Ngā Uruora animal pest control operational plan 2018-2021

June 2018

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Our area

Our core area for animal pest control is the Paekakariki-Pukerua escarpment,[1] including parts of Perkins farm/Middle Run, and Ames Street Reserve. [2]

Our vision

To reduce key introduced mammal pests in our core areas to levels that support expanding native bird, lizard and invertebrate populations.

Our goals

1. To reduce mustelid, possum, feral cats, rat and hedgehog populations on the Paekakariki-Pukerua Bay escarpment, including parts of Perkins farm/Middle Run, to levels sufficient to support expanding native bird populations, including creating a suitable environment for the expected arrival of kaka and kakariki.[3]
2. To reduce mustelid, possum, feral cats, rat and hedgehog populations in Ames Street Reserve to support the nesting of blue penguins.
3. To maintain 30 hectares of 'rat free sanctuaries' within key native forest areas on the Paekakariki-Pukerua Bay escarpment. A main aim is to create safe nesting sites within these prime forest areas.
4. Through intensive pest control create a lizard friendly area within the Paekakariki 'quarry'.
5. To continue the pest control and monitoring which supports the lizard protection trial on the escarpment.

[1] The escarpment begins near Muri Station and finishes at Paekakariki. It excludes the escarpment above Pukerua Bay beach.
[2] The official name for Perkins farm was 'Middle Run'. However, the farm is now commonly referred to as Perkins farm after the last owner. In the report the area is referred to as Perkins farm/Middle Run.
[3] Other potential pests including goats, hares, rabbits and magpies will continue to be monitored to assess if they represent a significant threat to our flora and fauna.

6. To work with neighbouring pest control groups, including the Paekakariki ‘Rat Pack’, Predator Free Pukerua Bay and Friends of Paekakariki Streams, to create a ‘halo’ effect for the pest control work.
7. To maintain good relationships with the main funders of pest control, in particular Greater Wellington Regional Council and the Department of Conservation.
8. In the medium term, to reduce our reliance in toxins and, when using them, to ensure we use the safest and most effective toxins.
9. To create a sustainable, safety conscious, trapping labour force through attracting and supporting volunteers and, when possible, through raising funds to pay for pest contract support.

Contents

Introduction

Ngā Uruora began animal pest control in 1997. Over time, this effect has expanded. In the NUKP 2011 Strategic Plan, statements included ‘to remove and permanently exclude large browsing mammals from conservation areas’ and ‘to restrict all other pest animals (possums, rats, rabbits, stoats) to low levels indefinitely.’

In June 2015, it was announced that the government was providing a $294,000 Community Environment Fund grant for a project aimed at protecting and restoring biodiversity on the southern part of the Kapiti Coast. The Kapiti Biodiversity Project (KBP) allowed Ngā Uruora to become part of a wider ‘Kapiti Mainland Island’ and to expand animal pest control in our own area. This funding ended in March 2018. Some additional Department of Conservation funding was obtained in late 2017 and use of this funding is discussed in the report.

A copy of wider Kapiti Mainland Island report is available on the Nature Space website.[4] This includes a description of pest control being undertaken in neighbouring areas including that undertaken by Greater Wellington Regional Council.

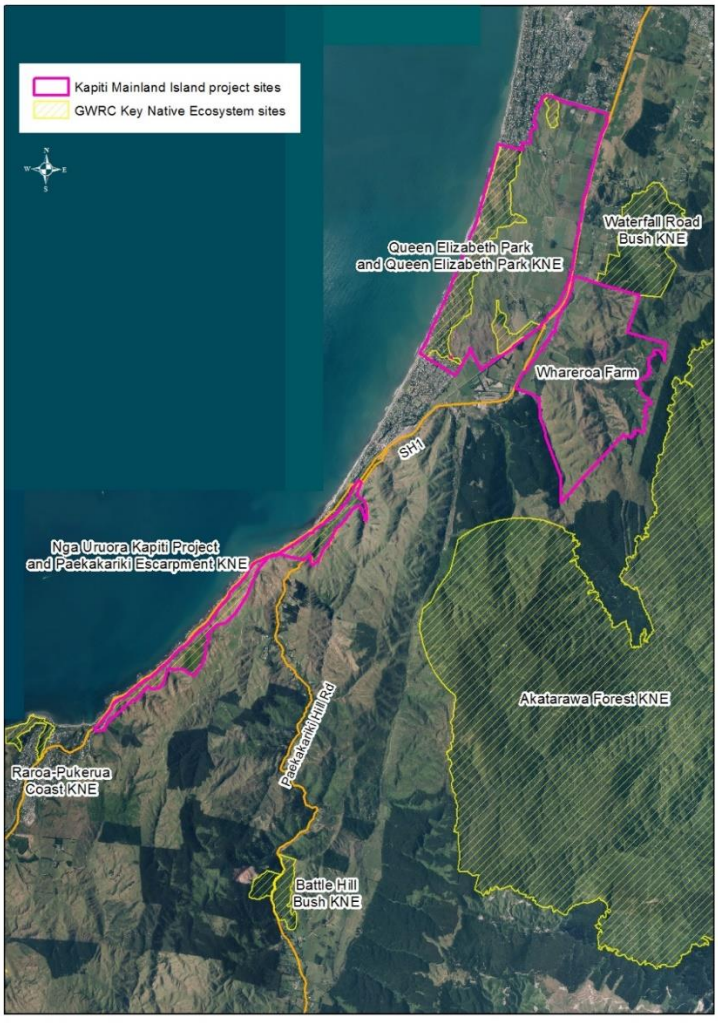
At the beginning of the KBP, a three year operation plan for Ngā Uruora was prepared. This is also available through the Naturespace website. This plan ran from June 2015 to June 2018. This plan is now revised and runs from June 2018 to June 2021.

[4] http://www.naturespace.org.nz/documents/project-reports

Our location

Figure 1 shows the location of the wider 'Kapiti Mainland Island' project site. To the West, the area is bordered by the sea. Just offshore, and within flying distance for some bird species, are two significant nature reserves, Kapiti Island and Mana Island. To the East is the Akatarawa range, an area controlled by GWRC and classified as a "Key Native Ecosystem" (KNE).[5] The main Ngā Uruora area is the KiwiRail owned land from Paekakariki to Pukerua Bay. Additional areas where Ngā Uruora undertakes pest control are part of Perkins farm/Middle Run (now owned by NZTA), AT Clark Reserve and Ames Street Reserve.[6]

Figure 1: The animal pest control area



Source: Greater Wellington Regional Council

[5] http://www.gw.govt.nz/kne/
[6] KCDC and GWRC undertake rabbit control in Ames Street Reserve.

What we are trying to achieve

The aims of pest control vary between projects and will vary over time. In the early days of pest control on the Paekakariki-Pukerua Bay escarpment most attentions focussed on making the area stock proof and targeting possums in our key Kohekohe forests. A key aim was to protect the existing forest and assist in natural revegetation.

Over time, the pest control effort has changed. The area trapped has expanded and mustelids and since 2015 there has been a greater effort to target rats within two 'rat free' areas. Since early 2017 we have also been specifically targeting mice within two small sites on the escarpment.

There are three main areas of flora and fauna we are primary wishing to protect, regenerating forests, birds and lizards. Protecting invertebrates is also important but is currently not part of a specific strategy.

Regenerating forest

Our core forests are kohekohe dominated. Possums control is needed to protect canopies, flowering and seed formation as well as understory browsing. Rats are also a major problem in terms of eating seeds and preventing regeneration. Possums also browse a wide range of other plants and will especially target some plants such as the Northern Rata Ngā Uruora is trying to re-establish on the escarpment.

For Kohekohe, seeding occurs in winter so rat control is needed in winter and spring. But a range of other trees seed throughout the year so ideally rat control within forests and on their margins for regeneration reasons should be year round.

Figure 2 shows before and after photos on Perkins farm. The before show the effect of grazing by sheep. However, once sheep were removed there was not a quick natural revegetation. This started to take place once rat control was initiated.

Figure 2

Our birds

A core vision of Ngā Uruora since its beginnings has been to 'bring the dawn chorus back to the Kapiti Coast'. Despite a major effort in planting and pest control since 1997, we still only have a very limited range of native birds. The following is a list of birds seen or heard during formal five minute bird counts at the Paekakariki escarpment Ho Chi Minh and Loop tracks between August and November 2015.

Bellbird, Blackbacked gull, Blackbird, Chaffinch, Dunnock, Fantail, Goldfinch, Greenfinch, Greywarbler, Harrier, Kereru, Kingfisher, Rock pigeon, Silvereye, Shining cuckoo, Sparrow, Starling, Swallow, Thrush, Tui and Yellowhammer

The KBP project has shown that *Kororā* (*Little Blue Penguins*) nest in Ames street reserve and our pest control in this area is designed to protect them.

It has been suggested a range of other native birds may already live permanently on the escarpment, may be passing through or may arrive soon. Examples include:

Pipit (probably present or passing through), Morepork (probably present), Red-billed Gull (likely to pass through), Shag spp (may use the escarpment and could nest in this area over time), Tomtit (present through Akatarawa forests), Whitehead (present through Akatarawa forests), Kakariki (may arrive soon), Kaka (may arrive soon).[7]

[7] This list was suggested in correspondence with Ian Flux.

As yet we do not have any of the rarer New Zealand birds including Tomtit, Saddleback, Stichbird, North Island Robin and Kiwi. It is unlikely these will become part of the escarpment bird populations in the medium term.

Strategies for supporting bird populations depends on their lifestyle such as whether they are tree or ground nesting, how fast they breed and what their food sources are. As yet, no bird species living on the escarpment are ground nesting.

Lizards

The Kāpiti Biodiversity Project, through the involvement of EcoGecko, has helped Ngā Uruora better understand its lizard populations. A number of reports have been prepared and these are all available on the Kapiti Biodiversity Project NaturesSpace website.

While overall pest control is likely to be helping our lizard populations, intensive pest control commenced in 2017 on two small sites to specifically protect and expand lizard populations. This includes trying to control mouse populations. The areas are the quarry and an area in the middle of the escarpment where a lizard protection trial commenced with support from the Department of Conservation. This latter trial is being managed somewhat independently of our main pest control e.g. it is a separate project in terms of data recording on Trap.nz. A plan for this pest control can be found on the Nature Space website.[8]

[8] http://www.naturespace.org.nz/documents/project-reports

Use of toxins

Since beginning pest control two decades ago, NUKP has used toxins (primarily Brodificoum) as part of its pest tool kit. However, the organisation is aware of on-going debate about the benefit and risk of using a variety of toxins. NUKP continues to monitor the scientific literature to ensure it understands best practice. As a result of reviewing its overall pest control strategy, NUKP has decided to begin reducing its use of Brodificoum. In terms of the two small lizard protection sites, Brodificoum will continue to be used regularly. However, over the next three years on all other sites Brodificoum will only be used in spring to protect peak nesting.

NUKP will explore the use of other potential toxins, including the potential to use cyanide (through licensed contractors) as an occasional 'knockdown'.

Pest control by area

According to Trap.nz, as at March 2018 there were 138 DOC200s, 2 DOC250s, 21 rat traps (Victors and Snap-E traps), 16 Timms, 1 A12 and 10 A24s spread across our area. There are an additional 40 A24s on our lizard protection trial site NUKP also have 151 Philproof (a mix of Mini and Economy) bait stations in our main areas. In addition, NUKP have 75 Philproof Economy bait stations on our lizard protection trial.

The following gives a brief summary of where these are deployed. Each section also has brief comments about the ongoing pest regime.

Ames Street Reserve

A network of DOC200 traps are serviced in Ames Street. These are checked three weekly. The traps help protect nesting penguins in spring. GWRC and KCDC co-ordinate rabbit control in this area.

Rail corridor from Paekakariki Village to Fisherman's Table

This commenced in early 2016 and is focussed primarily on rat control using Victor and Snap-E traps. These are checked at least monthly. The completion of a new access track from the village to Te Araroa will help with checking many of these traps.

Perkins farm/Middle Run

In late 2015 mustelid control, using Doc200 traps, commenced on part of Perkins farm/Middle Run. These are located at the base of Waikakariki Stream and in gullies above the Paekakariki Hill Road. These are check at least monthly.

NUKP also commenced possum and rat control within the key forest remnants on Perkins farm/Middle Run. This involved placing at least one Philproof bait station in each significant patch of forest at the base of Waikakariki Stream and in gullies above the Paekakariki Hill Road. These bait stations have been filled 2-3 times per year by the KBP pest contractor. It is proposed that over the next three years these bait stations be only filled each spring to protect the main nesting period.

In 2017, there was a significant goat presence on Perkins farm. These were eventually controlled by GWRC but there is potential for re-invasion.

Between the first section of the Hill Road and SH1

This is a steep and difficult site. Three A24s are located in this area. They were installed in September 2016. These use long life lures and are checked six monthly.

Kohekohe Loop Track

A network of DOC200 traps are maintained. These are checked three weekly.

Betty Perkins 'Reserve'

A network of bait stations and DOC200 traps have been maintained in this area. The DOC200 traps are checked monthly.

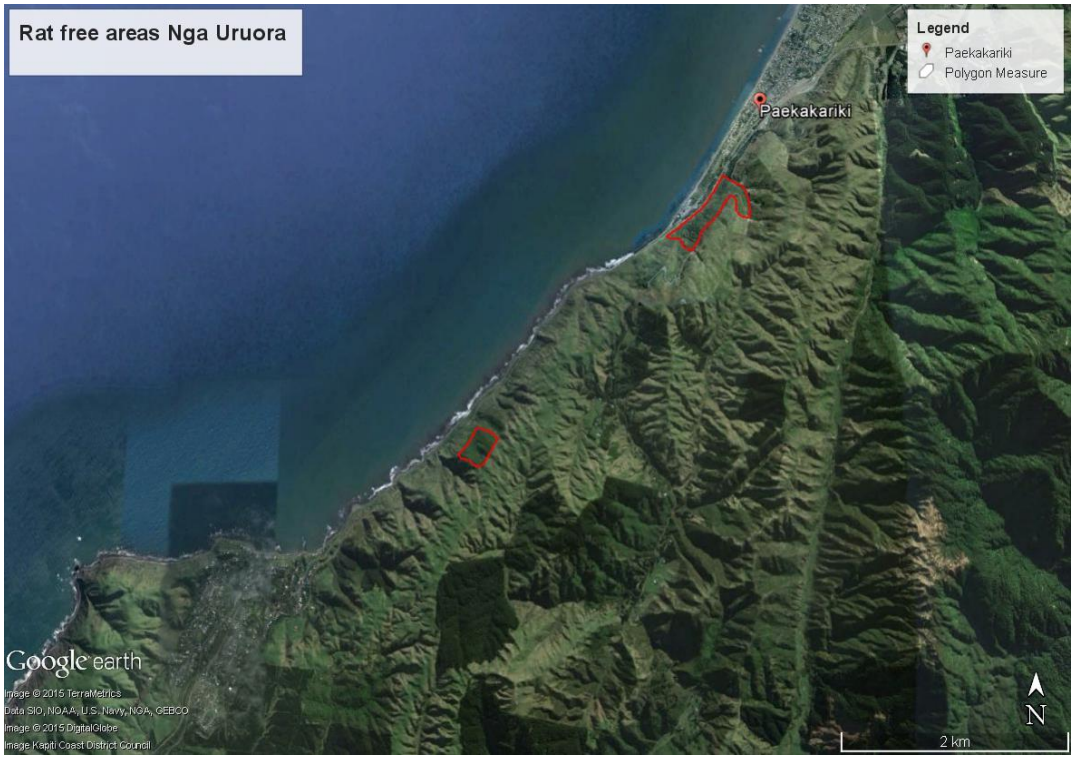
AT Clark 'rat free' sanctuary

Intensive rat control commenced on this site in early 2016. The area is centred on the KCDC AT Clark Reserve. A 21.5 hectare site containing a mix of mature kohekohe forest and regenerating bush is now protected by a grid of 100 metre by 50 metre traps (DoC200) and bait stations (Philproof Mini). This was an expansion of rat control already undertaken in the area.

As a result of concerns about the long-term use of Brodificoum, it has been decided to fill the bait stations only in spring. Bait stations will be therefore supplemented with a mix of new DOC200 traps and A24s. These will be installed during winter and spring of 2018.

This area contains 20 tracking tunnels and twice yearly monitoring has been carried out since November 2015. The results of this monitoring is discussed in a later section of this report.

Figure 3: Sites of 'Rat free sanctuaries' on the Paekakariki-Pukerua Bay escarpment



Te Araroa track

Te Araroa trail provides a spine along the whole escarpment. The trail was completed in early 2016. We now have DOC200s approximately every 100 metres along the length of this track. While these DOC200s are primarily targeting mustelids, they also catch rats.

Quarry

The north end of the quarry is effectively an extension of the AT Clark 'rat free' sanctuary. DOC200 traps are on the track running through the quarry. An aim was to have a grid of 100 metre by 50 metre traps which has been achieved by a mix of the DOC200 traps, bait stations and Victor/Snap-E traps. Bait stations fill gaps between other traps and form a barrier next to the railway line. These traps are checked monthly. The bait stations have been refilled on an ad hoc basis, but effectively about three times a year

The southern section of the quarry is treated differently. Research undertaken by Trent Bell of Ecogecko has shown the quarry to be a prime site for lizards.[9] Predator control was increased in 2016 and 2017. On the flat areas, there is an aim to have traps and bait stations 20 metres apart. There are 4 A24s with long life lures checked six monthly. There are 11 bait stations. These have been filled on an ad hoc basis. The main DOC200s and rat traps are checked monthly. However, many of these traps have remote sensors allowing checking if they signal they have triggered.

Figure 4

Ecosite 'rat free' sanctuary

The second 'rat free' sanctuary is the "Ecosite'. Again, existing pest control has been supplemented by adding new traps and bait stations. This includes DOC200s around the perimeter of this area – mainly next to farm land. This area is approximately 7.2 hectares. The bait stations will be filled only in spring.

[9] http://www.naturespace.org.nz/documents/project-reports

Bob's track

Bob's track allows easy access to the ecosite. Three DOC200 traps have been placed on this track and checked monthly. This has been identified by Ecogecko as a good site for lizards so pest control is especially important in this area.

Other isolated patches of forest

There are a number of isolated patches of regenerating forest along the escarpment away from current tracks. There have been some bait stations placed in these in 2016. In the next three years these bait stations will be filled only in spring.

Station escarpment

As at March 2018, there has been no trapping on the station escarpment. This contains a scree slope that may support lizard populations. It is proposed to initially trap the base of this escarpment using DOC200 traps at 50 metre spacings near the lizard site but at 200 metre spacings along the remainder of the base of the escarpment. Depending on what catch records show traps may also be installed along the top of the escarpment.

Ferrets and feral cats

Potentially cats, including feral cats, roam the whole escarpment. Use of motions cameras shows there are cats on the escarpment. Ngā Uruora currently catch some small cats in DOC200s. In 2017, Ngā Uruora placed two DOC250 traps along the escarpment well away from housing areas and from time to time are baited with meat. Timms are also baited with meat from time to time.

A specific cat policy will be developed over the next three years by NUKP.

There is a concern that ferrets will soon be moving into the area from the north. If there are ferrets in our area, DOC250 traps are capable of catching them. If ferrets emerge as a major problem a specific control strategy will be developed.

Filling bait stations

Given that most bait stations will be filled just once a year, it is proposed that this activity is carried out on one weekend as an organised working bee. This will also assist the organisation to better meet health and safety concerns (such as handling bait, disposing of any bait remains etc).

New trapping technology

Trapping technology is changing rapidly and while this offers the potential to improve NUKP efforts, decisions taken now set in place the technology NUKP are likely to use in the next three to five years.

Most of NUKP pest control is based around commonly used single kill traps and bait stations (using Brodificoum). However, NUKP has been trialling a number of A24s, two A12s as well as remote sensors on both DOC200s and Snap-E traps. 40 A24s are a key component of the lizard protection trial. Some of the other A24s are in difficult to check areas, such as on the slopes of the quarry. These difficult to check traps use long life lures so are checked six monthly.

Based on discussions with other groups, the opinions about A24s vary from excellent to poor. One of the questions is whether they are cost effective in the type of environment NUKP operates in given their high initial capital cost and on-going running costs (for a discussion of costs see Callister, 2017).

NUKP has also been trialling remote sensed traps through a joint venture with Econode and Groundtruth (funded by the KBP). As at March 2018, there were eight traps being trialled with a further 10 A24s sensors due to arrive in early 2018. These have all been located on the lizard sites with an aim to not only test the technology but to also bring in fresh in fresh specimens for autopsy. As the result of a DOC grant obtained in late 2017, there is the potential to expand testing of these traps. This includes testing new communication systems that can complement the use of the offshore island aerial. The results of the first phase of the trial will be written up in 2018.

NUKP has also been trialling a number of lures. This includes in late 2017 beginning a trial of a new mustelid lure in association with Landcare Research.

A number of new traps and toxins are in development and in the longer term new technologies such as gene drives may change dramatically methods of pest control.

Pest control targets

Possums

For possums pest control targets are based primarily around a Residual trap catch (RTC) index. While our theoretical target is 5% RTC, Ngā Uruora has no plans to carry out formal RTC monitoring.

Rats

A Tracking Tunnel Index (TTI) has been used for rodent monitoring and setting targets. In the ‘rat free sanctuaries’ the target is to reduce rat numbers to under a 5% TTI over the period September to March.

Outside the ‘rat free sanctuaries’ there is no specific target for rats. Given the steep nature of the escarpment and the level of Ngā Uruora resources is not feasible to have intense rat control across the whole site.

Mice

It is accepted that it is extremely difficult to control mice especially on a large scale. Specific mouse control is carried out in two sites. The lizard protection site, where there is a goal of 5% or less, and the quarry, where there is no monitoring hence no specific target.

Mustelids

While a formal target for mustelids will not be set, the aim is to keep them at very low levels across the whole escarpment.

Hedgehogs

Hedgehogs are a by kill from using DOC200, DOC 250 traps and Timms traps. No specific targets are being set.

Feral cats

No specific target is set but an aim is to keep numbers as low as possible.

Monitoring

There are a number of ways animal pests can be monitored: These include:

- Tracking tunnels.
- Motion cameras
- Leg hold traps for possums.
- For kill traps, counts of animals.
- Autopsies of fresh kills (made easier with remote sensed traps).
- For bait stations, the amount of bait taken.
- Counters on self-setting traps.
- Regular bird counts help to monitor bird populations.
- Lizard surveys.
- Invertebrate surveys
- Field based motion triggered cameras
- Observations of rat browse on native fruits such as kohekohe and tawa, as well as observation of revegetation, help to determine if the native forest is recovering.

No one monitoring method provides an ideal way of measuring the success of animal pest control. For Ngā Uruora, trap data (including counters on Goodnature traps) is heavily relied on to indicate abundance of rodents and mustelids. Other monitoring such as bird counts and use of motion cameras also help with monitoring. However, tracking tunnels have been set up for rodent monitoring in the two 'rat free' areas. Tracking tunnels have also been set up on the lizard control site.

Rodent tracking tunnels

Tunnel tracking for rodent abundance were set up in Ngā Uruora's two 'rat free sanctuaries' in October 2015. There was sufficient space to have 20 tunnels on the larger site (Figure 5) and 12 tunnels on the smaller Ecosite (Figure 6). There are a further 20 tunnels on the lizard protection site. With 20 tunnels it is possible to monitor in 5% bands (ie if one trap records a rat the TTI is 5%). For the site with 12 tunnels we can only monitor in 8.3% bands. More information on the tracking tunnels, including results, can be found on the Naturespace web site.[10]

[10] http://www.naturespace.org.nz/documents/project-reports

Figure 5: Tracking tunnel locations at AT Clark reserve

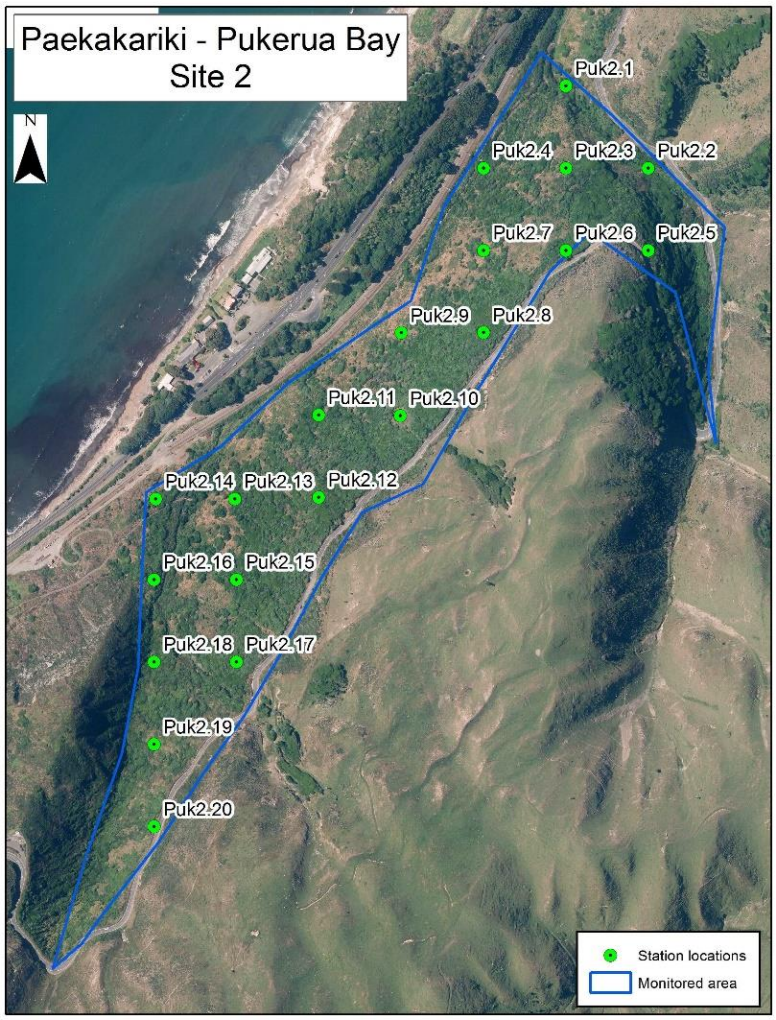
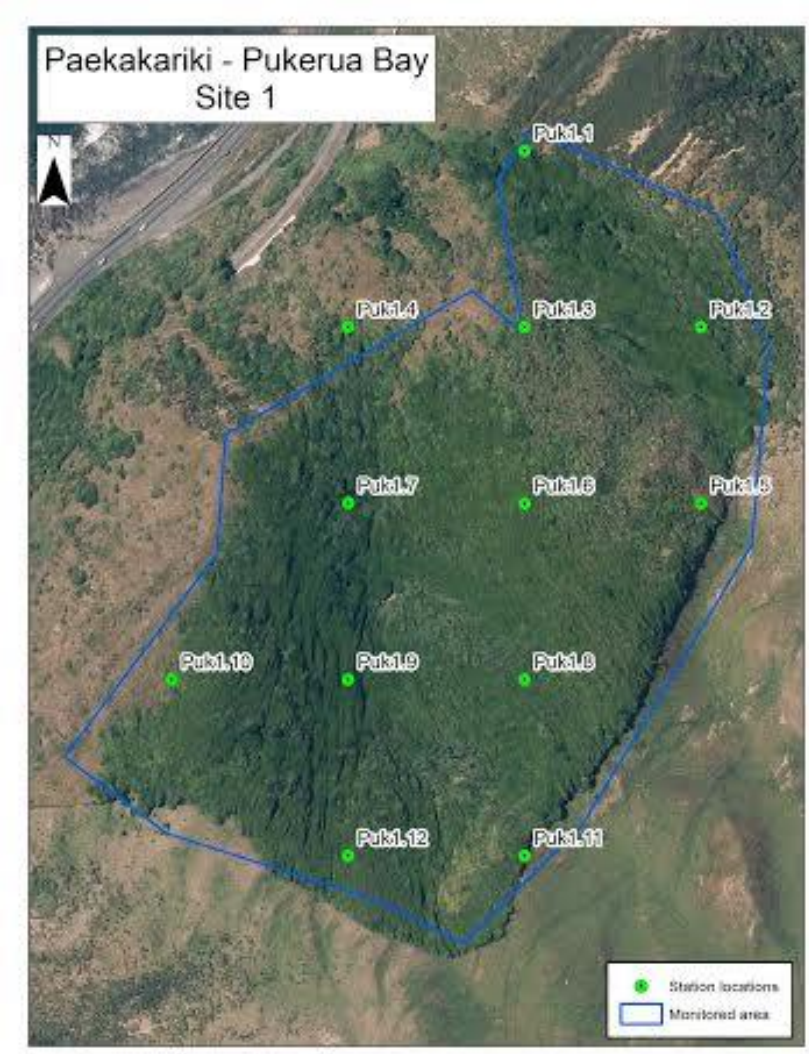
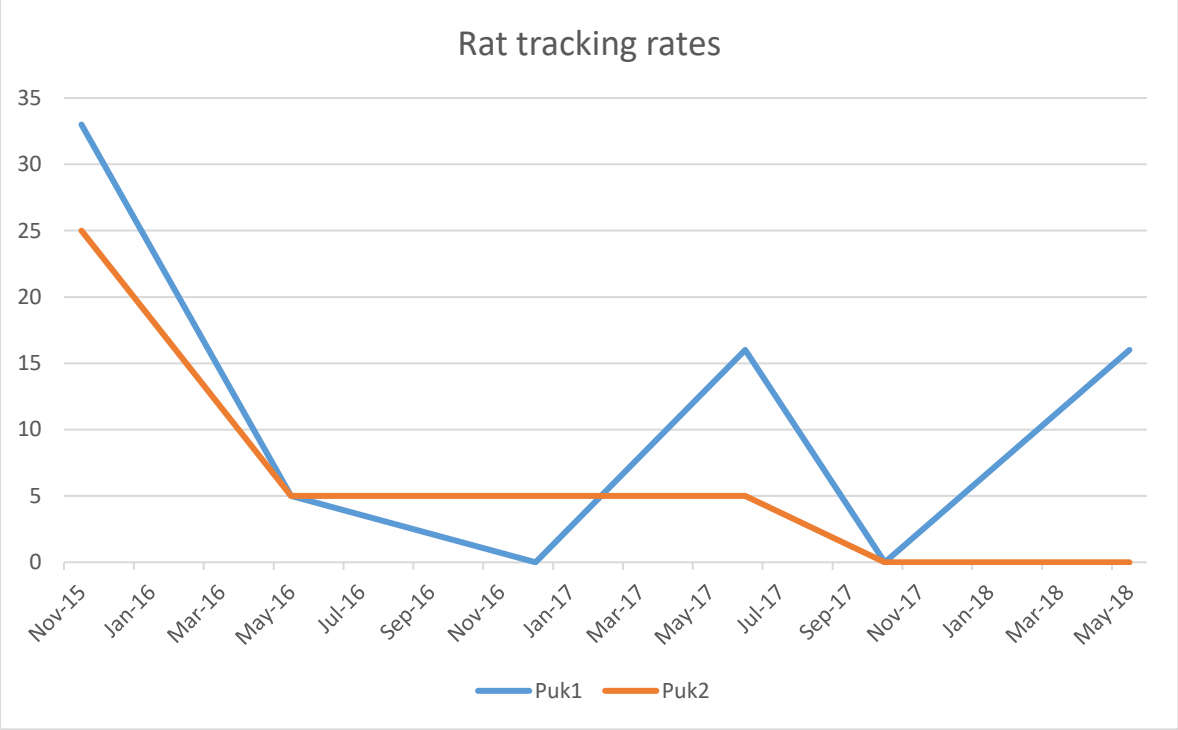


Figure 6: Tracking tunnel locations at the ecosite



Over, the period April 2015 to April 2018 the tracking tunnels were checked in spring and autumn by a contractor paid for by the Kapiti Biodiversity Project. At the start of this monitoring the rat tracking rate was over 25%. In the subsequent period the rates have mostly been near the target of 5% on the Ecosite but varying more closer to Paekakariki

NUKP aims to continue these twice yearly tracking exercises using volunteer labour.



The Trap.org.nz recording system

At mid-2015 Ngā Uruora began its transition across to using the web based trap data collection system Trap.org.nz. Most trappers are now using the system but some need ongoing assistance.

Bird counts

Five minute bird counts have also been carried in one area for Ngā Uruora in 2007/2008 and again 2010-2011. Counts began again in mid-2015.

In the data collected there has not been a dramatic increase in bird numbers or species. This is not an unusual outcome in New Zealand (Ruffell and Didham, 2017).

A number of groups are now testing in field sensors to do bird counts via recording of calls. It is possible the 'reading' of the calls will be fully automated within a relatively short time. If this technology becomes affordable it will open up new opportunities for bird monitoring.

Invertebrate counts

Ngā Uruora has weta houses on the Loop track. These are regularly checked but there is no structured monitoring of invertebrates.

Motion cameras

Motion triggered cameras can provide a useful 'picture' of animal activity and behaviour in the bush including around trap sites. In October 2015, NUKP obtained a motion activated camera to assist us in understanding animal behaviour. Cameras have not been used as a formal monitoring tool but have been very helpful in understanding how effective our trapping is. In particular it has allowed NUKP to get a better understanding of cat presence in our area.

There is investigation going into the use of motion cameras – as well as heat sensing cameras - as a tool to supplement and possibly replace tracking cards.[11] There are both advantages and disadvantages in both technologies. As the result of a DOC grant obtained in late 2017, NUKP has the potential to further explore the use of cameras as a monitoring tool

Funding pest control

NUKP has received funding from a wide range of sources over its lifetime. This includes GWRC and QE2 Trust. In the past three years, the KBP has provided significant funding for pest control including allowing NUKP to use a pest contractor for some work.

GWRC provides most of the baits and lures for on-going trapping. However, NUKP needs to fund consumables for A24s and to fund toxins for the lizard control trial.

The DOC grant announced in late 2017, will allow NUKP to fund these lures and toxins for a further year. Other sources of funding are being explored to allow the funding of some pest contractor support.

[11] https://predatorfreenz.org/detecting-predators-city-works-best/

Our workforce

From late 2015 until mid-2018, Ngā Ururoa has been able to utilize a mix of paid contractors and volunteers for pest control. Unless new funding can be obtained, over the next three years NUKP will need to reply primarily on volunteers.

Health and Safety

The trappers on the Paekakarki-Pukerua Bay escarpment work under GWRC guidelines. The 'right to occupy' agreement Ngā Uruora has with NZTA regarding Perkins farm/Middle Run has additional health and safety requirements.

In terms of the use of Brodificoum in rodent control by Ngā Uruora, the practices of the Auckland group Ark in the Park are drawn upon. Ark in the Park have their rodent baits in sealed plastic bags in bait stations. This reduces bait spread and bait becoming mouldy and unpalatable to rats in damp forests. Plastic bags are filled by experienced trappers and distributed when needed. This saves volunteers dealing with bulk supplies of Brodificoum. Mouldy baits are removed and placed in landfill waste.[12] The bulk supplies of Brodificoum are stored in secure lockers at Whareroa farm shed. Suitable warning signs are at this shed. Toxin warning signs are placed on key entrances to the escarpment.

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[12] The Windy Hill group on Great Barrier Island safely dispose of mouldy bait in worm farms. In the future this method may be explored by NUKP

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