

Creating a Kapiti Mainland Island



This report was prepared by the trapping teams from Nga Uruora, Whareroa Farm Reserve and Queen Elizabeth Park



November 2015

Creating a Kapiti Mainland Island

Our area

Our core area for animal pest control is approximately 1,650 hectares covering Queen Elizabeth Park, Whareroa Farm Reserve, the Paekakariki-Pukerua escarpment,¹ including Perkins farm/Middle Run², as well as in the village of Paekakariki.

Our vision

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

In the longer term, build a ‘halo’ effect by supporting animal pest control in neighbouring areas, in particular the communities of Raumati and Pukerua Bay as well as neighbouring farming communities.

Our goals

1. To reduce mustelid, possum, feral cats, rat and hedgehog populations in Queen Elizabeth Park, Whareroa Farm Reserve, Perkins farm/Middle Run and the Paekakariki-Pukerua Bay escarpment to levels sufficient to support expanding native bird populations, including creating a suitable environment for the expected arrival of kaka and kakariki.
2. To reduce mustelid, possum, feral cats, rat and hedgehog populations in Queen Elizabeth Park and Ames Street Reserve to support the nesting of blue penguins.

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. To create 44 hectares of ‘rat free sanctuaries’ within key native forest areas on Whareroa Farm Reserve and on the Paekakariki-Pukerua Bay escarpment. A main aim is to create safe nesting sites within these prime forest areas.
4. Based on recommendations arising from lizard and weta surveys, to create pest control ‘hot spots’ in Queen Elizabeth Park, in Whareroa Farm Reserve, and on the Paekakariki-Pukerua Bay escarpment that reduce predators to abundance levels sufficient for lizard and weta populations to persist and expand.
5. To support the efforts of local residents in Paekakariki to create a ‘rat free’ town.
6. To encourage the expansion of animal pest control into the urban areas of Raumati South and Pukerua Bay.
7. To work with local farmers, such as the Waterfall Road based Kotukutuki Group, to support pest control in neighbouring areas.



Contents

Introduction	2
Aim of this report.....	5
The location of the Kapiti Mainland Island.....	5
The groups involved.....	8
What each group was doing up to mid-2015	9
Group activity.....	9
Whareroa farm reserve.....	9
Nga Uruora.....	10
Queen Elizabeth Park.....	11
Paekakariki ‘Rat Pack’	13
Perkins farm/Middle Run.....	14
Friends of Paekakariki Streams	15
The Kotukutuki Group.....	15
Animal pest control by Greater Wellington Regional Council and other bodies.....	15
How the expanded pest control plan was developed	17
Expanded animal pest control plans.....	18
Queen Elizabeth Park.....	18
Whareroa Farm.....	19
Nga Uruora.....	20
Urban pest control in Paekakariki, Raumati and Pukerua Bay	21
Pest control targets	21
Monitoring	21
Volunteer opportunities	22
References	23

Introduction

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 funding, channelled through the Friends of Queen Elizabeth Park (Kapiti) Trust, is to be used to restore Kapiti Coast biodiversity. As part of the project, the Trust will work with the local community to support bird populations, improve habitats for lizards and weta, propagate and plant rare dune plants, increase fish and insect populations in streams, and facilitate an increase in local animal pest control.³

Animal pest control is a key element of conservation work in New Zealand (Kolbert, 2014; Butler, Lindsay and Hunt, 2014). New Zealand's native wildlife has evolved in isolation in the absence of land mammals. A wide range of introduced predators threaten the survival of New Zealand's native plants, birds, reptiles and invertebrates as most are ill equipped to deal with the threat.

There are many mammalian pest species in New Zealand, including large animals such pigs, goats and deer, and smaller pests primarily stoats, weasels, ferrets (mustelids), possums, hedgehogs, rats and mice as well as rabbits and hares. In some areas dogs and cats, including feral cats, are also a major threat to native wildlife. Pests such as possums, hedgehogs, rats and stoats compete with our native birdlife for food and habitat as well as also eating the eggs, the young and sometimes attacking the adults.

There are three types of rats in New Zealand. Not only do they eat birds and their eggs and chicks but also have a major impact on lizards and invertebrates (such as weta). They also eat a wide range of native fruits and other plant material.

Ship rats are causing the most damage to our wildlife because they are good climbers, so they are able to get access to most bird nests high in trees. Norway rats are large enough to kill nesting adult seabirds and prey on animals that live, roost or nest close to the ground. Kiore eat a wide range of foods, including seeds, fruits, lizards, insects, eggs and chicks. However, Kiore are not present on the Kapiti Coast.

³ For more information see <http://www.naturespace.org.nz/groups/kapiti-coast-biodiversity-project>

There are three types of mustelids. These are stoats, weasels and ferrets. Some areas of the Kapiti Coast seem unlike most other areas in New Zealand where mustelid control is carried out in that there are much greater numbers of weasels rather than stoats. The reason seems to be the open nature of the landscape in QE Park, Whareroa farm and the Paekakariki-Pukerua Bay escarpment. While many of the techniques of control may apply to all mustelids, the current literature focuses on stoats and there may be differences. It is expected that this project will assist in the development of best practice for control where weasels, rather than stoats, are the main target. It is also expected that mustelid control which focuses on weasels will contribute to the literature on mustelid control/eradication in New Zealand.

Mice also have a major impact on lizards and invertebrates and prove especially difficult to control.

In non-urban areas, 1080 provides a cost effective way of controlling a range of animal pests. This is not an option for this project. In some areas other poisons are used, such as Brodifacoum (a second-generation anticoagulant) and cyanide baits. However on the mainland, it is Department of Conservation policy not to use Brodifacoum and this includes Whareroa Farm Reserve.

In addition, another method of 'pest control' is to use excluder fences. Again, this is not an option for this project.

This project is based on improving and expanding the animal pest control efforts already being undertaken in the area. The main targets are mustelids and rodents.

The Department of Conservation sets out some ideas of what constitutes a ‘mainland island’⁴

Mainland island habitats are a relatively new and exciting area of conservation management, aiming to protect and restore habitats on the mainland through intensive management of introduced pests. They are referred to as mainland ‘island’ habitats because they are manageable areas, isolated by means of fencing, geographical features or more commonly, intensive management.

It is a challenging concept because it is a new management technique, which means that much of the work will be undertaken as research-by-management. It is also challenging because, unlike islands which are discrete land masses surrounded by sea, mainland islands are subjected to continual reinvasion pressure from pests and predators in surrounding areas, and therefore require an ongoing commitment.

Through a consensus amongst the trapping community, the term has been adopted to describe the Kapiti project.

Figure 1: Paekakariki “Rat Pack” trap building working bee



Source: Ted Coats

⁴ <http://doc.govt.nz/our-work/mainland-islands/>

Aim of this report

The development of enhanced animal pest control within the Kapiti Coast Biodiversity project has been a ‘bottom up’ collaborative exercise rather than a centrally co-ordinated ‘top down’ venture. It has involved many discussions and meetings rather than just one meeting with interested parties. This development of the plan reflects this process. The plan was prepared by the trapping teams from Nga Uruora, Whareroa Farm Reserve and Queen Elizabeth Park. The full plan was reviewed by the Kapiti District Council and Greater Wellington Regional Council. The full plan has been provided to the Ministry of the Environment. It is available on request.

The aim of this report is to provide a summary overview of the project.

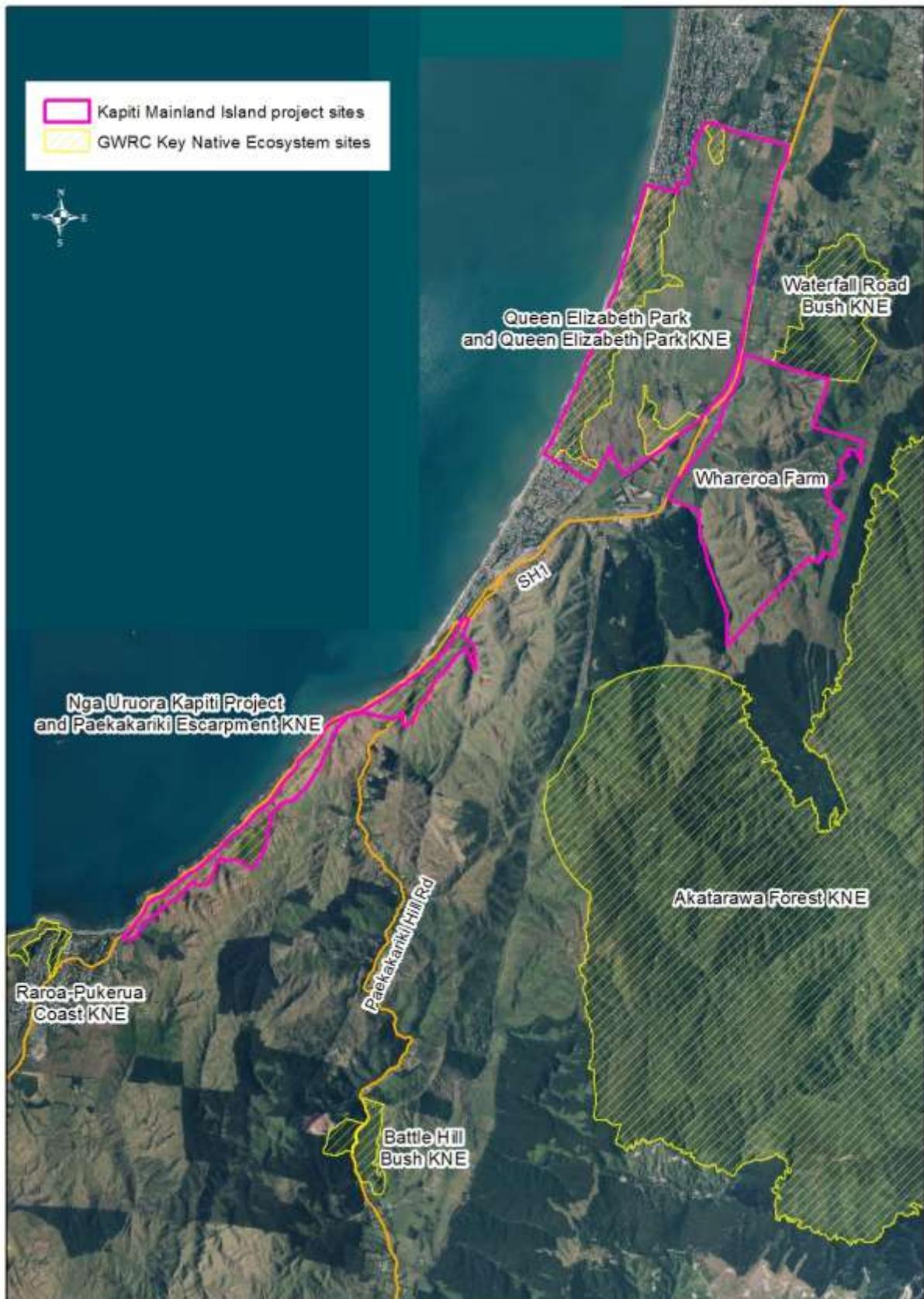
While this report contains some operational information it not a detailed operational plan for each of the groups and individuals involved in animal pest control on Kapiti Coast. In November 2015, the trappers at Whareroa, QE Park and Nga Uruora had developed their own detailed operational plans. Each group will continue to operate autonomously.

The location of the Kapiti Mainland Island

Figure 2 shows the location of the ‘Kapiti Mainland Island’ project sited. To the left, 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 right is the Akatarawa range, an area controlled by GWRC and classified as a “Key Native Ecosystem” (KNE).⁵ According to GWRC planning documents, the Akatarawa forest is seen as an important regional asset and as such on-going pest control will be carried out in this large neighbouring forest. A number of other KNSs are either within the ‘Mainland Island’ area or adjacent to it.

⁵ <http://www.gw.govt.nz/kne/>

Figure 2: The animal pest control area



Source: Greater Wellington Regional Council

While animal pest control aims to protect a wide range of flora and fauna, within the Kapiti Coast Biodiversity project there is a special interest in supporting and enhancing native bird population. Figure 3 represents some thinking undertaken about important flight paths of birds. In this diagram, one might expect birds such as Kaka and Kakariki to arrive in the project area from the Akatarawas after arriving there from Zealandia (moving up the Hutt Valley) or south from Mt Bruce (coming though the Tararuas). Kaka are already being reported flying in from Kapiti Island (Figure 4). In the flight path from the Akatarawas, Whareroa is an important first place of contact with the Kapiti Coast and of the three groups currently has the best areas of native forest, especially podocarps.

Figure 3: Bird flight paths

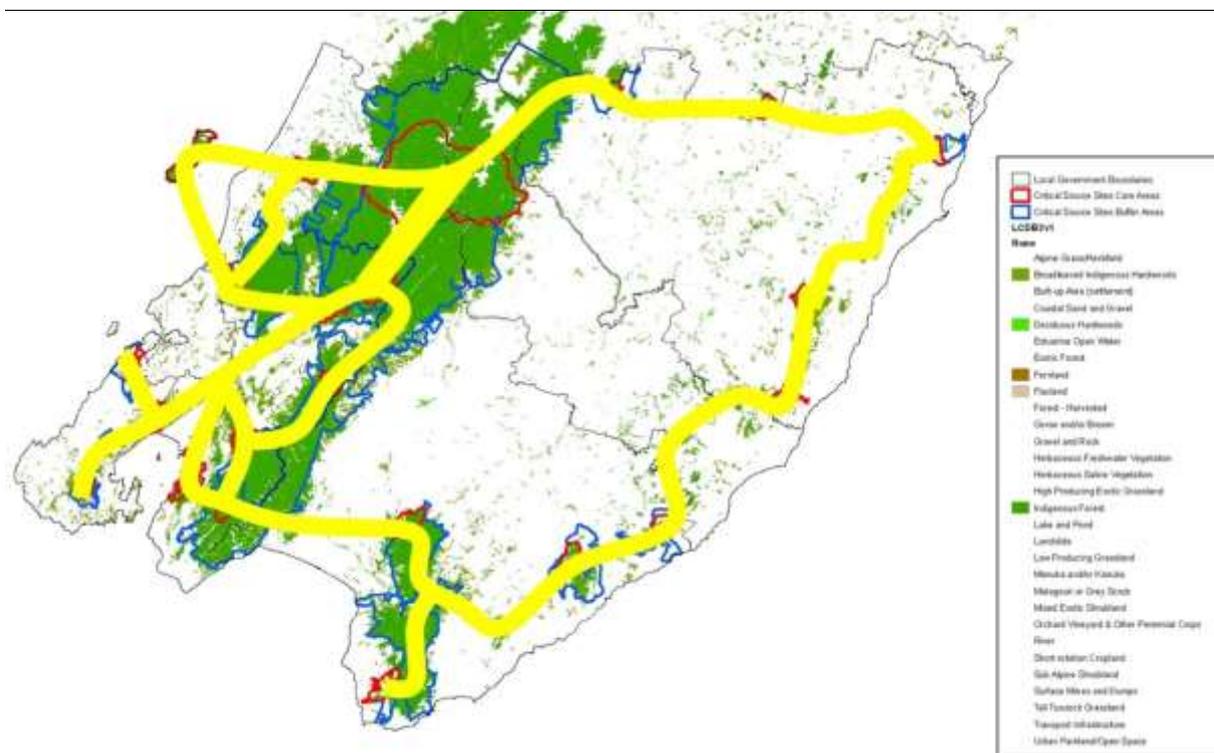


Figure 4: Kaka photographed in a Raumati South garden September 2011



Source: Hamish Carson

The groups involved

Three major restoration groups form the core of the Kapiti Coast Biodiversity project. These are the Friends of Queen Elizabeth Park (QE Park), Whareroa Guardians Community Trust Inc (Whareroa) and Nga Uruora Kapiti Project (NUKP). Each group has for a number of years been undertake a range of pest control in their respective projects. NUKPs volunteer pest control started in the late 1990s, in QE Park it began in 2008 while in Whareroa pest control began in April 2013.

There are also other groups and individuals involved in pest control in the Kapiti Coast Biodiversity area. This includes the Paekakariki ‘Rat Pack’, Friends of Paekakariki Streams and local farmers, including the ‘Kotukutuku Group’ based on Waterfall Road. There has been a long history of co-operation between groups.

What each group was doing up to mid-2015

Group activity

Dedicated teams of volunteers in QE Park, Whareroa, and Nga Uruora been undertaking control of mustelids, possums, hedgehogs, rats and, to a minor degree, mice. Staff of QE Park also undertake rabbit and hare control in the park and KCDC staff undertake rabbit control in Ames Street Reserve. In Whareroa Farm Reserve goats are also controlled.

Historically, QE Park, Whareroa and NUKP have all developed and implemented animal pest control plans. This section does not have detailed information on the trapping effort of each group as at mid-2015, simply a snapshot of activities. More detailed information can be found in each groups operational plans.

Whareroa farm reserve

In April 2013 volunteer pest trapping started on Whareroa Farm. Initially starting with one volunteer and 16 DOC 150 traps, there are now nearly one hundred traps and several volunteers. The traps are baited with Erazze freeze dried rabbit and Ferafeed attractant, and fitted out with mouse traps to protect the bait. They have generally been laid out at approximately 250 meter spacing's targeting mustelids and rats (in accordance with DOC mustelid trapping recommendations), along tracks and trails to make them accessible for the volunteers servicing them. Some of the traps have been placed in specific locations thought to be particularly attractive to mustelids, and there has been an intensive effort on a three hectare site in order to protect the local Weta population. All traps are checked on a regular basis, with each trap checked at least once a fortnight, and often more frequently.

There has also been an intensive Possum trapping programme. This started in late 2013 with a small number of traps, but has now built to approximately 100 traps set in lines throughout the bush areas on the farm.

A sophisticated reporting system has been developed to keep detailed records. Each trap has a life history of when it was checked, by whom, and what it has caught or not caught. This

Over time a network of DOC200 traps have been built up targeting both mustelids and rats. In terms of mustelids, it has been mainly weasels that have been caught. The construction of the Te Araroa track has helped with the layout and servicing of traps.

Since Nga Uruora began pest control, GWRC has provided Brodifacoum for possum control and lures for mustelid traps. In 2014 GWRC provided financial support to buy over 40 DOC 200 traps.

As at mid-2015, Nga Uruora's pest control focussed on the Paekakariki-Pukerua Bay escarpment as well as Ames Street reserve. In addition, pest control has been carried out on a small area of Perkins farm (known locally as 'Betty Perkins reserve').

Figure 6: Layout of traps on the Pukerua Bay-Paekakariki escarpment in mid-2015



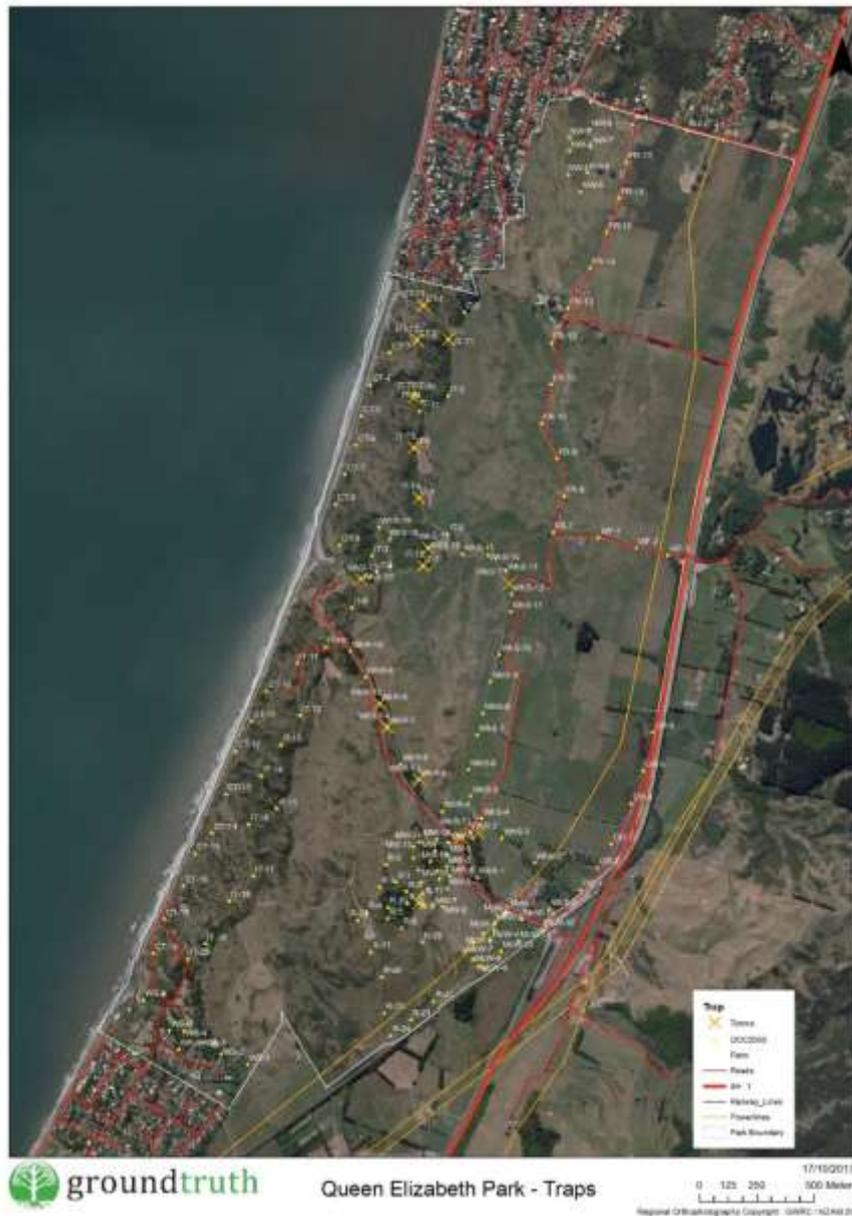
Queen Elizabeth Park

Since 2008, DOC 200s have been the traps used mainly for controlling pest animals in Queen Elizabeth Park. The DOC 200 is used widely throughout New Zealand to catch stoats and rats. They are also useful in catching juvenile hedgehogs. The three varieties of mustelids causing major environmental destruction in New Zealand are, in descending size, ferrets, stoats and weasels. There have been no ferrets caught in Queen Elizabeth Park. However unlike many other trapping ventures in New Zealand, about three times the number of weasels are caught in comparison to stoats. That can be explained by the terrain. Stoats

prefer bush country while weasels are more likely to be found at the edge of the bush and on grasslands. This is the most common terrain in the park. Most of the study about mustelids in New Zealand focuses on the stoat. It is hoped that the work in Queen Elizabeth Park will advance the knowledge about weasels and thus increase their elimination.

The trap lines established in the park are designed, first, to catch the pests which frequent the wetlands. Wetlands are areas which are attractive to birds. Secondly, trap lines are now, to the extent that it is possible, along the entire boundary of the park. In addition to catching mustelids, the DOC 200 is an effective means of eliminating rats. They are found throughout the park, and in particular near the urban areas at each end. Monitoring the presence of pest animals is one way used to find out the effectiveness of a trapping programme. Greater Wellington Regional Council is responsible for the monitoring programme in the park and the trapping volunteers contribute, quarterly, by placing in the tunnels, and collecting, the cards used to record the presence, or otherwise, of pest animals.

Figure 7: Layout of traps on Queen Elizabeth Park in mid-2015



Paekakariki “Rat Pack”

The Paekakariki “Rat Pack” formed in 2011. The ‘Rat Pack’ works with the community to build rat traps and distribute these amongst the community. The broad aim is to work with the local community to make Paekakariki ‘rat free’.⁶ Born out of a “Green Street” initiative, Victor Rat Traps are built at community working bees. The primary target is rats but mice

⁶ <https://www.sites.google.com/site/wellingtonroadnorth/announcements/theratpackhitstheheadlines>

are also caught. A goal is to protect the boundaries with restoration areas to prevent spread of rats in either direction.

Figure 8: Layout of traps in Paekakariki village in mid-2015



Perkins farm/Middle Run

A major area without pest control is in the midst of the core Mainland Island area is New Zealand Transport Agency owned Perkins farm/Middle Run. In October 2014, Nga Uruora gained a ‘right to occupy’ the front part of Perkins farm/Middle Run in order to undertake weed and animal pest control. The northern end of the Transmission Gully construction site is also an area without pest control.

For Perkins farm/Middle Run, which has a boundary with Paekakariki Village, there was no formal pest control on most areas while being farmed. An exception was a small area known informally as “Betty Perkins reserve” where NUKP has been undertaking some basic pest control. In 2014/15 some bait stations targeting possums were placed along the edges of the farm by GWRC as part of their Regional Possum Predator Control Programme.

Friends of Paekakariki Streams

Paekakariki also supports the group Friends of Paekakariki Streams. This group primarily focusses on the health of Wainui Stream. The group aims to eventually begin pest control along this stream.

The Kotukutuki Group

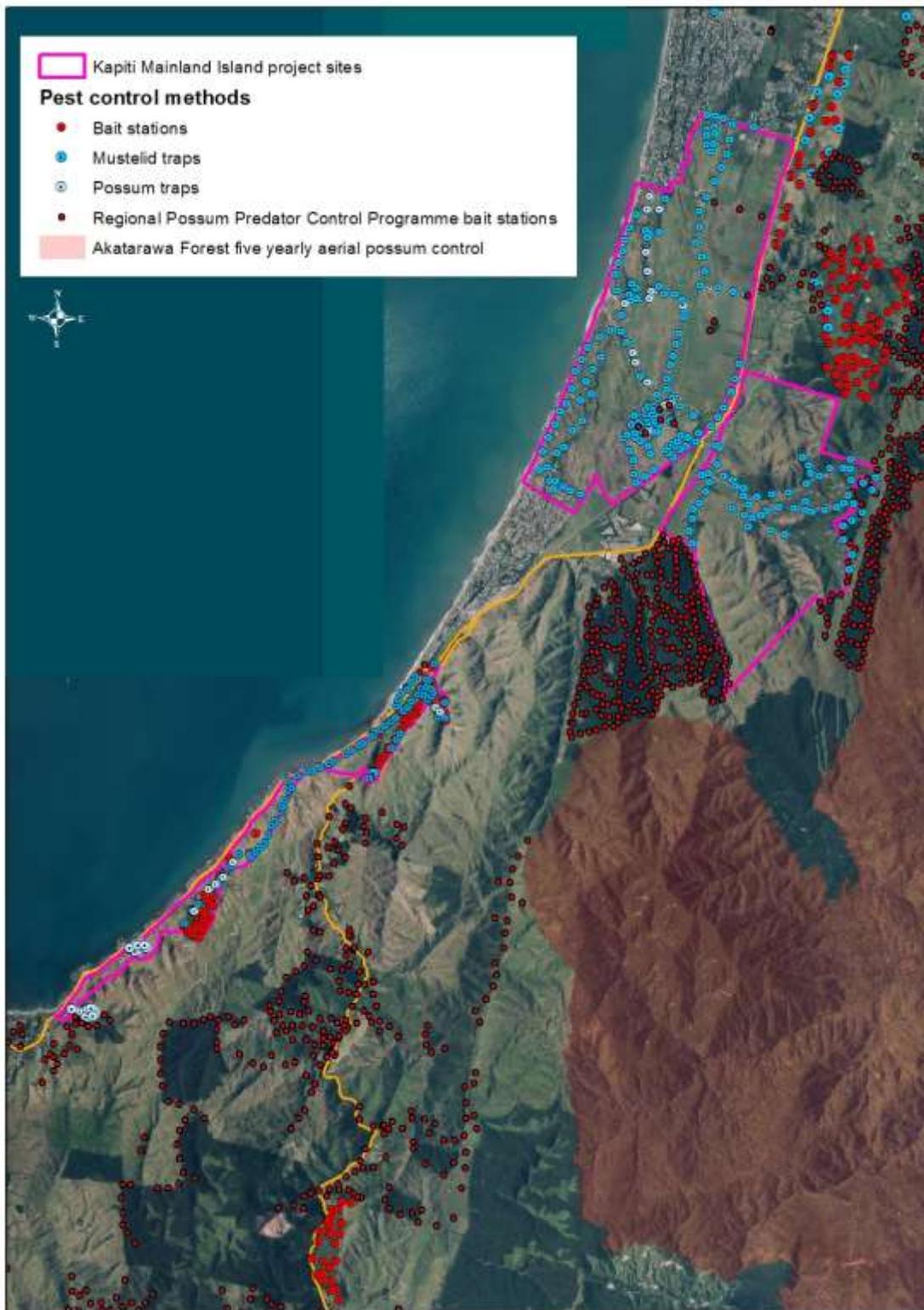
A group of landowners in Valley Rd aligned with the Christian conservation organisation – A Rocha, are carrying out extensive and intensive pest control as part of protecting the native bush habitat on their properties for plants e.g. green mistletoe, insects e.g. red admiral butterflies, reptiles e.g. wellington green geckos and birds e.g. bell birds.⁷ They use bait stations and kill traps to control possums, mustelids, feral cats, hedgehogs, rabbits, rats, mice, magpies and wasps.

Animal pest control by Greater Wellington Regional Council and other bodies

The GWRC runs a Regional Possum Predator Control Programme across the Wellington Region. The Department of Conservation also supports pest control in the region. Figure 9 shows some of the trapping effort within and around the edges of the Kapiti Mainland Island.

⁷ <http://naturespace.org.nz/groups/kotukutuku-ecological-restoration-project>

Figure 9: Trapping and bait stations mid 2015



How the expanded pest control plan was developed

Before the MFE funding was confirmed animal pest control research and consultation had commenced. In late 2014 a meeting was held at St Peters Hall in Paekakariki to bring together the pest control teams from QE Park, Whareroa, Nga Uruora, the Paekakariki 'Rat Pack' and Pukerua Bay members of Friends of Mana Island. The aim of the meeting was to share information about current pest control across the region and to begin the conversation about increasing our effort. At this meeting a presentation was given by GroundTruth about the use of the trap data recording software Trap.or.nz. Some of the outcomes of the meeting were;

- a 'Kapiti Mainland Island' Facebook page was set up. The aim is to use this form of media to share pest control information across all groups. As at the end of November 2015 this had 27 members. (<https://www.facebook.com/groups/808443299275757/>)
- NUKP began its transition across to using Trap.org.nz. This combined mapping and data recording system is already used by QE Park and the 'Rat Pack'.

-

As a result of the meeting, the term 'mainland island' was adopted.

In late 2014 a draft pest control strategy document was circulated amongst groups for comments. This document was designed to develop the vision and broad goals for the pest control program, to summarise current pest control, to set out the challenges faced when increasing pest control and to canvas some solutions.

In late June 2015 a second discussion document on pest control was circulated for feedback and also tabled with the Kapiti Coast Biodiversity governance group. This document was intended to continue the process of drawing together the different pest control operations and was, in the main, positively received by all groups.

In June and July, the trapping teams from NUKP, Whareroa and QE Park independently developed draft plans for upping pest control in our region. This was helped by Greater

Wellington Regional Council staff producing maps showing our pest control efforts as well as their own possum control. These maps show that the area covered by some trapping effort within the Kapiti Coast Biodiversity Project (including a small part of Perkins farm/Middle Run) is approximately 1,650 hectares. As a comparison Kapiti Island is about 2,000 hectares while the Auckland Ark in the Park project is 2,450 hectares.

To assist in the planning, Angus Hulme-Moir, at the time working with Predator Free New Zealand, set up a meeting with Darren Peters, head of pest control with the Department of Conservation. This was attended by representatives from all groups. This greatly helped clarify thinking about pest control and importantly confirmed that the overall direction was right.

Expanded animal pest control plans

The MFE project is funded for three years beginning June 2015. Funding available for pest control totals \$37,900 for new trapping hardware and \$39,000 for a paid contractor to help set out traps and support the trapping effort.

Each individual group has its own detailed pest control plan. Therefore the following is simply a brief summary of expansion plans.

Queen Elizabeth Park

Establishing rodent and mustelid trap lines which encircle Queen Elizabeth Park has been an aim of trapping in the park for some years. The MfE grant, along with other changes in the Park, allow this aim to be achieved.

First, the development of the cycle way allows for establishing a trap line from Poplar Ave to Rainbow Court. The distance is about one kilometre and it is proposed to have a line of ten DOC 200s about 100 metres apart in place by the end of 2015. A land swap between GW and NZTA, to be completed shortly, enables a line, again of ten DOC 200s about 100 metres apart, over a distance of approximately one kilometre from the south west corner of the remnant to Wainui Stream. The third new line may take a bit longer to put in place. When

the Expressway is completed, it is proposed to put a line of ten DOC 200s at the corner of Poplar Ave and SH1 and around the wetland to be created there.

In October 2015, it was announced that 22 hectares of wetland would be retired and GWRC Biodiversity staff would be consulted as to how to protect this area from predators.

Since trapping began in QEP in 2008 a number of traps have vanished or been destroyed by passing machinery. While some have been replaced, about five gaps remain. In addition, some of the traps used in the park were near their use-by date when they arrived, A further five are sought to replace those where rust is destroying the trapping mechanism. A total of 40 DOC 200s will be made available from the MFE grant.

GW has supplied stoat lure and they will continue to do so. There is a domestic mouse trap in each DOC 200 to trap mice that would otherwise be consuming lure meant for mustelids. GW will continue to provide these traps and peanut butter lure. Further, GW staff have been invaluable to assisting establishing each line and it expected that this assistance will continue.

As at November 2015 a detailed strategy for possum control was being developed.

Whareroa Farm

The Whareroa farm trapping team will continue to maintain current mustelid lines with an extension of these lines limited by accessibility challenges. There will be an intensified effort to control possums in key forest areas and an increased effort in other areas.

Using traps purchased through the MfE grant, intensive rat control commenced on six sites in late 2015/early 2016 in order to create 'rat free sanctuaries'. The areas chosen are key areas of mature kohekohe and podocarp forest. Total area protected will be approximately 15.1 hectares, comprising sites ranging from 0.5 hectares through to 8.8 hectares. Some of these areas are already trapped using Doc150 traps. A key part of this intensive rat control will be the use of Goodnature to protect forest margins from rats and Timms traps to protect margins from possums.

Nga Uruora

Nga Uruora aims to expand mustelid control into two areas. One is along the new Te Araroa trail from the current 'lookout' through to Pukerua Bay. The aim is to open this final part of the track in early 2016 and the track will allow placing of 45 DOC200s to continue the line which begins at the Northern end. These traps will also target rats and hedgehogs.

Using DOC200 traps, limited mustelid control will also commence on part of Perkins farm/Middle Run. These will be located at the base of Waikakariki Stream and in gullies above the Paekakariki Hill Road.

On the Paekakariki-Pukerua Bay escarpment NUKP will trial Victor traps as a lower cost alternative to DOC200s for rodent control.

NUKP will also commence possum and rat control within the key forest remnants on Perkins farm/Middle Run. This will involve placing bait stations and a small trial of Goodnature possum traps. Again, these will be located at the base of Waikakariki Stream and in gullies above the Paekakariki Hill Road.

The aim is to reduce possums across the whole escarpment to under 5%. While a formal target for mustelids will not be set, the aim is to keep them at very low levels across the whole escarpment.

Using mainly bait stations purchased using the MfE grant, intensive rat control commenced on two sites in late 2015/early 2016. The first is centred on the KCDC AT Clark Reserve. A 21.5 hectare site containing a mix of mature kohekohe forest and regenerating bush will be protected by a grid of 100 metre by 50 metre traps (DoC200) and bait stations. This is an expansion of rat control already undertaken in the area.

The second site is the 'Ecosite'. Again, existing pest control is being supplemented by adding new traps and bait stations. This area is approximately 7.2 hectares

Urban pest control in Paekakariki, Raumati and Pukerua Bay

An aim is to emulate best practice used on conservation estates. By getting enough urban dwellers involved, a grid of 50 metres by 100 metres of traps is possible. Victor rat traps in boxes are used.

An aim of the Kapiti Biodiversity Project is to support 'Rat Pack' type activities in Raumati and Pukerua Bay.

Pest control targets

Each restoration group and agency has its own formal or informal targets based on particular pest threats, goals of the project, the group or agency resources, including volunteer numbers, and the ability to monitor outcomes on particular sites. For example, in the 'rat free sanctuaries' a tracking Tunnel Index (TTI) will be used for rodent monitoring and setting targets. In these 'sanctuaries' the target is to reduce rat numbers to under a 5% TTI over the period September to February.

Monitoring

Monitoring is already carried out in various ways by the groups involved in the Kapiti Biodiversity Project. Additional monitoring will be a key part of the enhanced pest control strategy for each group. There are a number of ways animal pests can be monitored: These include:

- Tracking tunnels before and after the control program.
- Leg hold traps for possums.
- For kill traps, counts of animals.
- For bait stations, the amount of bait taken.
- Counters on self-setting traps.
- Dissections to determine stomach contents of animal pests.
- Regular bird counts help to monitor bird populations.
- Lizard and invertebrate surveys.

- Field based motion triggered cameras
- Observations of rat browse on native fruits such as kohekohe and tawa will 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. Already many of these methods are being used to some extent by the various groups. Each group will use the methods that best suit their area and operations. Data will be shared and will help provide a regional view of the impact of the pest control.

Volunteer opportunities

All groups involved in the Kapiti Mainland Island project depend heavily on volunteers. We always welcome new people to help with our trapping effort. The following are the contacts for each main group involved in the project.

Whareroa farm	Shane Williamson	shanewill3745@gmail.com
Nga Uruora	Paul Callister	paul.callister@outlook.com
Queen Elizabeth Park	Michael Stace	ja.mi@xtra.co.nz
Paekakariki “Rat Pack”	Geoff Osgood	gosgood4@gmail.com

References

Butler, D, Lindsay, T. and Hunt, J. (2014) Paradise Saved: The Remarkable Story of New Zealand's Wildlife Sanctuaries and How They Are Stemming the Tide of Extinction, Auckland: Random House

Kolbert, E (2014) The Big Kill: New Zealand's crusade to rid itself of mammals. The New Yorker, December 22, <http://www.newyorker.com/magazine/2014/12/22/big-kill>