
OPERATIONAL PLAN REPORT 2018/19

**REGIONAL PEST MANAGEMENT
STRATEGY 2002-2022**
Pest Animals and Pest Plants


greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

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1. Introduction

1.1 Biosecurity at the Greater Wellington Regional Council

The Wellington region is under threat from a number of pest animal and plant species. The Greater Wellington Regional Council (GWRC) is involved in the control of unwanted plants and animals because:

- Many of New Zealand's native plants and animals cannot co-exist with introduced species. In areas of high biodiversity value, pest plants and pest animals need to be controlled to protect vulnerable ecosystems
- Pest plants and pest animals cause considerable economic loss in many of New Zealand's primary industries. Pest management is essential to the success of our agricultural and horticultural industries
- Pest plants and pest animals are a nuisance to many aspects of rural and urban life, inhibiting the ability of people to enjoy their properties and inhibiting their wellbeing

The Regional Pest Management Strategy 2002-2022 (RPMS) provides the strategic and statutory framework for effective pest management in the Wellington region. The central focus of the RPMS is on mitigating pest threats to society, to farming and agriculture in general, and supporting indigenous biodiversity and the ecological health of our ecosystems. There are two major objectives:

1. To minimise the actual and potential adverse and unintended effect of pests on the environment and the community
2. To maximise the effectiveness of individual pest management programmes through a regionally coordinated response

Many advances in the effective management of a wide range of pest plants and pest animals have been made during the life of the Strategy. In response, indigenous biodiversity has been enhanced and local economic values protected over large parts of the region. The ability for this to be achieved was due to support from landowners, community / care groups and territorial authorities (TA).

1.2 Regional Pest Management Plan Review and new Regional Pest Management Plan 2019-2039

Following changes to the Biosecurity Act in 2012 and the National Policy Direction 2015, GWRC commenced and completed a review of the RPMS. Following almost three years of intensive review of the outcomes of the RPMS and extensive public consultation, the new Regional Pest Management Plan 2019-2039 (RPMP) became operative on 2 July 2019.

The 2018/19 financial year was a year of transition from the RPMS to the new RPMP. The species worked on during the year were prioritised based on the findings of the review and resulted in increased attention to some species programmes while slowly winding down programmes on species that were not likely to be carried into the new

RPMP. Resources were instead put into delimiting surveys to help gain information for decision making for the proposed RPMP.

1.3 Purpose of this Operational Plan Report

This document reports against the achievements and outcomes of GWRC's biosecurity-related activities. The work programme was set by the RPMS Operational Plan 2018/19 and aligns with the GWRC Annual Plan, which sets overall priorities and work programmes for the organisation.

Implementation of the RPMS requires resources. Our obligation to the community is to ensure these resources are used as efficiently and effectively as possible. This report provides some detail regarding how and where those resources were applied in the 2018/19 year.

The report is structured in two parts:

Part one - Pest animals

Part two - Pest plants

The content is organised to align with the Operational Plan 2018/19. In the Pest animal and Pest plant sections, the aim, cost, means of achievement, and the actual performance is reported on for each pest species or management category.

Part one: Pest animals

2. Surveillance species

Aim: To prevent the establishment or minimise the impact, and prevent the further spread, of animal Surveillance species in the region at a cost of \$11,000.

Annual cost: The cost of Surveillance species management (monitoring, investigation, publicity and reporting) for the region was \$10,600.

Means of achievement

Provide information and publicity to enhance public awareness of the surveillance species. The species in this category are Argentine ants, Australian subterranean termites, Darwin's ant, rainbow skink and red-eared slider turtle.

Actual performance

Rainbow skink

We received a photo of a lizard that experts believed be a rainbow skink, found in a Paraparaumu store. Ministry of Primary Industries (MPI) inspected the Northland premises that the goods came from and confirmed that the lizard came from there and was likely to have been alone. We inspected the Raumati property it had been released in, but found no sign of it.

Argentine ants

Awareness of Argentine ants remained high in the Kapiti area after media attention last year. This has resulted in significant numbers of enquiries asking for ants to be identified. Inspections and the sale/supply of ant bait were the main aspects of work on this species.

Cooperation with the Department of Conservation (DOC) and Kapiti Coast District Council (KCDC) to minimise risk to Kapiti Island, including delivery of bait and education/information to boat owners / concessionaires / landowners who travel to Kapiti Island has been a key focus, with good stakeholder buy-in. Planted traffic islands in the Kapiti Boat Club carpark, on Marine Parade just outside Kapiti Boat Club, and on the adjacent residential property were treated as these are risk areas for ants getting to Kapiti Island. Three properties associated with Kapiti Island landowners who take boats across to their private land were inspected, with no Argentine ants found, although white-footed ants were present.

Queen Elizabeth Park (QEP) is the one Key Native Ecosystem (KNE) where Argentine ant control has been necessary and fairly successful, controlling Argentine ants up to the boundary of GWRC land and away from the KCDC land at the entrance to the cycleway. This will be an ongoing exercise: eradication is not likely due to the periodic reinvasion from adjacent private property. The known infested area of QEP was expanded following further inspections.

Argentine ants are also present in Alicetown and Seatoun, but there were very few enquiries from these locations.

Myna

Trapping mynas at the Masterton and Martinborough transfer stations was partially successful, although a number of onsite issues complicated our operations. Surveillance revealed greater numbers of mynas than expected, and we will investigate the use of firearms as a control method in 2020/21 .

Wallaby

We received a public report and a photo of a dead dama wallaby in Wellington. Night time surveillance of the area showed no evidence of any other wallabies. The dead animal may have been shot in the Bay of Plenty and brought back to Wellington.

3. Total control – rooks

Aim: Total control of rooks in the Wellington Region at a cost of \$101,000.

Annual cost: The cost of rook management (surveys, research, compliance, education) for the region was \$45,300.

Means of achievement

Undertake direct control by service delivery where rooks are known to exist.

Actual performance

For the 2018/19 year we have seven confirmed breeding rookeries in the Wairarapa and none on the Wellington side of the region. This is the same number as the previous year, with the same number of active rook nests treated this season as in 2017. There remains a noticeable reduction in active nests compared to the 2016 result.

Nest baiting occurred in October, with every rookery visited appearing intact. We hand removed or baited 16 nests containing eggs or chicks. There were 50 empty nests seen at the rookeries we treated, but these were not baited this season.

We were required to use the Biosecurity Act regulatory powers for the first time to gain access to a rookery.

The rook control programme remains on track to achieve total control of rooks in the Wellington Region by 2025. The number of treated nests has reduced by 134 since 2009/10.

As has been the case for a number of years, GWRC has not received any reports of rook damage to crops in arable farming regions, which indicates the success of the aerial baiting strategy, and is a significant achievement that adds merit to the current rook control methodology. Continuation of the programme is necessary as rooks have proven to be a resilient and tenacious species with the ability to quickly expand numbers in the absence of programmed control.

Means of achievement

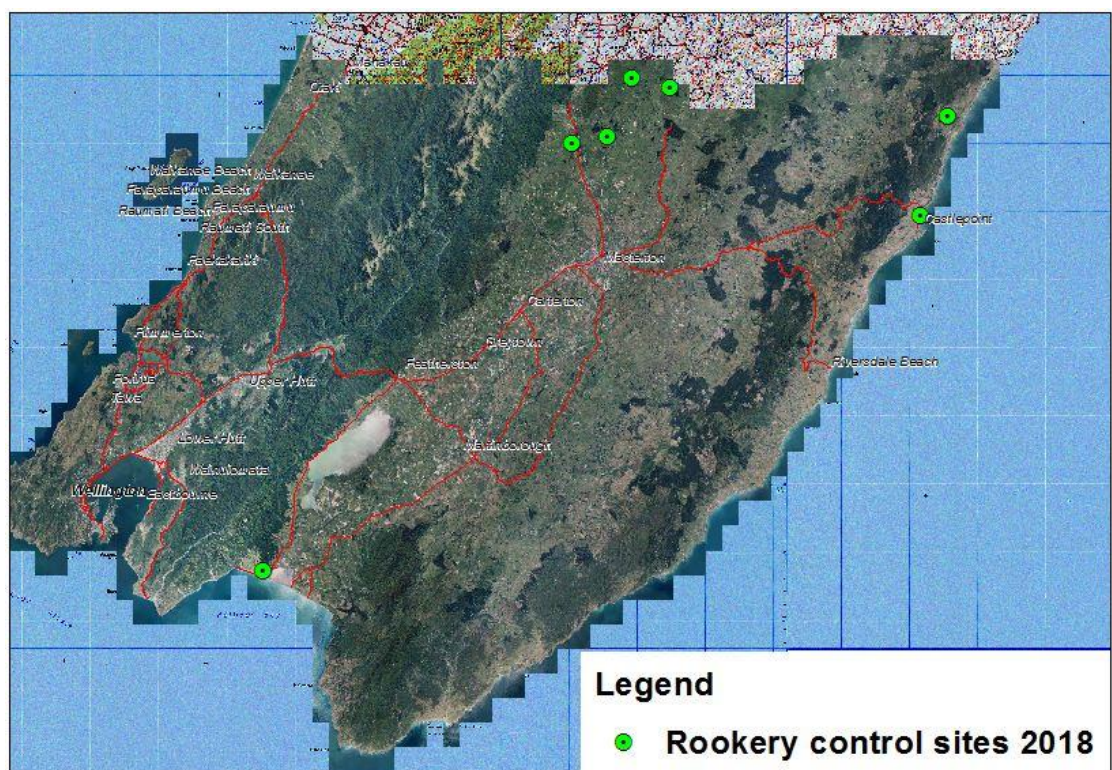
Annually survey rook populations in areas where they are known to exist, and where new infestations are reported.

Actual performance

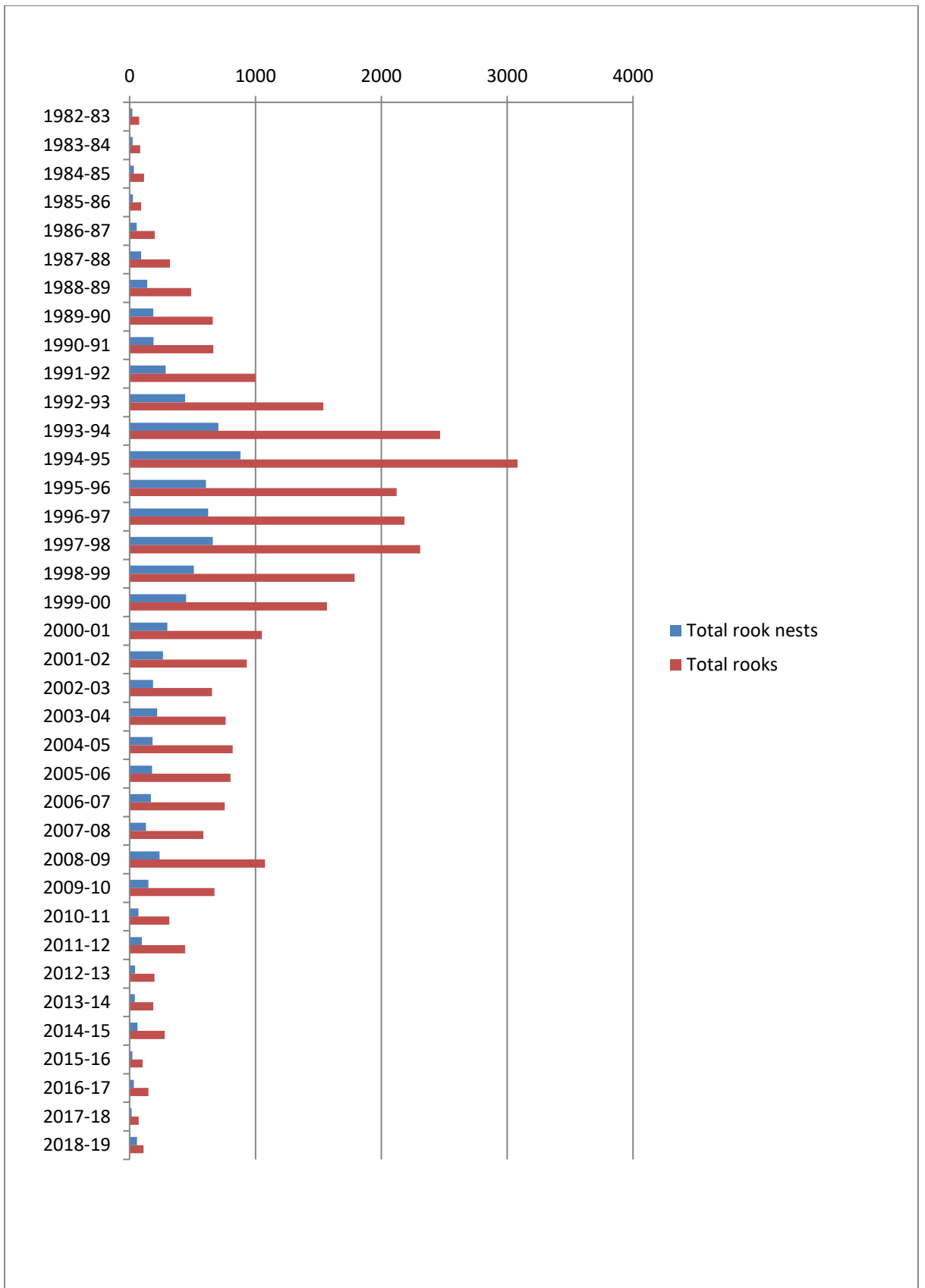
The aerial rook survey was completed in September 2018, with eight breeding rookeries identified, one of which was abandoned before control. Of these eight, one rookery was a new site, three were reactivated old rookeries, and the remainder were rookeries still active since baiting last year. Another three locations were noted where rooks were seen but no nests found.

Findings indicate the continuing downward trend in breeding birds, and we now have three less rookeries than in 2016.

Extra time was spent surveying in the Pirinoa district, with no rooks found. Ten rooks were reported at Whangaimoana soon after our surveys, repeatedly seen on a paddock close to the beach. Rooks were also observed at four other historic sites but no nests could be located. Those birds may be male remnants of past breeding colonies.



Map 1. Rookeries treated during the 2018 season



Graph 1. Total number of rookeries and number of rooks (estimated) in the Wellington Region

Means of achievement

Ensure compliance with the strategy rules in order to achieve the strategy objectives; annually inspect pet shops and rook keepers to prevent sale and/or breeding of rooks.

Actual performance

Our advertising campaign continues to remind landowners of their responsibilities when managing rooks. Private attempts at rook control can lead to rookery fragmentation and dispersal over a wider area. Rooks may also become bait-shy if poisoning is attempted using inappropriate methods and baits. Public and landowner education is the key to ensure control is managed by GWRC.

The rook programme relies heavily on the public and landowners in the region helping to locate rooks. The control programme is publicised annually in newspapers, urging the public to report sightings: two enquiries were logged for this season.

Means of achievement

Encourage Horizons and Hawke's Bay Regional Council to actively pursue management of rooks within their region to complement GWRC's total control programme.

Actual performance

Horizons has made significant progress in reducing their rook population, which assists GWRC in meeting our targets.

Horizon's results have been impressive with 2,942 nests treated in 2005 down to only 135 nests treated at the conclusion of the 2017 season.

By cooperating in the annual joint nest baiting programme on both sides of the regional boundary, we work to prevent the southward migration of rooks into the Wairarapa.

We will continue to work with Horizons to keep our northern boundary under control.

4. Suppression species – rabbits

Aim: To minimise the adverse impacts of feral rabbits throughout the region at a cost of \$202,000.

Annual cost: The cost of rabbit management (surveys, service delivery, biological control, compliance, education and research) for the region was \$202,350.

Means of achievement

Undertake direct control to manage rabbits on riverbeds, esplanades or similar public commons to ensure that rabbits do not exceed Level 5 of the Modified McLean Scale.

Actual performance

There were no situations in the region that required regulatory intervention. Regular night shooting in parks, reserves, cemeteries and on beaches was undertaken for Wellington City Council (WCC), Hutt City Council (HCC), KCDC and GWRC's Akura Nursery. Costs for these activities were fully recovered.

The rabbit spring flush was the most prolific for a number of years across parts of the region. Good breeding conditions coincided with reports of high rabbit densities in Wairarapa, Porirua and Kapiti Coast. Predation and natural mortality reduce numbers over summer as feed dries off.

When requested, we carry out rabbit poisoning on lifestyle blocks and around amenity areas. Night shooting and fumigation work continued over summer, including work along the Te Awa Kairangi/Hutt River.

Landowner enquiries are a large part of our activity, including cost recovery shooting, fumigating and poisoning. This year, changes to legislation left landowners without a registered business on their property unable to purchase magtoxin fumigant. Control options are reduced to pindone pellets or shooting. Magtoxin is useful when neither of these methods are appropriate or likely to be effective.

Means of achievement

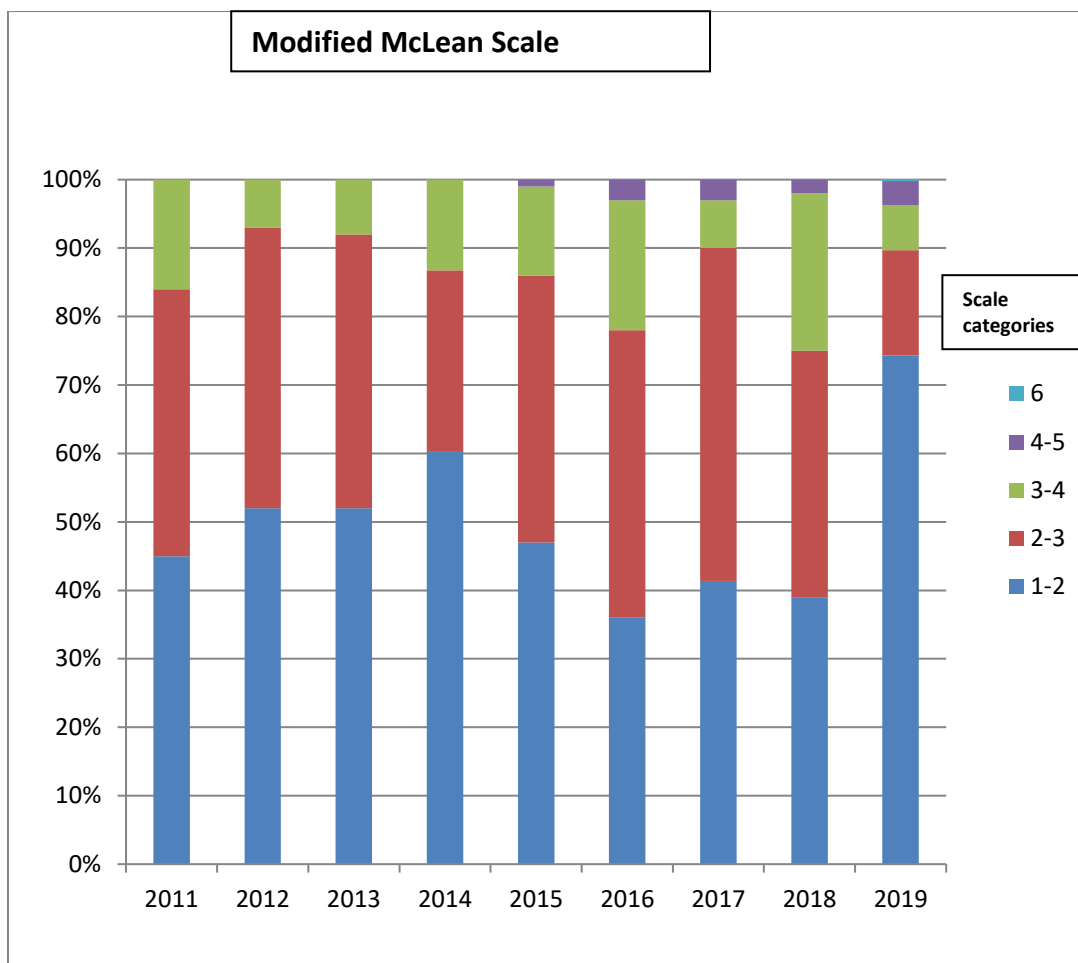
Survey land in high to extreme rabbit-prone areas to determine the extent of rabbit infestations.

Actual performance

Annual rabbit monitoring between May and July 2019 identified localised areas where numbers exceeded Level 5 of the Modified McLean Scale. In many parts of the region, rabbit numbers dropped back through natural causes or virus activity.

Monitoring of rabbit prone areas of the Kapiti Coast, Wellington city and Hutt Valley showed rabbit numbers to be at medium to low densities, with small pockets of high densities (around 10 rabbits per site) persisting in areas known as 'hotspots' (sites such as Waikanae Park where eradication cannot be achieved due to reinfestation, and/or the breeding ability of survivors).

Rabbits breed in spring and the emergence of young rabbits from burrows gives the appearance of high population numbers. By May densities are much reduced, with only the breeding stock for the next season remaining. Rabbits are limited by land use and environmental factors.



Graph 2. Annual (May to July) rabbit monitoring survey results: proportional comparison of the number of surveyed properties in each Modified McLean Scale category. Means of assessment changed in the 2018/19 year. A scale of 6 was only recorded for 0.2% of properties in 2018/19, and never beforehand.

Means of achievement

Release biological control agents for the control of feral rabbits when appropriate.

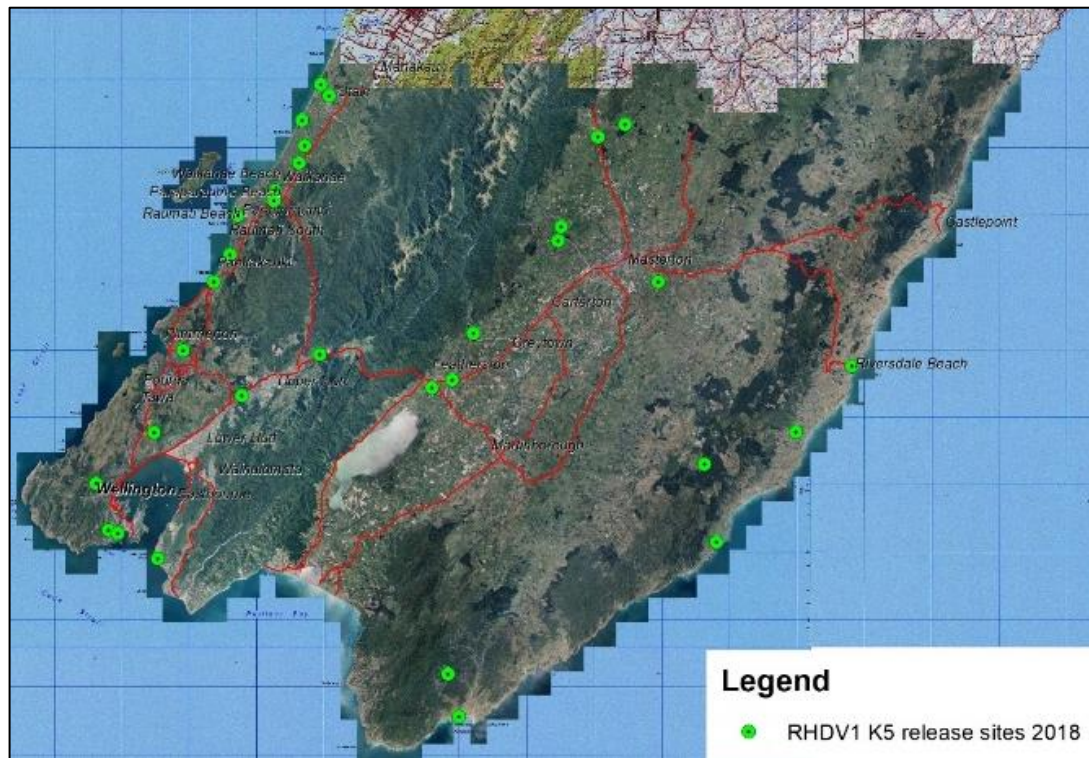
Actual performance

As reported previously, the new strain of rabbit haemorrhagic disease virus (RHDV) known as RHDV1-K5 was released in April 2018, at 31 locations spread across the region (as seen in Map 2).

Initially, the virus appeared to kill most rabbits that ate the bait directly. Post-night count monitoring indicated mixed results, with 56per cent of sites showing a significant reduction; 29per cent of sites with more rabbits present; 15per cent of sites with no change in rabbit numbers.

Occupiers also reported results varying from no reduction to significantly fewer rabbits. Rabbit carcass samples collected from the treated areas and sent to Manaaki Whenua - Landcare Research (MWLR) came back positive for the new virus RHDV1 K5. Around the same time a less virulent virus (RHDV2) self introduced, likely

resulting in increased immunity to the more lethal virus strains. This will probably reduce the effectiveness of RHDV in controlling rabbit populations.



Map 2. RHDV1-K5 release sites April 2018

Means of achievement

Support research initiatives including biological control.

Actual performance

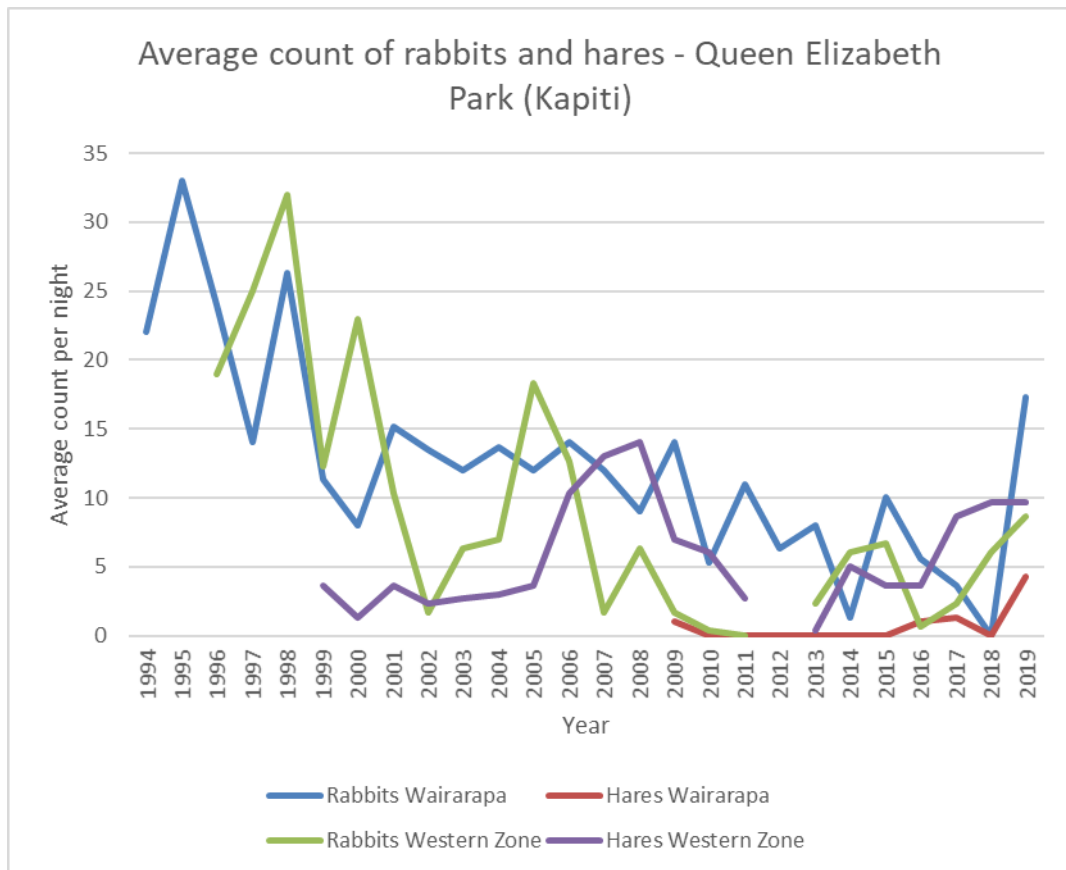
Rabbit blood sampling for the virus antibodies was not undertaken in 2019 as a test to distinguish between antibodies for each of the three strains of virus has not yet been developed. We hope such a test will be available for next winter.

Rabbit trend monitoring

Rabbit and hare night counts to determine population trends are conducted between May and July each year in QEP (Kapiti coast), and in Tora (Wairarapa coast), where no formal control occurs at either site.

The counts in the QEP site showed an increase of roughly double the rabbit numbers counted from last year, but no change in hare numbers.

Monitoring on the Tora Coast was not possible in 2018 due to access restrictions, but resumed in 2019 and recorded the highest rabbit numbers since 1997.



Graph 3. Average rabbit and hare count, from three nights counting at 25 stations per site (Western Zone refers to QEP)

5. Site-led species – magpies

Aim: To manage magpies to minimise adverse human health and environmental impacts in the Wellington Region at a cost of \$60,000.

Annual cost: The cost of magpie management to minimise adverse environmental and health impacts for the region was \$54,200.

Means of achievement

Undertake direct control of magpies where there is known to be a threat of injury to members of the public, or, complaint(s) are made to that effect within 10 working days.

Actual performance

Eight complaints were logged regarding magpie attacks. All complaints were responded to within 10 working days including capturing and destroying the magpies some cases.

Means of achievement

Respond to landowners wanting to undertake magpie control within 15 working days of receiving a request for information and/or assistance.

Actual performance

Sixteen complaints were logged regarding nuisance magpies, and 83 enquiries that specifically requested the loan of a magpie trap. All complaints were responded to within 10 working days including capturing and destroying the magpie in some cases. Staff provided advice on best practice trapping techniques to maximise catches, and had loan traps available.

6. Site-led species – human health – wasps

Aim: To minimise the adverse human health and environmental impacts of wasps at selected sites at a cost of \$7,000.

Annual cost: The cost of wasp management to minimise the adverse human health and environmental impacts for the region was \$10,200.

Means of achievement

Provide advice and education to occupiers wanting to undertake wasp control.

Actual performance

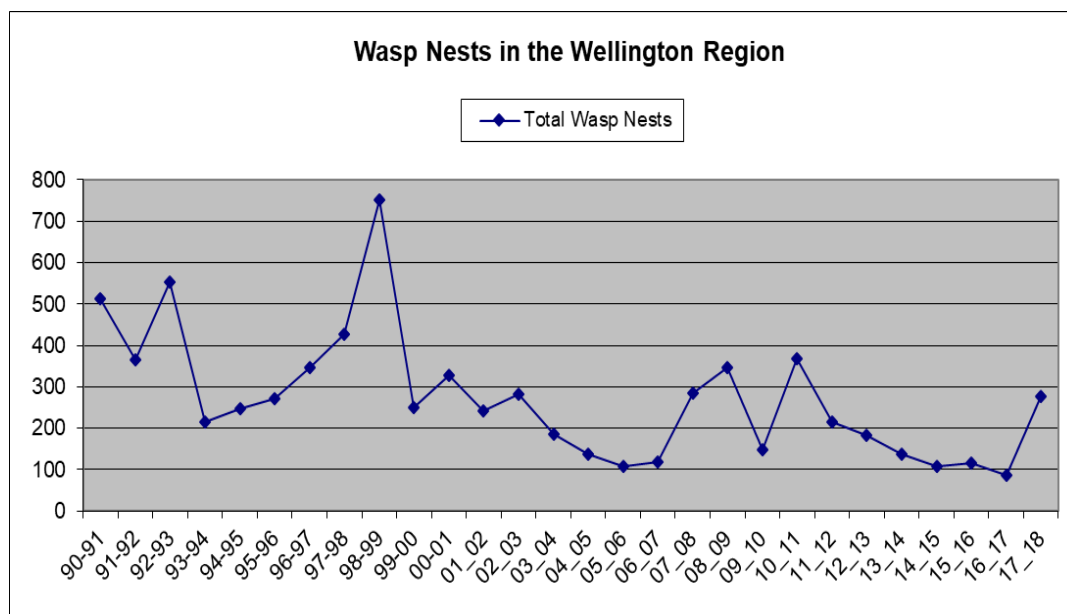
There were only two complaints from occupiers about neighbouring wasp nests affecting them. This is a significant decrease from previous years.

Various TAs, DOC and GWRC respond to wasp nest nuisance enquiries within the Wellington Region. Calls have been recorded in the 'Wasp nest register' since 1990/91. The amount of calls regarding wasp nests to GWRC and TAs is indicative of a favourable season weather wise for wasps (Graph 4).

Relevant GWRC staff became registered users of the new wasp bait Vespex which came on the market in December 2015. Biosecurity staff have trialled the product in random sites to test the effectiveness of the product as experience from other organisations indicated that it was only really effective in beech forests when little other food is available. The wasp control trial at Kaitoke Regional Park camping ground resulted in fewer wasp nests in the general area, so the trial will continue next year to see if this trend continues.

The giant willow aphid (*Tuberolachnus salignus*) infestations in the region are likely to drive wasp numbers up if combined with the right climatic conditions. The aphids secrete large amounts of honeydew on willow trees, creating a food source for wasps, which leads to increased wasp activity near areas with willow trees. Treatment options will vary depending on the site.

We work with the community to enable them to treat wasps and nests. We do this through our GWRC website, social media and at events; sharing information and discussing techniques such as how to build your own wasp trap ([as seen here](#)).



Graph 4. Wasp nest nuisance enquiries for the Wellington Region. Incomplete data for the 2018/19 year; only Hutt City Council passed on data (35 nests were recorded in the 2018/19 year)

7. Site-led – biodiversity – possum

Aim: To minimise the adverse effects of possums in areas of ecological significance (outside of the KNE programme) and maintain accrued biodiversity and economic gains in the Wellington Region at a cost of \$123,000.

Annual cost: The cost for minimising the adverse impacts of possums in ecologically significant areas and maintaining current biodiversity and economic gains in the Wellington Region was \$168,000.

Means of achievement

Undertake direct control by service delivery in sites of ecological significance (outside of the KNE programme) in agreement with the landowner/occupier.

Actual performance

GWRC supported landowners who undertook possum control in Queen Elizabeth II National Trust (QEII) covenanted sites across the region. Bait, traps and advice are provided by GWRC through local QEII representatives, with GWRC covering the cost of equipment up to \$2,000.

Service delivery - Cost recovery

GWRC undertakes a range of advice and cost recovery possum and rat control work outside the KNE programme for local TAs and private landowners.

TA work undertaken for:	Number of control sites	Target pest animals controlled	Cost recovered
Wellington City Council	25	Possums, rats, mustelids, rabbits, magpies	\$170,700
Hutt City Council	5	Possums, rats, rabbits	\$25,500
Kapiti Coast District Council	5	Possums, rats, mustelids, rabbits	\$10,100
Porirua City Council	1	Goats	\$900
Total			\$207,200

Table 1. Cost recovery work undertaken for territorial authorities

Means of achievement

Provide a referral or cost recovery service to landowners/occupiers who require possum control.

Actual performance

We dealt with 64 possum- related enquiries resulting in sales of traps or toxin in the 2018/19 year. No possum cost recovery work was requested on private land.

8. Site-led – Regional Possum Predator Control Programme (RPPCP)

Aim: To minimise the adverse effects of possums in areas declared Bovine Tb free at a cost of \$1,545,000.

Annual cost: The cost for minimising the adverse impacts of possums in the RPPCP areas of the Wellington Region was \$1,532,400.

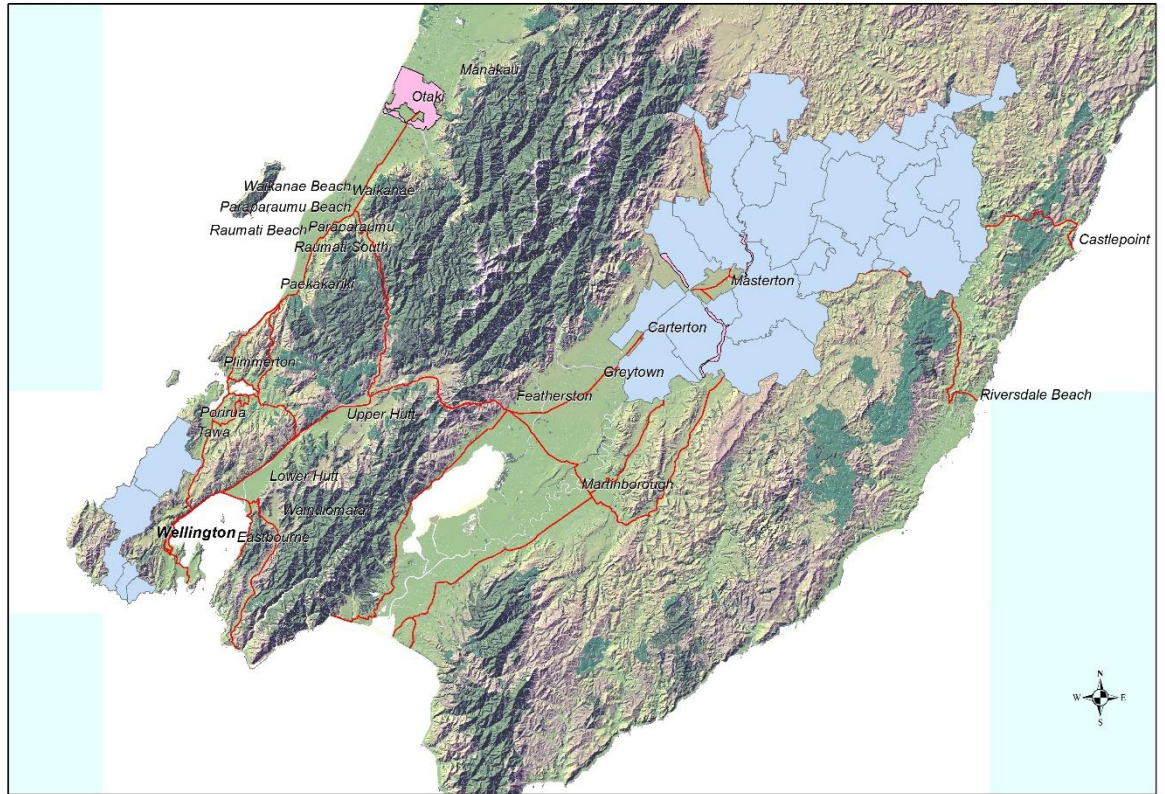
Means of achievement

Maintain a possum residual trap catch index (RTC) of 5per cent or lower within the RPPCP. Currently there is 138,500 hectares declared Bovine Tb free within the Wellington Region.

Actual performance

The proposed RPPCP for the 2018/19 year was to complete 110,000ha of possum control and 3,900ha of mustelid control.

During the year, 21 possum control projects covering 118,804ha, and mustelid control covering 3,892ha were completed in three operational areas. Nine possum control projects were monitored, with an average RTC index of 4.0per cent achieved (vs 5per cent RTC target).



Map 3. RPPCP 2018/19 control areas: mustelid in pink, possum in blue

9. Site-led – Key Native Ecosystems (KNE), reserves and forest health

Aim: To protect indigenous biodiversity in a comprehensive selection of Key Native Ecosystems and reserves at a cost of \$1,793,000.

Annual cost: The cost to achieve a measurable improvement in the ecological health and diversity of Key Native Ecosystems and reserves through pest animal control was \$1,420,000.

Means of achievement

Establish and implement integrated pest management plans for all KNE sites and selected reserves.

Actual performance

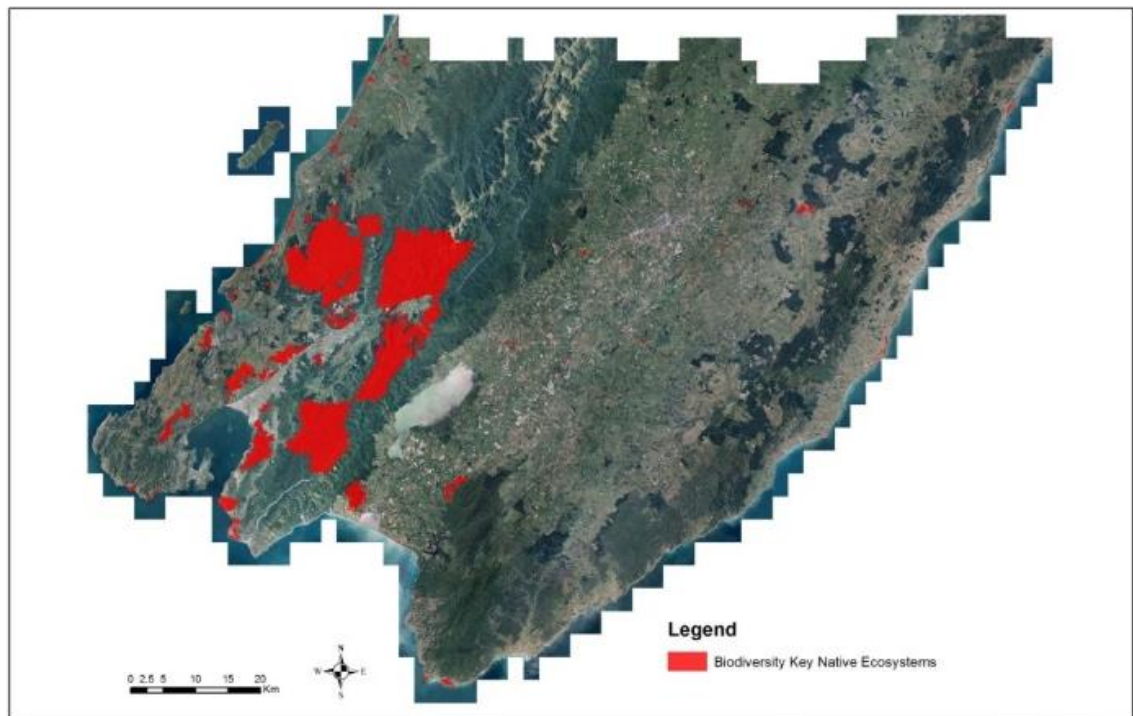
KNE operational plans are being produced for all 56 KNE sites. The plans identify the ecological values, threats to the ecological values, objectives and the operational activities, including pest animal control, that will be undertaken at each KNE site.

Means of achievement

Undertake direct control of pests identified in the management plan for each KNE site.

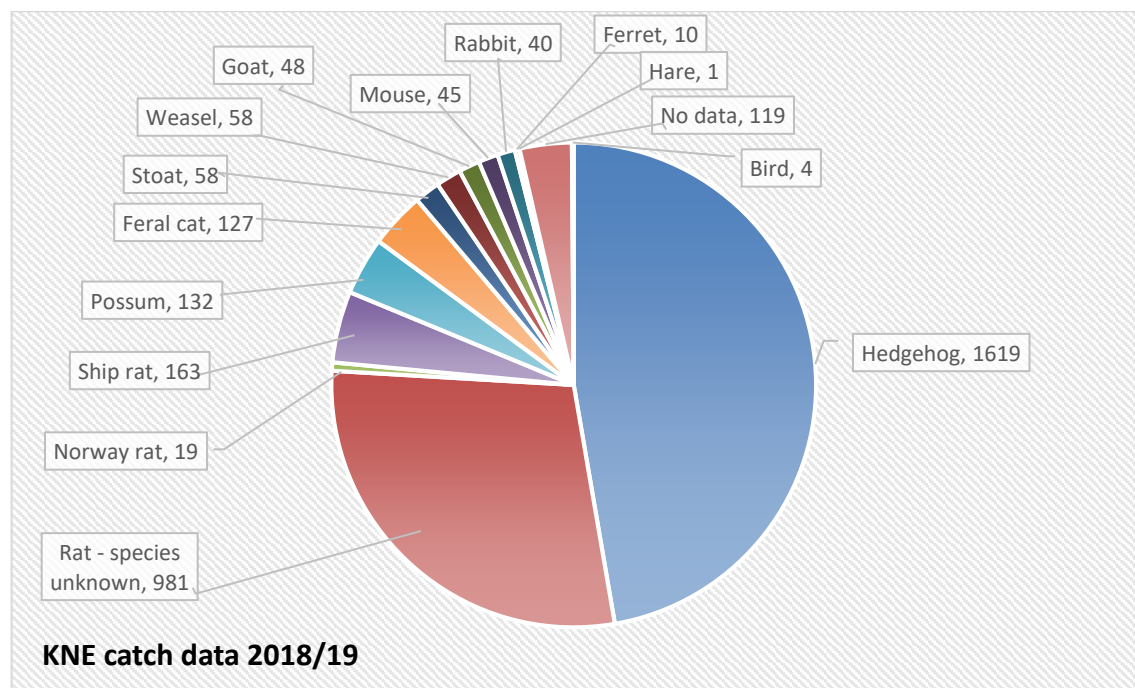
Actual performance

During the 2018/19 year, pest animal control of possums, rats and/or mustelids was undertaken at 51 of the 56 KNE sites.



Map 4. Sites managed as part of GWRC's 2018/19 KNE programme in the Wellington region

Predator traps in KNE sites captured 3,424 pests in the 2018/19 year, hedgehogs being most abundant, followed by rats, and feral cats (half of which came from Pūkaha).



Graph 5. KNE trap catch numbers by species for the 2018-19 year

Trap audits occurred in some Kapiti KNE areas where landowners do the servicing themselves. The condition of the traps was varied, with most traps not having been serviced for a long time and therefore in a poor state of operation. Similarly, audits of volunteer traps raised concerns regarding a lack of best practice standards. We worked with GWRC staff who coordinate these volunteer groups or landowners to rectify observed issues.

We set up a new KNE predator control programme in the eastern hill country at Kourarau. This involved the placement of 35 integrated predator control sites over four properties utilising traps and bait stations.

Wainuiomata Mainland Island

OSPRI completed an aerial 1080 control operation in the Wainuiomata/Orongorongo catchments in September 2018, which gave an excellent knock down of possums and rats. We followed up with a service overhaul of all traps in Wainuiomata Mainland Island which have been in place for 12 years.

Means of achievement

Coordinate site management with other biodiversity initiatives, where possible.

Actual performance

KNE operational plans identify all management partners and relevant stakeholders and GWRC works collaboratively with these groups to coordinate site management.

Pest animal control is undertaken with volunteers to assist them in achieving a range of biodiversity- based objectives. This continues in a wide range of TA reserves and KNEs across the region.

GWRC also works with DOC to implement the Wairarapa Moana Predator trapping at Boggy Pond, Wairio and Pounui Lagoon.

Means of achievement

Monitor site recovery using a range of ecological indicators.

Actual performance

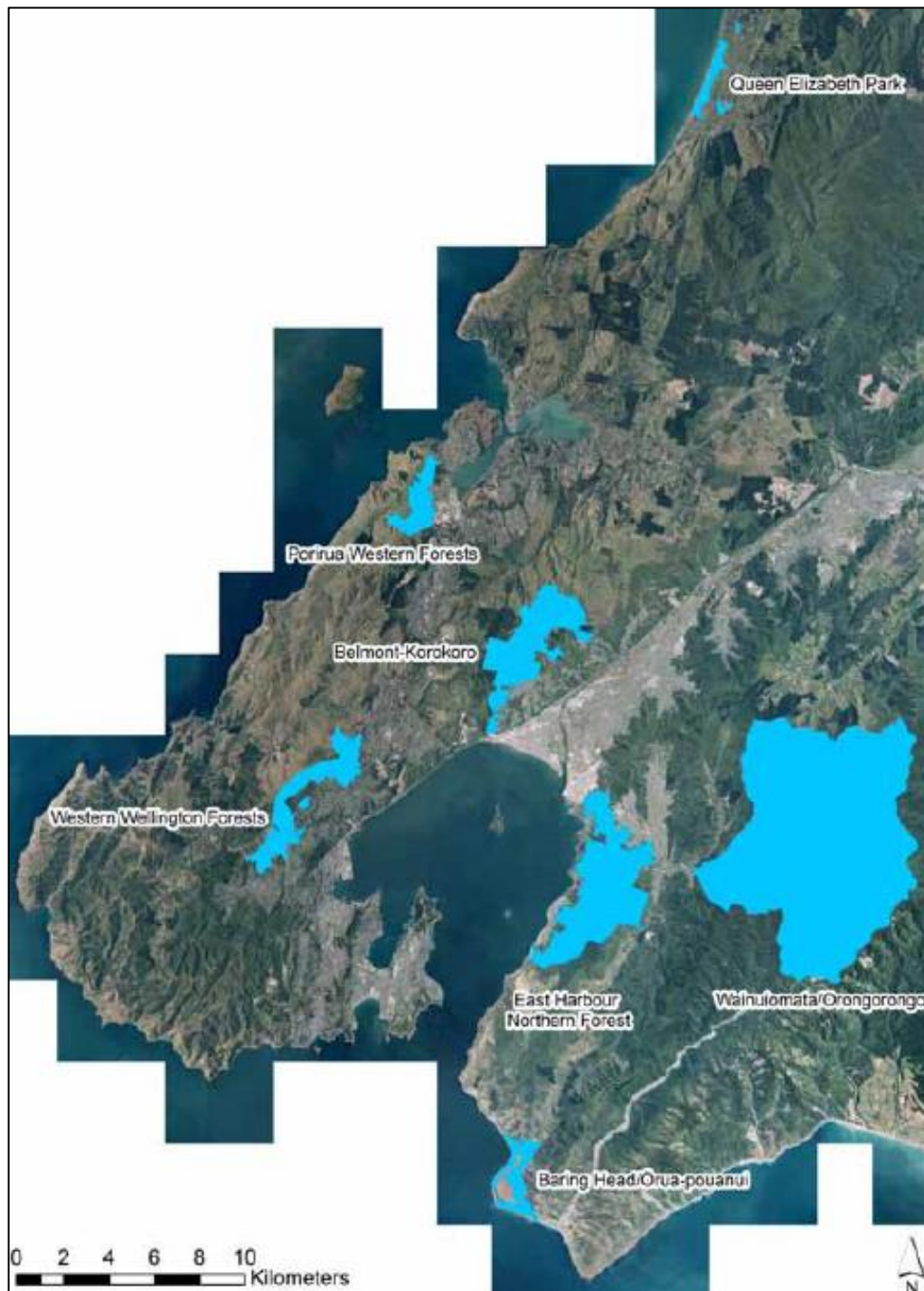
In order to better understand pest mammal dynamics and to ensure that small mammal control is effective, monitoring of rodents and mustelids is carried out at a subset of KNE sites. Small mammal monitoring was conducted at eight KNE sites (Map 5) during 2018/19.

At the Wainuiomata/Orongorongo KNE site the rat tracking rate noticeably exceeded the 5per cent target in the Mainland Island (21per cent) and had returned to pre-aerial 1080 operation levels in the non-treatment area (81per cent) a year after the drop in September 2018. GWRC scheduled a response targeting rats prior to the bird breeding season in the Mainland Island.

At the East Harbour Northern Forest KNE site, the rat tracking rate in the Mainland Island was the highest it has been since the last mast fruit fall (34per cent) in 2016,

well above the 5per cent target. The rat tracking rate in the non-treatment area was the highest recorded at this site (94per cent) since monitoring began in 2006. GWRC have scheduled a ground response targeting rats prior to the bird breeding season in the Mainland Island.

The rat tracking rate was within the 10per cent target at the Baring Head/Ōrua-pouanui (8per cent), Belmont Korokoro (5per cent), QEP (no rats encountered), Otari/Wilton's Bush site within Wellington Western Forest KNE site (4per cent), and Porirua Western Forests (no rats encountered) KNE sites.



Map 5: Key Native Ecosystem small mammal monitoring sites

Means of achievement

Where KNE sites are identified on TA land, seek funding from the relevant authority to form financial partnerships.

Actual performance

GWRC maintains good working relationships with all of the regional TAs, including a number of shared funding agreements for pest management. Memoranda of Understanding (MOU) provide a formal platform for these relationships. Three year MOUs are prepared and agreed between GWRC and the relevant TAs (Hutt City Council, Upper Hutt City Council, Kāpiti Coast District Council, Porirua City Council, Masterton District Council, Wellington City Council). The parties agree to support biodiversity and optimise ecological health within the relevant territories. This is further confirmed and supported by agreeing pest control work and budgets in each KNE plan.

Predator Free Wellington Project (PFW)

PFW is a charitable organisation supported by Wellington City Council, GWRC, NEXT Foundation and Predator Free 2050 Ltd. The vision is to make Wellington the world's first predator free capital city—a network comprising thousands of households, community groups and organisations working together to eradicate rats, mustelids and possums, so our native wildlife can thrive.

Predator Free Miramar – Implementation

Agreements between Wellington City Council, Predator Free Wellington and GWRC were formalised in the 2018/19 year. In preparation for the project, GWRC experts were tasked to develop an eradication plan for the project. Following peer review of the plan and a successful bid for funding with Predator Free 2050, GWRC staff were tasked with implementing the approved eradication plan. A large quantity of bait, bait stations, traps and detection devices were purchased for the project, including 5,000 Protecta Sidekick bait stations and 1,500 double-set weka length trap boxes, 52,000 chewcards and waxtags.

In preparation for the pending Miramar predator eradication project, GWRC employed three community engagement staff to gain permissions from Miramar Peninsula residents for the project. Ninety nine per cent of residents gave permission to host a predator control device on their property.

Bait station and trap lines were cut in the bush areas, with bait stations and trap sites laid out throughout the Miramar Peninsula on a tight grid to cover every rat's home range – even deep in urban and commercial areas. Three main contractors completed work in the bush reserves, coastal areas and on selected commercial sites. In addition we employed a team of 13 to tackle control in the residential and commercial areas. We worked with Wellington International Airport to develop a mutually agreeable plan that would enable effective pest control, while not obstructing airport operations. Part of this compromise was the restriction of completing work between 1am to 5am, one night per week.

Control in bush reserves and coastal areas started mid-June, and in residential and commercial areas in July 2019; due to the preparation required leading up to this

operational stage. During field operations, one possum was reported, tracked down and trapped, returning Miramar to possum- free status.

Achieving eradication at Miramar depends on preventing re-invasion of rats and predators into the area. We worked in conjunction with Zero Invasive Pests (ZIP) testing novel barrier designs and intensive trapping networks for the western side of the airport, which will be the source of reinvasion. With the effective barrier we believe that Miramar Peninsula can be completely eradicated of rats and mustelids.

Means of achievement

Undertake direct control of feral and unwanted cats by service delivery as part of the integrated pest management of KNE and other selected sites.

Actual performance

Feral and unwanted cats are actively managed in 20 KNE sites within the Wellington Region. These sites are predominantly rural, as the high number of domestic cats in urban areas prevents the use of current cat management techniques. GWRC also works in conjunction with TAs and private landowners to manage feral and unwanted cat populations. The Pūkaha buffer predator control traps recorded the highest catch of feral cats at 95 for the 2018/19 year – resulting in 810 feral cats being removed from this site over the last ten years.

Means of achievement

Work with communities to remove populations of stray or unwanted cats.

Actual performance

Individuals who wish to remove stray or feral cats from their own land are given advice on control options, are offered materials at cost price or referred to commercial pest management operators.

WCC have had bylaw changes to introduce compulsory microchipping. Until pet cats can be identified, control of feral or stray populations is almost impossible anywhere near urban areas.

Means of achievement

Reduce densities of select site-led biodiversity species (feral deer, feral goats, and feral pigs) in KNE sites and TA reserves.

Actual performance

Another successful year of ungulate control concluded with 320 feral goats, 31 feral deer and 173 feral pigs removed from valuable KNE ecosystems in the region. Control was undertaken in Wainuiomata Mainland Island, Wainuomata/Orongorongo

Catchment, East Harbour (northern forest), Hutt catchment, Kaitoke, Pakuratahi, and Akatarawa.

Emphasis was put on the Wainuiomata areas due to the pending 1080 drop which prevented the use of specialised hunting dogs for six months. Requests were made by hunting teams for more time in several areas in particular Pakuratahi to counter the increasing reinvasion rates from DOC land. The reduction of wild animal recovery operations on the Tararua tops over recent years has seen an increase in deer populations in this area. Overall, ungulate numbers appear stable with very low numbers in some areas. A very low number of goats were shot in Kaitoke Regional Park, and likewise for pigs shot in the Wainuiomata Mainland Island.

10. Operational research and development

Goodnature A24 traps at Te Ahumairangi

We have a trial network of 194 Goodnature A24 traps, testing the effectiveness of these automatic resetting traps against our standard toxic bait operations; the toxic bait operations being extremely effective at maintaining rats at low levels when targeting possums.

Possum baiting stopped in March 2018 when the network of traps was complete. We are monitoring possum activity with corflute chew cards, which are placed randomly during trap servicing to see if any possums are present. To date, the chew cards have shown no possum bites, even with approximately 60 to 70 cards placed at each service.

We are also monitoring rodent numbers through tracking tunnels which last occurred in January 2019. Rodent tracking results to date are summarised below. The results indicate that these self-resetting traps can provide effective control at a 150m by 75m spacing, in this forest type (regenerating natives/pine forest).

	Jun 2016	Oct 2016	Feb 2017	May 2017	Sep 2017	Dec 2017	Mar 2018	Jan 2019
Rats	2	5	0	0	5	1	5	1
Mice	5	1	0	0	2	0	0	0
Hedgehog	0	4	1	0	1	5	9	5
% Rodents	17.5	15	0	0	17.5	2.5	12.5	2.5

Table 2. Tracking tunnel monitoring results

In 2019 we also began using wax tags to monitor for possums, which decreases the chance of rodents destroying any possum marks after being attracted by food bait left on chew cards (rodents have a tendency to chew/destroy plastic). No possum bites have been seen so far on these either.

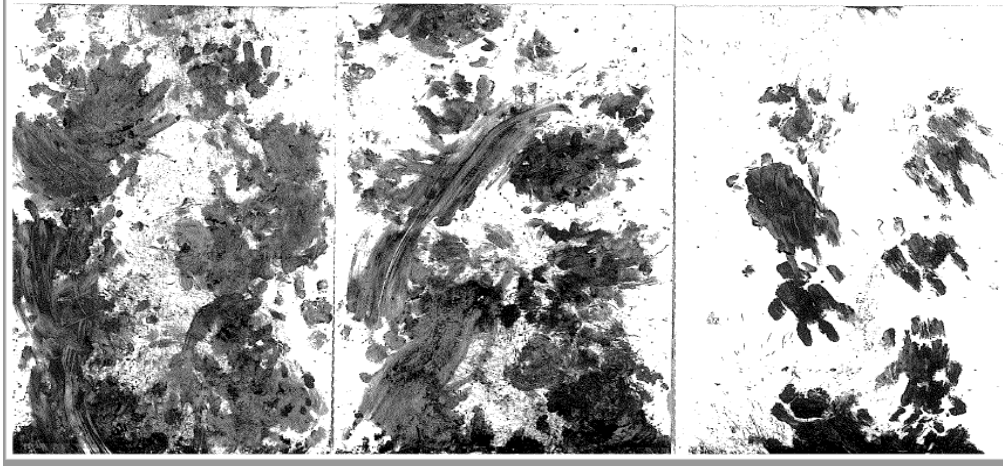


Image 1. Possible possum prints on cards from the January 2019 monitor

AT220 and PodiTRAP trials

We have been trialling two new predator traps.

Trials for the AT220 self-setting traps saw five sites set up with a possum control focus, with some sites pre-fed and some not. All the sites were monitored prior to control and will be monitored at the end of the trial. Another five sites were focused on all predators (possums, feral cats, ferrets, rats, stoats) and have trial cameras recording interactions of pest animals with the device.

The traps are based on a DOC 200 killing mechanism featuring a very powerful set of springs that allow a humane kill. The possum, rat or mustelid approaches the killing part of the trap, breaks an infrared sensor and activates the trap. The trap then self-resets by an electric motor slowly lifting the killing bar up to the ready position again. The traps have been tested and passed the National Animal Welfare Advisory Committee humane test for possums. The traps killed at least 13 possums and at least one rat in the first week of operation, a very promising result. Further testing has continued.

Five PodiTRAPs were installed on grazed land at Boggy Pond, in Wairarapa, where cattle have access, to monitor the interaction between cattle and these novel traps. This tested the trap durability in realistic conditions as cattle often kick traps and set them off, rendering them ineffective until they are re-set.



Image 2. Poditrap, set position

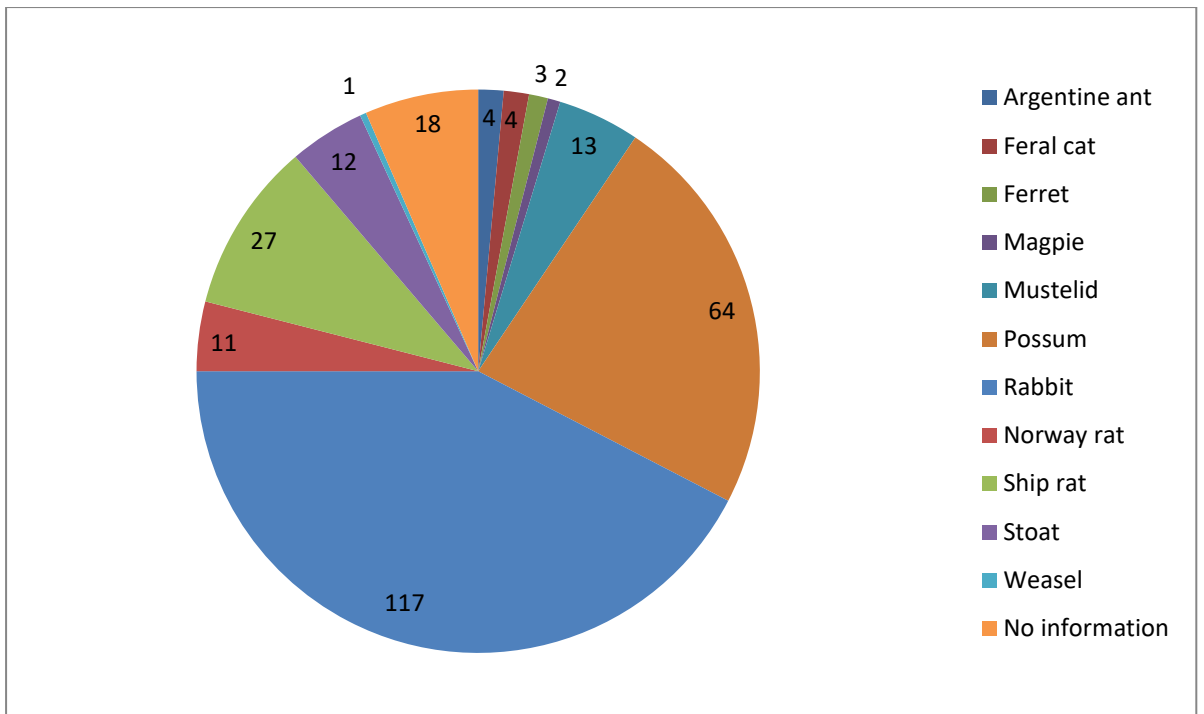


Image 3. AT220 trap

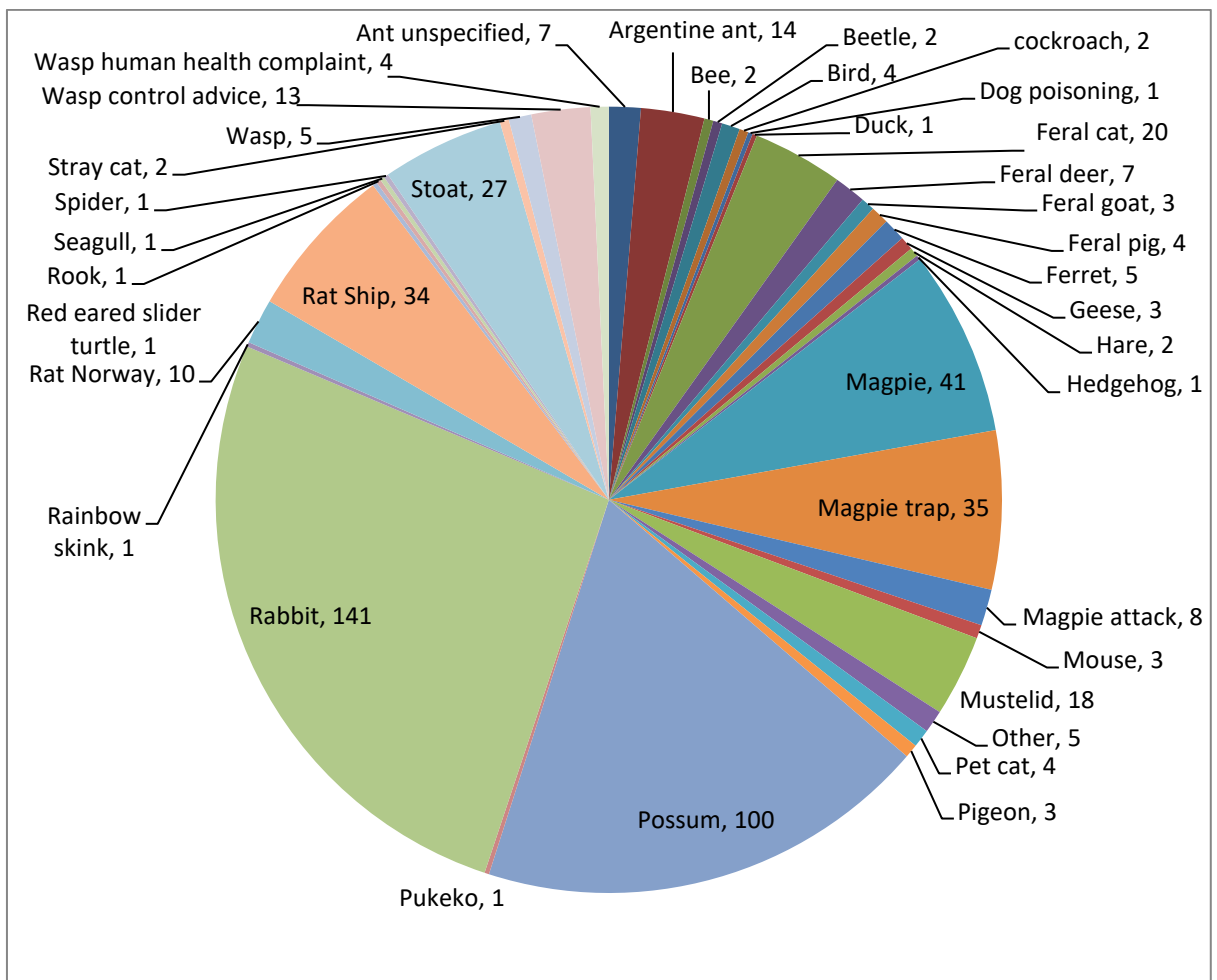
With the intensive scrutiny regarding the use of toxins, it is hoped that new products such as self re-setting traps will prove effective, giving us alternatives to toxins.

11. Public enquiries

Responding to public enquiries is a significant focus of the RPMS Operational Plan. This year we received and processed 813 public pest animal related enquires, a very similar number as the previous year.



Graph 6. Pest animal client enquiries for the purchase of toxins / traps (n = 276)



Graph 7. Pest animal client enquiries – count by pest species for the 2018/19 year (n = 537)

Part two: Pest plants

12. Regional Surveillance species

Aim: To determine the distribution and means of control for Regional Surveillance pest plants within the Wellington Region at a cost of \$255,000.

Annual cost: The cost of managing Regional Surveillance plants throughout the region during 2018/19 was \$91,500.

Means of achievement

Identify new sites of Regional Surveillance pest plants by GWRC staff, the public, or through the Regional Surveillance programme.

Actual performance

There are 34 Regional Surveillance species listed in the RPMS. To date, only 12 species have been discovered in the Wellington region (Table 3).

Nine new sites with a Regional Surveillance species infestation were discovered this year, bringing the total number of known sites with Regional Surveillance species in the last 10 years to 316.

Seven new purple loosestrife sites were found in the Wairarapa. One new Senegal tea site was found in Otaki reported by the landowner as they suspected it to be alligator weed. One new spartina site was found on Western Lake Road, in the Wairarapa.

Plant name	Found this year	Number of sites
African fountain grass		1
Asiatic knotweed		29
Bomarea		26
Cape tulip		34
Chilean flame creeper		3
Chocolate vine		140
Nassella tussock		1
Purple loosestrife	7	33
Senegal tea	1	15
Spartina	1	4
Water hyacinth		6
White edged nightshade		12
Total:	9	316

Table 3. Number of sites with Regional Surveillance species in the Wellington Region over the previous 10 years

Means of achievement

Undertake a control trial programme on selected Regional Surveillance pest plants within the region.

Actual performance

Purple loosestrife (*Lythrum salicaria*)

In preparation to implement the new RPMP, seven sites were controlled in the Wairarapa. In the western zone, control was carried out on 10 sites. These sites were previously known but not worked on under the RPMS.

Senegal tea (*Gymnocoronis spilanthoides*)

Twelve annual inspections were made on Senegal tea, all in the western zone. Plants were found at nine of them, and control measures undertaken.

Spartina (*Spartina spp.*)

The new site mentioned above on Western Lake Road, in the Wairarapa was controlled. Spartina is controlled around Lake Onoke and Lake Ferry by DOC. We monitored all known historic spartina sites to check for presence/absence.

Means of achievement

Provide information and publicity to enhance public awareness of the threat posed by Surveillance species to the region.

Actual performance

During the 2018/19 year, a factsheet for each Regional Surveillance species was available on the GWRC website.

The Ministry for Primary Industries continued their funding of the Check, Clean, Dry (CCD) programme for the 11th consecutive year. The aim of the programme is to raise public awareness of didymo and other freshwater pest species, and the risk they pose to our waterways. A regional advocate was employed to engage with the public by targeting high-use areas of our rivers, attending specialist outdoor events and looking at new ways to engage the public. A number of targeted adverts were sent out via social media which generated good uptake and views from the public. Our advocate visited schools and other interested organisations. Collateral information was handed out to relevant organisations, businesses and clubs.

Means of achievement

Use biological control agents where appropriate, and support relevant biological control research initiatives.

Actual performance

GWRC is part of the National Biological Control Collective (NBCC) along with a number of other councils, DOC and Manaaki Whenua Landcare Research. The NBCC

is currently funding research into biocontrol agents for a range of pest plants including some Regional Surveillance species.

13. Total Control species

Aim: To manage all Total Control species within the Wellington Region at a cost of \$348,000.

Annual cost: The cost of managing Total Control plants throughout the region during 2018/19 was \$307,000

Means of achievement

Identify new sites of Total Control species through incidental reports by GWRC staff, the public, or through the Regional Surveillance programme, delimiting known infestation sites.

Actual performance

This year 17 new sites of Total Control species were discovered, bringing the overall number of Total Control species sites to 581 for those species worked on in the 2018/19 year (Table 4).

African feather grass, Bathurst bur, perennial nettle and saffron thistle were not worked on in the 2018/19 year as part of the effort to develop the new RPMP and because the work does not meet the objectives of the RPMS.

Note that sites with no active growing plants for more than five years are categorised as ‘Monitor’ and sites with no growing plants for more than nine years are regarded as successfully eradicated and categorised as ‘Eradicated’.

Plant name	New sites found this year	Current total number of Sites
Blue passionflower	10	265
Climbing spindleberry	0	45
Eelgrass	0	6
Moth plant	2	117
Woolly nightshade	5	74
Total:	17	581

Table 4. Number of sites of Total Control species in the Wellington Region, after redefining criteria as part of developing the new RPMP 2019-2039

Means of achievement

Undertake direct control by service delivery of all Total Control species at all known sites within the region on an annual basis.

Actual performance

Delimiting surveys:

The 17 new Total Control species sites found during the year were mostly the results of delimiting surveys, with some reported by members of the public.

Woolly nightshade (*Solanum mauritianum*)

Five new sites of this species were found, three in Kapiti, one on Matiu/Somes Island, and one in Lower Hutt.

Moth plant (*Araujia sericifera*)

One new infestation was found at a known property in Tora, and one in Kapiti.

Blue passionflower (*Passiflora caerulea*)

Ten new sites of blue passionflower were found, four in Kapiti, three in Featherston, one in Lower Hutt, one in Wellington and one in Porirua.

Climbing spindleberry (*Celastrus orbiculatus*)

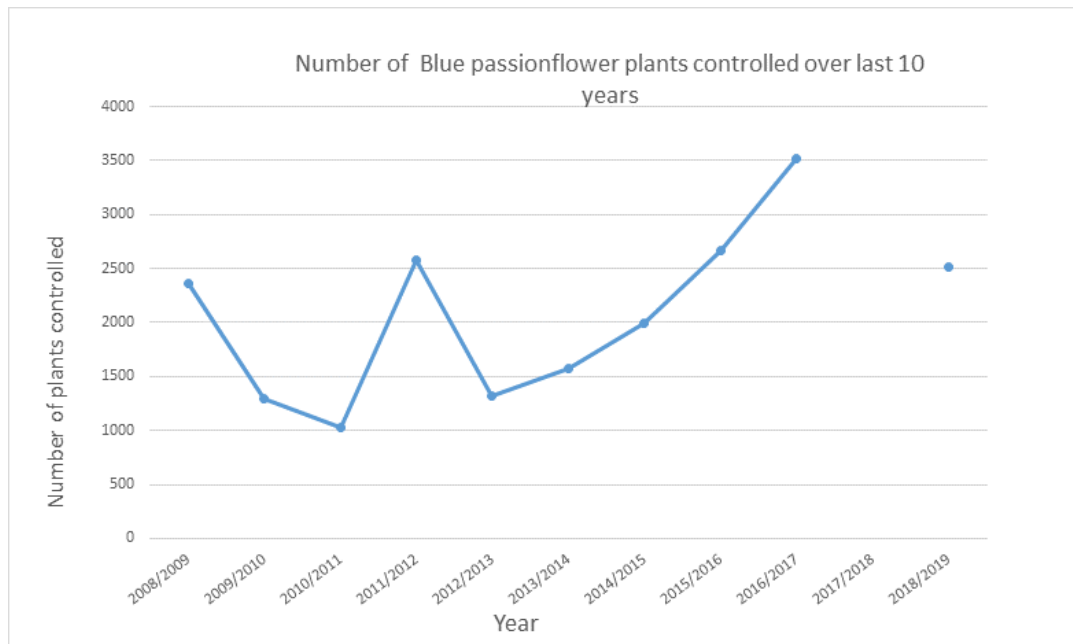
New areas of infestation were found at a known site within a large Wainuiomata bush reserve. The initial find was a result of a delimit survey.

Annual inspections:

Blue passionflower (*Passiflora caerulea*)

Annual site inspections resumed this year after a hiatus in 2017/18 when the focus was on delimiting blue passionflower sites instead, and after discussion, it was agreed that blue passionflower should be moved to Sustained Control status in the new RPMP.

Of 344 listed sites, a new monitoring process prioritised this to 268 sites requiring annual inspections. At 92 sites, plants were found. Plants were absent from 176 sites, with 45 of these re-categorised as 'Monitor', and three sites re-categorised as 'Eradicated'

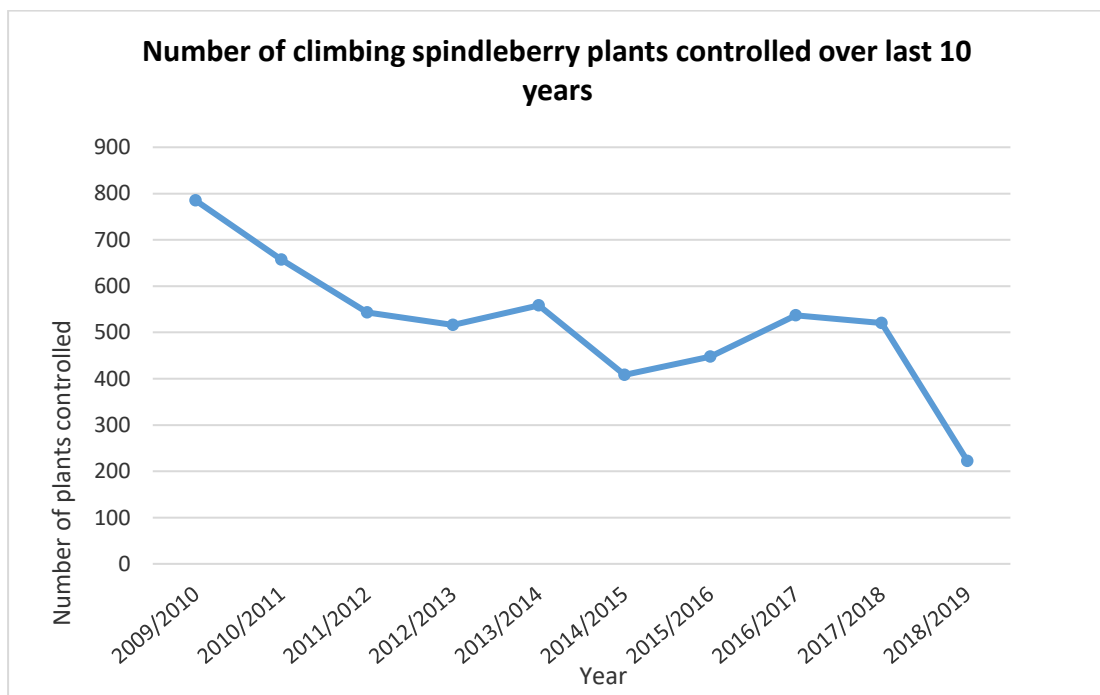


Graph 8. Blue passionflower plants controlled over time (no data available for 2017/18)

The increase in the number of plants controlled since 2016/17 was a result of finding new sites from delimiting surveys. The increasing number of sites was a contributor for moving blue passionflower from Eradication to the Sustained Control programme in the RPMP.

Climbing spindleberry (*Celastrus orbiculatus*)

Of 47 known sites, plants were found at 10. Plants were absent from 29 sites, of which five were re-categorised as ‘Monitor’, and two were re-categorised as ‘Eradicated’. There were eight sites that we were unable to access.



Graph 9. Climbing spindleberry plants controlled over time

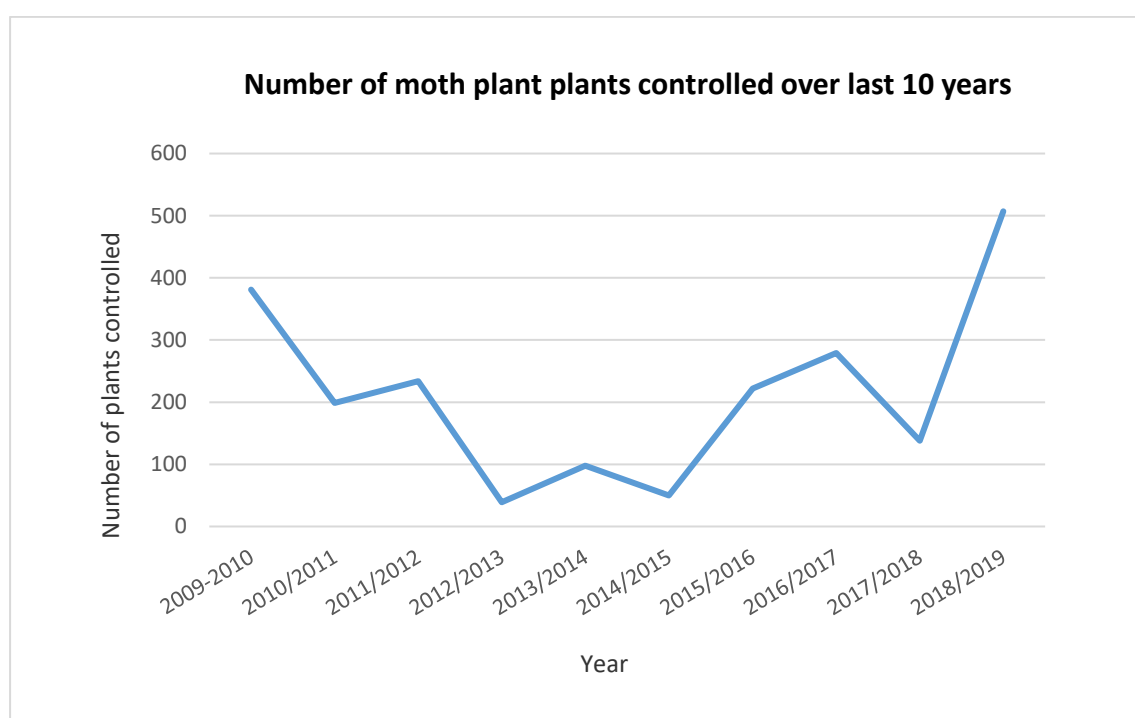
The number of climbing spindleberry plants controlled shows steady decline. The new objective for the RPMP is to “sustainably control climbing spindleberry to “less than or equal to 2014 levels”, and according to our data (graph 9) we are well below this upper limit.

Eelgrass (*Vallisneria spp.*)

Six inspections were made for eelgrass at sites identified as natural, significant or outstanding waterbodies. All were in the Wairarapa and there was no eelgrass found anywhere.

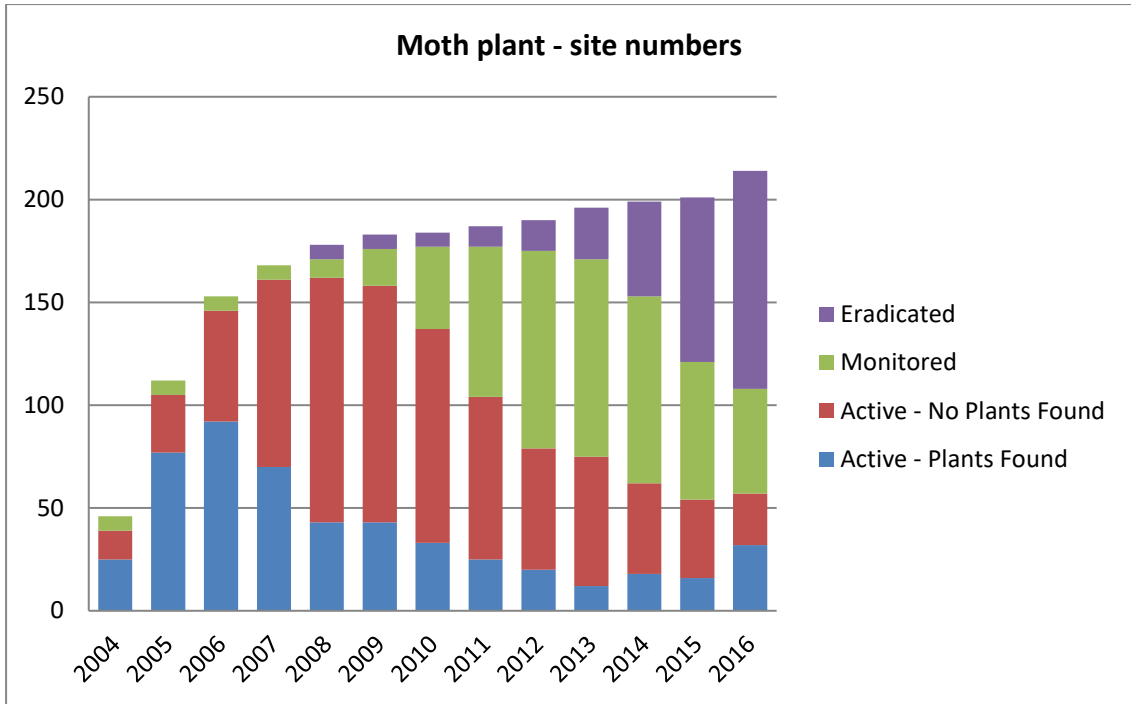
Moth plant (*Araujia hortorum*)

Of 135 known sites plants were found at 25. Plants were absent from 108 sites, of which 21 sites were re-categorised as ‘Monitor’. We re-categorised 18 sites as ‘Eradicated’, and were unable to visit two sites.



Graph 10. Moth plant controlled over time

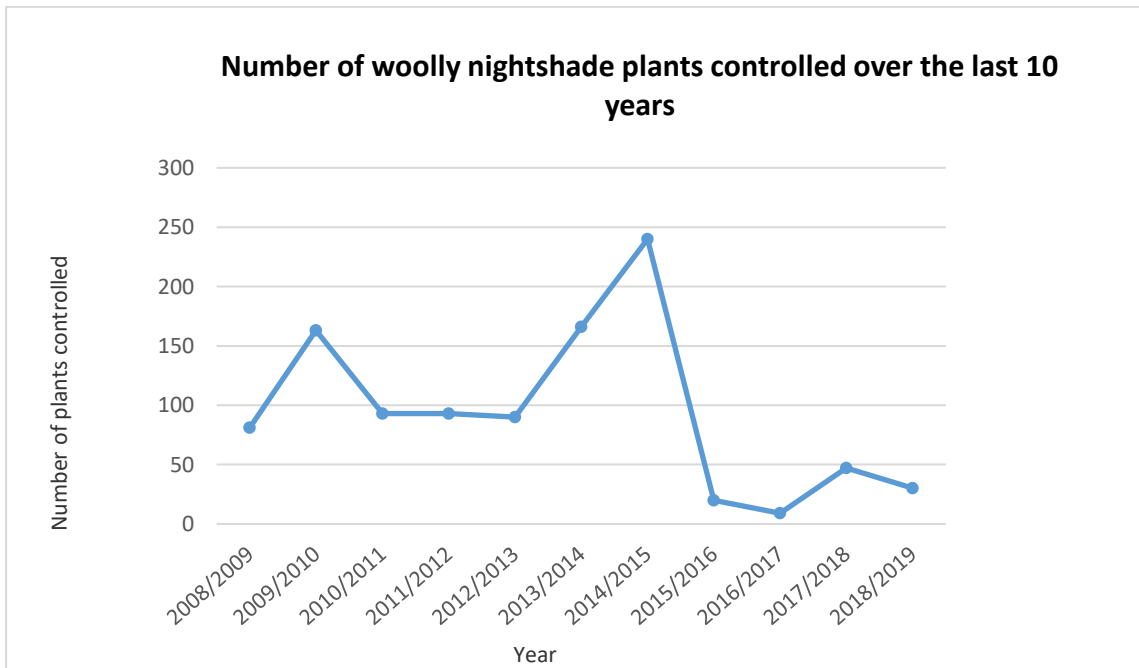
Despite the increase of the number of controlled plants (graph 10) over time, the number of Aactive category (plants present upon inspection) sites have reduced over time (graph 11).



Graph 11. Relative proportion of active, monitored and eradicated sites over time

Woolly nightshade (*Solanum mauritianum*)

The year started with 86 listed sites. Plants were found at 15 sites. Plants were absent from 69 sites, of which 22 were re-categorised as ‘Monitor’, and 12 were re-categorised as ‘Eradicated’. Two sites were not inspected.

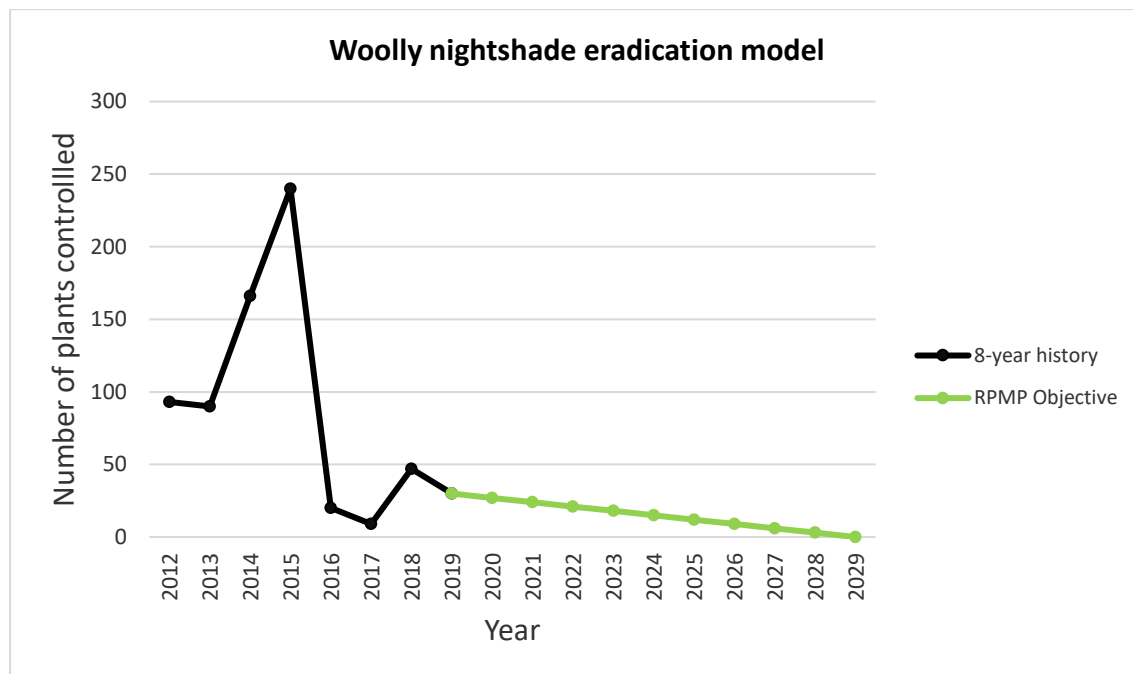


Graph 12. Woolly nightshade controlled over time

The number of woolly nightshade plants found and controlled appears to be declining, aside from a spike in 2014/15 which is attributable to one site with a large number of

seedlings. The number of sites moving to eradication outweighs the number of new sites found.

The objective for woolly nightshade in the RPMP is for eradication by 2039 (plotted in graph 13 at time of review; 2029).



Graph 13. Woolly nightshade history and envisioned eradication model

Delimiting surveys

During the 2018/19 year, 19 Total Control species delimiting surveys covering 1,751 individual properties were completed. Delimiting surveys require the inspection of all properties within a specified distance, usually 200m from a known infestation site, in an attempt to locate further sites of a targeted species. From these surveys, 17 new Total Control sites were found.

Means of achievement

Annually inspect all plant outlets and markets within the region to ensure no RPMS and National Pest Plant Accord (NPPA) species are being offered for distribution, sale or propagation.

Actual performance

Staff inspected a limited number of plant outlets and markets in the region for plant species listed in the RPMS and NPPA and all outlets were compliant.

Means of achievement

Use biological control agents where appropriate, and support relevant biological control research initiatives.

Actual performance

The NBCC is currently undertaking research into finding suitable biocontrol agents for the Total Control species woolly nightshade.

14. Containment species

Aim: To control all Containment species outside the Containment zones within the Wellington Region at a cost of \$164,000.

Annual cost: The cost of managing Containment plants throughout the region during 2018/19 was \$96,300.

Means of achievement

Undertake direct control by service delivery of Containment species outside the Containment zone within the region on an annual basis.

Actual performance

Boneseed (*Chrysanthemoides monilifera*)

GWRC staff continue to inspect and control all known boneseed sites outside areas determined as Containment zones. The programme has made considerable progress in reducing the number of boneseed plants setting seed, with the team often working in difficult terrain and under demanding conditions. Control areas are located in coastal Wairarapa, Titahi Bay and on Wellington's south coast.

Staff controlled 364 adult boneseed plants over 24 sites. A total of 1207 boneseed seedlings were also controlled over 41 properties, with one new site this year.

Boneseed, evergreen buckthorn and sweet pea shrub were controlled when they were found outside the Containment zones. This mainly occurred in coastal KNEs.

Means of achievement

Provide information and publicity to enhance public awareness of the threat posed by the Containment species to the region.

Actual performance

The GWRC website includes information on all Containment species. Boneseed signage remains in place in selected areas of coastal Wairarapa outlining the threat boneseed poses to vulnerable coastal environments.

A factsheet on boneseed is available online and is also used as a poster in selected coastal shops and farm stores. It is handed out with advice of entry forms to inform the public of the threat posed by this plant.

Means of achievement

Identify new sites of Containment species outside the Containment zones through incidental reports by GWRC staff, the public, or through the Regional Surveillance programme.

Actual performance

One new boneseed site was found this year, bringing the total number of sites to 407.

Means of achievement

Use biological control agents where appropriate, and support relevant biological control research initiatives.

Actual performance

The boneseed leaf roller caterpillar (*Totrix s.l.sp. chrysanthemoides*) which was released in previous years within the Wellington and Porirua coastal escarpments, is not likely to have established.

15. Site-led Boundary Control, suppression and human health species

Aim: To minimise the adverse impacts of Site-led boundary control species and the risk to human health of species in specific situations throughout the Wellington Region at a cost of \$179,000.

Annual cost: The cost of managing Site-led boundary control plants throughout the region during 2018/19 was \$245,500.

Means of achievement

Action complaints received within the parameters of the Regional Pest Management Strategy.

Actual performance

Staff responded to 178 enquiries throughout the year, regarding a variety of species, approximately half of which were Boundary Control species (the majority of enquiries concerned old man's beard).

Service delivery (control by GWRC staff) is often the most cost effective way to deal with complaints from members of the public. Unfortunately, repeated visits and significant staff time are often required to ensure compliance with the RPMS rules. Twenty enquiries resulted in a Letter to Clear being sent, with three of these proceeding as far as a Notice of Direction being issued – the bulk of complaints were

resolved following the initial letter. Our involvement with Boundary Control species discontinues with the adoption of the new RPMP.

Means of achievement

Use biological control agents where appropriate, and support relevant biological control research initiatives.

Actual performance

We were able to provide yellow flag iris samples for Landcare Research, and took an AgResearch representative out to search for green thistle beetle wintering sites.

We received two free releases of the tradescantia leaf beetle, that were surplus from a summer trial. The same property that received tradescantia leaf beetle also received tradescantia yellow leaf spot fungus in March 2019.

We transferred Scotch thistle gall fly to a farm in Martinborough.

16. Site-Led – Key Native Ecosystems (KNE), reserves and forest health

Aim: To protect indigenous biodiversity in a comprehensive selection of Key Native Ecosystems and reserves at a cost of \$1,199,000.

Annual cost: The cost to achieve a measurable improvement in the ecological health and diversity of Key Native Ecosystems and reserves through pest plant control during 2018/19 was \$1,284,300.

Means of achievement

Undertake direct control by service delivery of pests identified in the management plan for KNEs and reserves.

Actual performance

KNE operational plans are being produced for all 56 KNE sites. The plans identify the ecological values, threats to the ecological values, objectives and the operational activities, including pest animal control, that will be undertaken at each KNE site.

This year control work was undertaken at 56 KNE sites across the region, with control work also undertaken at seven wetlands as part of the wetland programme. The work was either carried out by external contractors or by GWRC staff depending on the scope of the work. GWRC staff also worked collaboratively with DOC (as agreed in a MOU) to control a variety of pest plants in Wairarapa Moana, and spartina grass at Lake Onoke.



Image 4. Gorse control in East Harbour Regional Park, also a KNE

Means of achievement

Co-ordinate site management with other biodiversity initiatives where possible.

Actual performance

In addition to the work that GWRC completed in KNEs, wetlands and reserves this year, staff worked on a number of other biodiversity initiatives. These included working with:

- The GWRC Biodiversity department on a range of biodiversity projects including planting
- DOC on aerial spray operations on alder and willow species around Lake Wairarapa and surveying and controlling the gunnera along the Tauherenikau River
- QEII Trust and Kiwirail at Taupo Swamp controlling multiple pest plant species infesting this area
- Hutt City Council on controlling boneseed, marram grass, and horned poppy at Parangarahu Lakes

17. Biological control

Staff worked with eight different species of biocontrol agents during the year. Work included the release and transfer of agents and the monitoring of establishment and spread.

Releases of the biocontrol agents for the year included four releases of Japanese honeysuckle white admiral butterfly, one of Darwin's barberry seed weevil, two of ragwort plume moth, two of the tradescantia leaf beetle and three of tradescantia yellow leaf spot fungus.

The Japanese honeysuckle butterfly (*Limenitis glorifica*) were released at various locations throughout the region in Wellington city, Porirua, Upper Hutt and Otaki.



Image 5. Larvae for release site



Image 6. Infestation of Japanese honeysuckle at release site

The ragwort plume moth (*Platyptilia isodactyla*) was obtained from Horizons Regional Council in exchange for several releases of green thistle beetle. The releases of plume moth bring the total number of sites in the region to six. Establishment has been previously confirmed at one of the sites but remains unknown for the others. The plume moth is an agent that does well in wet climatic conditions and has been proven to have a good impact in such areas in other parts of the country where the ragwort flea beetle doesn't thrive.

Three releases of the tradescantia leaf beetle (*Neolema ogloblini*) were received, all free of charge from MWLR. Two were left over from a summer season and were released at a site alongside the Otaki River which connects to the lower Tararua and has a microclimate with tropical fruit species growing. The third release of tradescantia leaf beetle was harvested from a field site in Palmerston North. The beetles released previously have not been doing well in our region and it is hoped that this population will be more adapted to a colder climate compared to the other releases that had all been bred in containment.

Three releases of the tradescantia leaf spot fungus (*Kordyana* sp.) were made; two were in Otaki and one in Upper Hutt. One of the releases in Otaki was at the same property as the tradescantia leaf beetle due to the suitable climate and value of the

bush. The landowners have separate areas where they have been hard at work manually controlling it.



Image 7. Tradescantia yellow leaf spot fungus and leaf beetle release site

Monitoring

Over the year presence/absence monitoring was done on all the release agents with one day's assistance from MWLR. There was no sign seen of the Japanese honeysuckle white admiral or the tradescantia leaf beetle and the status of these agents is not yet known.

Presence was confirmed at one site of the Darwin's barberry seed weevil where two larvae emerged from fruit collected from the site. This was a winter after its release (released in 2017/18) which indicates it is established. Status is yet to be confirmed at the three other sites.



Image 8. Darwin's barberry seed weevil (*Berberidicola exaratus*) emerged from a seed pod at Makara skyline walkway. Note puncture hole in fruit

Monitoring of the green thistle beetle (*Cassida rubiginosa*) on Californian thistle continued at five sites throughout the months of October to March. Staff also further assisted a scientist from AgResearch with searching for over-wintering beetles for their research programme.

As part of the national assessment study on nodding thistle agents (conducted by MWLR) monitoring was continued at two sites in Wairarapa. A team from MWLR visited and assessments were made at historic release sites of nodding thistle gall fly for suitability for a doctorate student research project. Later in the year seed heads were collected and supplied for the project which is investigating whether nodding thistle crown weevils cause evolutionary changes in thistle flowering/seed production phenology.

Our team organised one transfer of buddleia leaf weevil and one transfer of Scotch thistle gall fly in response to landowner requests. Also, seven transfers of green thistle beetle were made through the year, largely in response to landowner requests. Several other releases of these beetles were harvested and exchanged with Horizons for ragwort plume moth.

18. National Interest Pest Response Programme (NIPR)

GWRC is part of the Ministry for Primary Industries-led national programme to eradicate Manchurian wild rice (MWR) and Cape tulip from New Zealand. GWRC delivers pest plant control management for these two species on behalf of MPI.

There is one area in the region infested by MWR, at Te Harakeke swamp in Waikanae. A single aerial control operation was carried out in March 2019, followed by boat and two ground control operations. Baseline data for 13 field sites (within the one swamp) was established so that progress towards eradication can be measured in years to come.

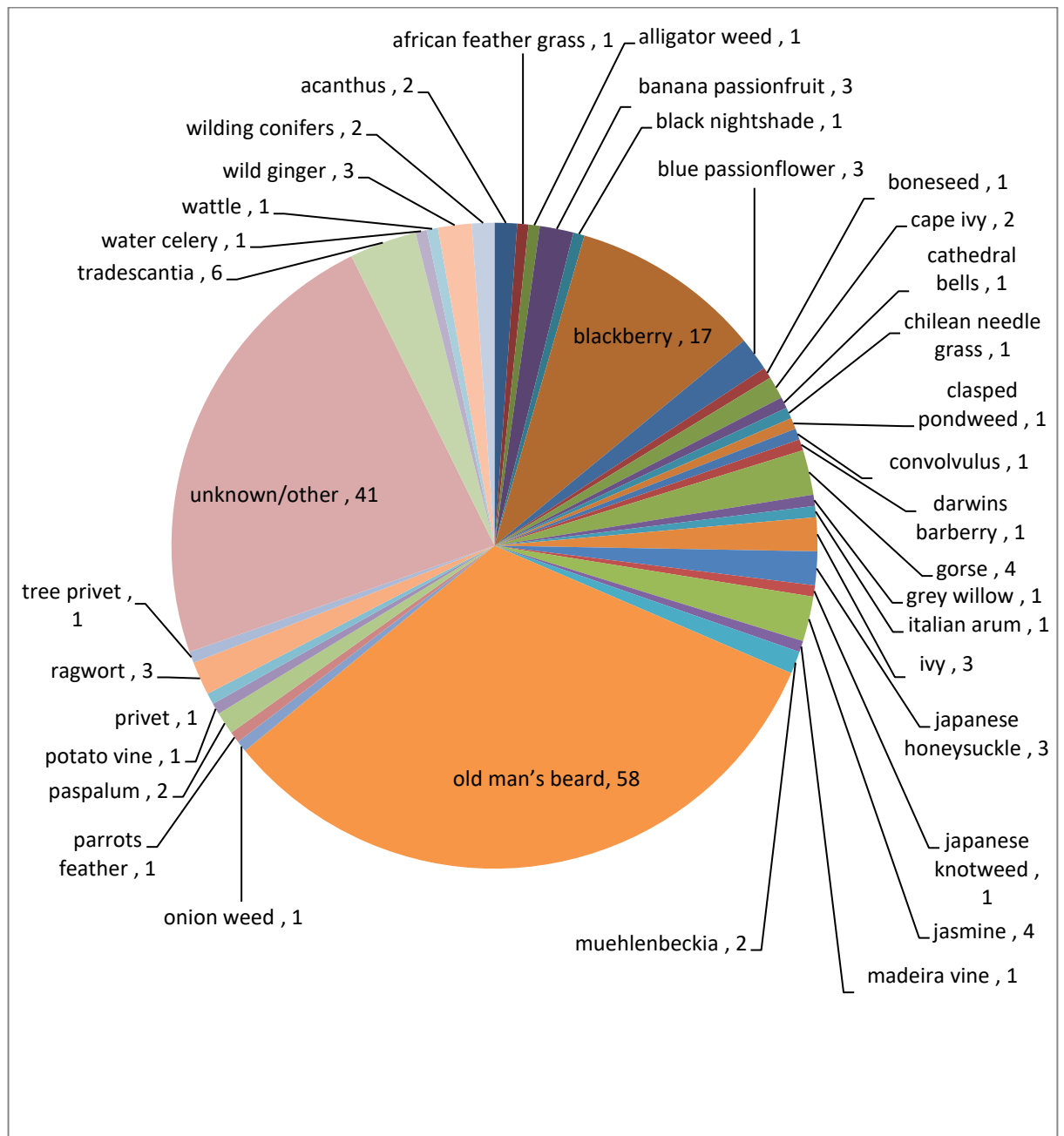
The aerial spraying operation used around half the herbicide required the previous season, and the ground control sites also used less herbicide. The boat allowed access to waterlogged areas unreachable by helicopter or people on foot.

A drone survey to review the success of the control work was flown in August 2019, and proved very useful, clearly showing good kills of targeted plants, but also new foliage coming up.

There is one active Cape tulip site in the region; reactivated in October 2018. GWRC staff inspected this site three times over the active growing season, on each occasion finding no plants.

19. Public enquiries

This year Pest Plants staff received and responded to 178 (recorded) public enquiries, compared to 222 the previous year. Almost half of enquiries (45per cent) related to non RPMS species, and 50per cent specifically related to Boundary Control species.



Graph 14. Pest plants biosecurity client enquiries – count by pest species for the 2018/19 year (n = 178)

Appendix 1 – Biocontrol agents released in the Wellington Region

Agent species name	First released	Total number of known sites	Overall agent status
Boneseed agents			
Boneseed leaf roller	2007	8	suspect failure
Broom agents			
Broom gall mite	2009	800+	established
Broom leaf beetle	2009	3	uncertain
Broom psyllid	1995	1000+	widespread
Broom seed beetle	1994	600+	widespread
Broom shoot moth	2008	3	uncertain
Buddleia agents			
Buddleia leaf weevil	2007	100+	established becoming widespread
Darwin's barberry agents			
Darwin's barberry seed weevil	2016	4	uncertain, new release
Gorse agents			
Gorse colonial hard shoot moth	2002	5	failed
Gorse pod moth	1997	abundant	widespread
Gorse soft shoot moth	2007	12	uncertain
Gorse spider mite	1989	abundant	widespread
Gorse thrips	1990	abundant	widespread
Japanese honeysuckle			
Japanese Honshu white admiral butterfly	2017	6	Uncertain, new release
Mistflower agents			
Mistflower gall fly	2001	2	established
Mistflower fungus	2009	1	established
Old man's beard agents			
Old man's beard leaf fungus	1997	3	failed
Old man's beard leaf miner	1995	abundant	widespread
Old man's beard sawfly	2002	2	failed

Privet agents			
Privet lace bug	2015	1	failed
Ragwort agents			
Cinnabar moth	2006	abundant	widespread
Ragwort plume moth	2012	6	established
Ragwort flea beetle	1988	abundant	widespread
Thistle agents			
Californian thistle flea beetle	1994	2	failed
Californian thistle gall fly	2006	1	failed
Californian thistle leaf beetle	1993	2	failed
Californian thistle stem miner	2010	2	uncertain
Green thistle beetle	2008	221	established becoming widespread
Nodding thistle receptacle weevil	1972	9	widespread
Nodding thistle crown weevil	1990	4	established
Nodding thistle gall fly	2005	12	established
Scotch thistle gall fly	2005	79	established
Tradescantia agents			
Tradescantia leaf beetle	2011	7	established
Tradescantia stem beetle	2012	10	uncertain
Tradescantia tip beetle	2013	7	uncertain
Tradescantia yellow leaf spot fungus	2018	4	uncertain, new release
TOTALS:		3000+	

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February 2020