Landcare	Bob & Carol Gibson	Franklin Rd	20/05/2020	29/05/2020	1727987	6042334	18:00	4:00	70h	17	14	3	2
Taheke Landcare	Saparelli	Pataua Nth Rd	29/04/2020	17/05/2020	1732764	6051755	19:30	5:30	70h	23	18	5	4
Taraunui Landcare	Le Shultz	Taraunui Rd	17/06/2020	21/06/2020	tba	tba	18:00	4:00	50h	8	8	0	0
Whareora Landcare	MSR 1	Maungatika SR	10/05/2020	17/05/2020	1727254	6045154	18:00	4:00	70h	0	0	0	0
Whareora Landcare	Reg & Kahu's Log	Maungatika SR	10/06/2020	18/06/2020	1728043	6045201	18:00	4:00	70h	0	0	0	0
Whareora Landcare	Above Home Stream	Maungatika SR	7/05/2020	19/05/2020	1727284	6044474	18:00	4:00	70h	0	0	0	0
Whareora Landcare	Holwell Ridge	Mt Tiger Forest	6/05/2020	16/05/2020	1726944	6046407	18:00	4:00	70h	0	0	0	0
Whareora Landcare	Rob & Rosie	MtTiger Rd	7/05/2020	20/05/2020	1726877	6045318	18:00	4:00	80	0	0	0	0

Appendix 3: Annual Kiwi Call Count Survey – Human Listening: 2014 – 2020

Group	Site Name	Location	Easting	Northing	Average Kiwi Calls/Hour 2014	Average Kiwi Calls/Hour 2015	Average Kiwi Calls/Hour 2016	Average Kiwi Calls/Hour 2017	Average Kiwi Calls/Hour 2018	Average Kiwi Calls/Hour 2019	Average Kiwi Calls/Hour 2020
Kohinui Stream Landcare	Kauri Villas	Kauri Villas			-	-	-	0.375	0.375	0	0
Whareora Landcare	MSR1: bluff ridge	Maungatika Scenic Reserve	1727254	6045154	1	0.88	0.66	0.75	0.125	0	0



Appendix 4: Kiwi Link CPCA 2019 Five Minute Bird Count Data

	Average of fantail	Average of grey warbler	Average of kukupa	Average of kingfisher	Average of tomtit	Average of tui	Average of kaka	Average of bellbird	Average of # species per count
Harris Road	0.67	0.78	0	1.44	2.22	2.78	0.11	0	4
NRC Mt Tiger Forest	0.1	0.8	0	0.2	0.3	0.2	0	0	1.6
Whanui	0.2	2.2	0.2	0.7	0.1	1.7	0	0	2.9
Whareora LC (Maungatika SR)	0.5	1.2	0.1	0.4	0.1	0.7	0	0	2.4
Whareora LC (Mt Tiger Forest)	1.1	1.3	0.2	0.3	0.9	1.7	0	0	3.2
Grand Total	0.51	1.27	0.1	0.59	0.69	1.39	0.02	0	2.8

	StdDev of fantail	StdDev of grey warbler	StdDev of kukupa	StdDev of kingfisher	StdDev of tomtit	StdDev of tui	StdDev of kaka	StdDev of bellbird	StdDev of # species per count
Harris Road	0.5	0.97	0	0.73	2.49	1.2	0.33	0	0.87
NRC Mt Tiger Forest	0.32	0.42	0	0.42	0.48	0.42	0	0	0.7
Whanui	0.63	0.79	0.42	0.48	0.32	1.34	0	0	0.57
Whareora LC (Maungatika SR)	0.71	0.79	0.32	0.52	0.32	0.67	0	0	0.97
Whareora LC (Mt Tiger Forest)	1.45	0.82	0.63	0.48	0.74	2.11	0	0	1.03
Grand Total	0.87	0.91	0.37	0.67	1.36	1.53	0.14	0	1.14



