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TE MAHERE Ā-ROHE KAUPARE RIHA -
PŪRONGO O TE MAHERE MAHI 2022/23

REGIONAL PEST MANAGEMENT PLAN -
OPERATIONAL PLAN REPORT 2022/23

Greater Wellington
Te Pane Matua Taiao

1. Whakarāpopototanga Matua | Executive Summary

The Regional Pest Management Plan 2019-2039 (RPMP) was prepared in accordance with the Biosecurity Act 1993 and became operative on the 2nd of July 2019. It contains objectives specific to individual pests and outlines how Greater Wellington Regional Council (GW), as the Management Agency, will achieve those objectives.

This report summarises the achievements and outcomes of the RPMP Operational Plan 2022/23 GW work programme and the resources used to deliver these. It should be read in conjunction with the RPMP Operational Plan 2022/23.

GW delivered four categories of species-led and four site-led programmes during 2022/23. Additionally, we are involved in four programmes that are part of national agreements and/or are funded nationally.

The total internal budget of $12,751,916 was underspent by $1,342,241 (10.5 percent). We achieved 89 percent of our performance measures. One was categorised as not achieved as no monitoring was carried out, and the remainder were partially achieved. Of the partially achieved performance measures, 93-99 percent of control work was still completed.

Issues and opportunities

Weather conditions (including Cyclone Gabrielle) caused delays through interruptions to the work programme. Wet and windy conditions are often not conducive to the nature of the work (for example herbicide application for pest plant control). Other blocks to completing work included access restrictions such as logging and road works, waiting on a resource consent, and having the amount of work required exceed budget limits, requiring reprioritisation of resources.

Two main opportunities were identified during the year; marine biosecurity and the continued development of a national pest plant modelling database. GW recognises that action needs to be taken in relation to these and are committed to working in partnership with other key stakeholders to progress activities within these areas.

Key Achievements

Our waterways and wetlands have been managed so that they are not choked by alligator weed, senegal tea, eelgrass, or purple loosestrife, maintaining the existing quality and function of our wetlands and rivers. Wilding conifers in our subalpine at-risk areas are under management, allowing the native biodiversity to retain its dominance and cover. Controlling aggressive and invasive climbers such as moth plant, blue passionflower and climbing spindleberry to prevent their establishment in our forests gives our forests a fighting chance to keep intact canopies and to regenerate.

Coastal areas of high biodiversity value have been protected against the spread of boneseed, allowing these areas to retain their natural character, biodiversity and function.

By assisting the spread of biocontrol agents for pest plant populations that have become widespread and abundant in the region, we work towards bringing these species back to a level where they are present but do not cause ecosystem level harm.

We have investigated numerous wallaby reports this year, and monitored the previous years' incursion area – with no evidence of any wallaby presence detected.

Keeping the pressure on rooks through the control of 50 rook nests, in tandem with the complementary work Horizons Regional Council does, is paying off with an expansive 'rookery free' buffer to the north of Greater Wellington's boundary.

Control of browsing pests, particularly rabbits and hares, has meant tens of thousands of native plantings in our regional parks are much more likely to survive.

Predator Free Wellington's amazing efforts have resulted in ship rats being the only known targeted predator remaining on the Miramar Peninsula, and at very low levels, in approximately 16ha of land. There has been a 71 percent increase in the mean number of native birds per (bird) count between 2017 and 2022 in Miramar.

In several areas around the region that are breeding sites for Matuku/Australasian Bittern, our staff have seen these birds numerous times while predator trapping. Monitoring in Wairarapa Moana has shown a good increase in the number of 'booming' males.

The South Mākara 1080 operation has supported the ongoing protection of the population of kiwi released in that area by Capital Kiwi.

Our Key Native Ecosystem program has seen results including increases in the abundance and coverage of native species, increases in native seedling survival and recruitment, improvements in water quality, increases in habitat and resources for native species.

We've provided quality information to the public via our Pest and Weed Central hub, where information and control advice for all the species mentioned in our Regional Pest Management Plan – those with their own programmes as well as those in the Harmful Organism list - can be found. We responded to over a thousand public enquiries and engaged with the public by giving talks and setting up stalls at events.

A number of species and sites have been controlled:

- 966 ungulates controlled
- 3,926 hedgehogs, 543 mustelids, 283 pest cats, 515 possums and 2,870 rats trapped – 8,137 invasive predators in total
- 3 incursions of Exclusion species and 56 new Eradication plant sites identified
- 59 RPMP plant sites eradicated

2. Kupu Arataki | Introduction

The Regional Pest Management Plan 2019-2039 (RPMP) contains objectives specific to individual pests and outlines how Greater Wellington Regional Council (GW), as the Management Agency, will achieve those objectives. The RPMP has clearly defined rules to be met by all land occupiers. It is our responsibility to ensure land occupiers are aware of, and meet, their obligations for pest management on their properties. We can also undertake pest control operations where there is recognised regional benefit.

A cost-benefit analysis (CBA) was undertaken for all species proposed for the RPMP. Species from the previous Regional Pest Management Strategy 2002-2022 were included as well as other species of interest which had been noted by officers leading up to the review process. This process decided what control, if any, was to be undertaken and what level of management was needed for the species.

The RPMP is implemented region-wide by GW through:

- **Monitoring** for the presence of declared pests in the Wellington Region.
- **Minimising** the actual and potential adverse or unintended effects associated with the specified organisms.
- **Eradicating** certain organisms, reducing the extent of others, and containing those species that are already well established.

This report summarises the achievements and outcomes of the 2022/23 RPMP Operational Plan GW work programme and the resources used to deliver these.

The report should be read in conjunction with the RPMP Operational Plan 2022/23.

3. Kaupapa - tirohanga whānui/ Programme overview

3.1 Species led programmes

There are four species led programmes that are outlined in the RPMP: The invasion curve (Table 1 and Figure 1) designates the different management programmes.

Exclusion programme: To prevent the establishment of a species that is present in New Zealand but not yet established in an area.

Eradication programme: To reduce the infestation level of a species to zero levels in an area in the short to medium term.

Progressive Containment programme: To contain or reduce the geographic distribution of a species.

Sustained Control programme: To provide ongoing control of a species to reduce its impacts on values and spread to other properties.

Additionally, we are involved in four programmes that are part of national agreements and/or are funded nationally:

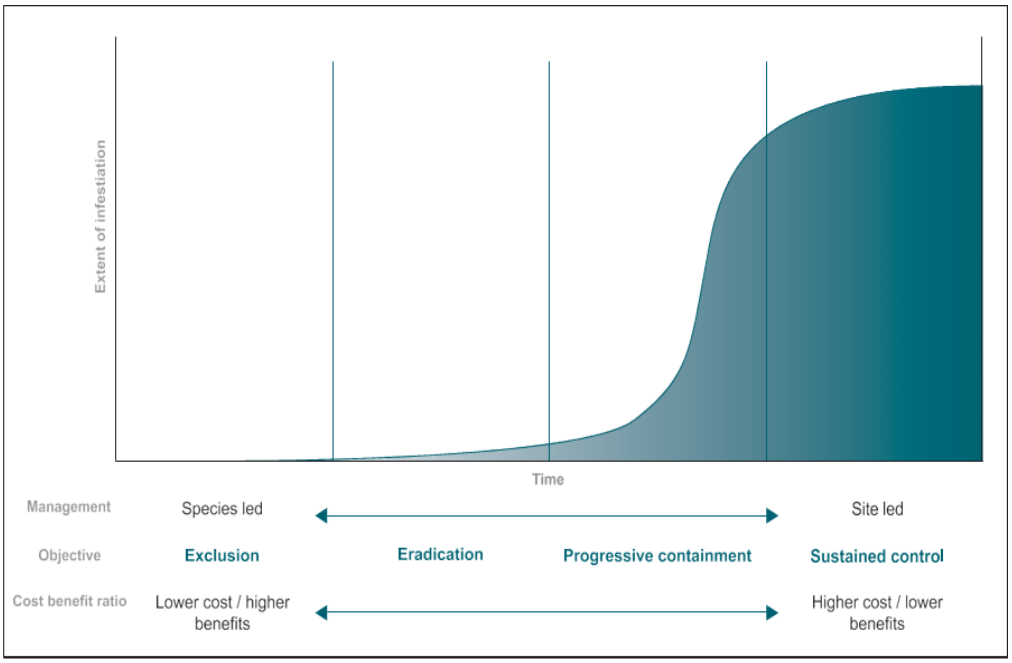
National Pest Plant Accord: To prevent the sale, distribution and propagation of a set list of pest plants (approximately 135 named species) within New Zealand.

National Interest Pest Response programme: To eradicate certain species (currently just Manchurian wild rice) from the Wellington Region.

Check, Clean, Dry: To keep our waterways clean and free of invasive freshwater pests.

Biocontrol programme: To fund biocontrol programmes for prioritised pest species.

Table 1: The Invasion Curve



Management programmes	Infestation phase	Phase characteristics
Exclusion	**Absent**	Pest not yet established in the Wellington Region, or it has been eradicated from all known sites in the region.
Eradication	**Lag**	Pest numbers low, rate of population increase low, distribution limited.
Progressive Containment	**Explosion**	Rapid growth in pest population size and range.
Sustained Control	**Established**	Pest is abundant and/or widespread.

Figure 1: Pest infestation phases through time in relation to its appropriate management. Adapted from our Regional Pest Management Plan 2019-39

3.2 Site led programmes

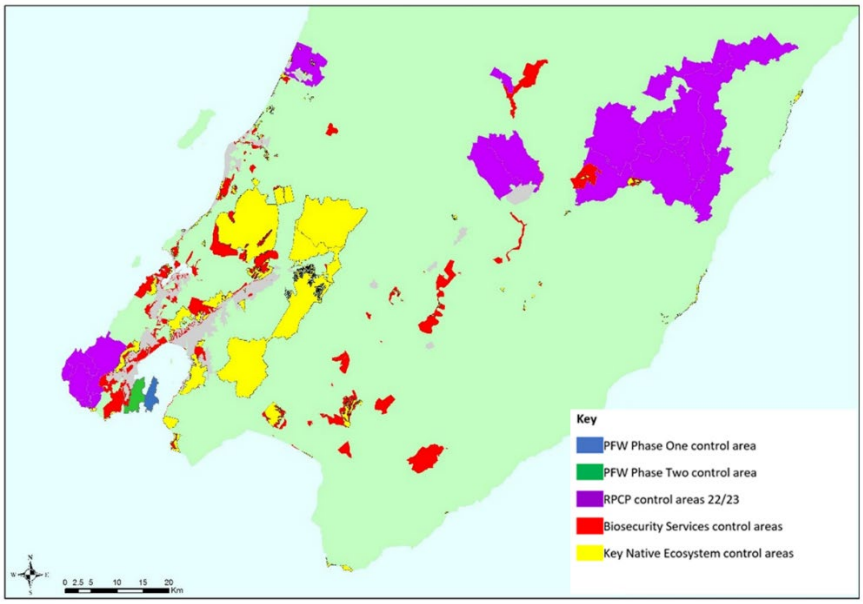
There are four site led programmes that are delivered through the RPMP (see Map 1).

Predator Free Wellington programme (PFW): To eradicate mustelids, possums and rats from the Miramar Peninsula before extending the project across the city. Predator Free Wellington is a programme funded by the Wellington City Council, GW, Predator Free 2050 and the NEXT Foundation.

Regional Predator Control Programme (RPCP): to control possums and other predators that are a serious threat to our native biodiversity and economy. The areas we work in are chosen based on protecting the best biodiversity ecosystems outside of the Key Native Ecosystem programme. 2022/23 was a transition from the former programme that was driven largely by declarations of bovine Tb freedom to a new programme focused on maintaining or enhancing indigenous biodiversity.

Biosecurity Services programme: This activity provides biosecurity delivery services across the region. This includes maintaining a buffer for predators around Pūkaha/Mt Bruce, providing cost recovery services to Territorial Authorities and landowners and controlling Argentine ants to minimise the risk to Kāpiti Island. Activities such as these lead to biodiversity gains for the region by reducing the impact of pest and invasive species.

Key Native Ecosystem programme (KNE): To protect and restore representative examples of original indigenous ecosystem types of high value in the Wellington Region through effective biodiversity management. This involves the development of strategic operational plans, planning operational activities, working with management partners and delivery of management activities including pest control.



Map 1: Site led programme coverage of the region

3.3 Pest control methods

We use a range of methods and tools to control pest plants and pest animals within the region. All control operations are undertaken by trained staff, contractors or volunteers using industry accepted best practice techniques. Our methodology considers innovation, environmental and humane factors alongside cost-effectiveness and practicality. Where chemical-based pest control methods are utilised, the most effective and least harmful option is always preferred, with all chemical application following best practice manufacturer instructions, endorsed by the New Zealand Environmental Protection Authority.

3.4 Upcoming issues

Marine Biosecurity

Marine biosecurity is a topic gaining momentum – historically we have not carried out any work in the marine area as such efforts need co-ordination nationwide for best effect, and a National Pathway Management Plan has not yet been published. However, we have recognised that action needs to be taken regardless and are working with the Top of the South Marine Biosecurity partnership as well as identifying our roles and responsibilities and the steps needed to fulfil our obligations in managing marine risks and threats.

Proposed tool for weed modelling

In 2021, The Parliamentary Commission for the Environment published a report titled *'Space Invaders: A review of how New Zealand manages weeds that threaten native ecosystems'*, concluding with recommendations to promote leadership, focus and action on native ecosystem weeds and noting better tools, information and coordination are needed, with central government having an important role to play.

Recommendation 6 of the report calls for the Ministry for Primary Industries to work with the Department of Conservation, Ministry of Business, Innovation and Employment, regional councils and relevant Crown Research Institutes to develop, administer and maintain a single authoritative and publicly accessible database of all exotic plants in New Zealand.

GW, along with other regional councils, are actively contributing to this task and have provided funding to further AgResearch's identification of emerging weeds and development of a Webapp for Weediness to operationalise the data for industry needs. This is a really positive step and will be an extremely valuable tool for weed modelling - predicting weediness and potential distribution under various climate regimes amongst other things.

4. Tipu Riha | Pest Plants

4.1 Exclusion programme

Alligator weed *(Alternanthera philoxeroides),* Chilean needle grass *(Nassella neesiana),* Nassella tussock *(N. trichotoma*).

Aim: Prevent the establishment of exclusion plant species in the Wellington Region.

Performance Measure	Result	Details
Identify new sites New incursion sites of exclusion plant species are identified.	Achieved	Three confirmed incursions in 2022/23.
Alligator weed: two sites in Taitā, one in Naenae, both suburbs of Lower Hutt.  Site locations in purple, above		
Incident investigation and response Initial investigations for all reports undertaken within five working days. Response plans developed and implemented within 20 working days.	Achieved	Initial investigation of three potential incursions was undertaken within five working days.
Detail of investigation In September 2022, an alligator weed incursion was reported in Taitā, Lower Hutt. The site was approximately 40m^2 with two defined patches on the property. Initial control was undertaken in October with a large about of vegetation and soil removed from the site. Ongoing control was required as not all roots were able to be		

removed. We returned on a monthly basis after initial control. No regrowth was found at the first re-inspection. On the second re-inspection in December one shoot had regrown.

A second site was found in Naenae in May 2023 and has required one follow-up control visit so far.

We initiated an advertising campaign targeting sessile joyweed and communities that may eat it, as the two are very similar in appearance – except that alligator weed can be toxic if heavy metals are present in the soil as it absorbs and stores them.

Alligator weed plant detail: not always found in or near waterways, but stormwater drains are a pathway for spread, as are lawn maintenance equipment.

Biodiversity Outcomes

Potential effects from alligator weed infestations include choking waterways and reducing waterflow which can lead to flooding, displacing native plants and depleting oxygen.

By preventing the establishment of alligator weed, these threats to the quality and function of our wetlands and rivers have been avoided. This plant is difficult to get rid of, so eradicating all incursions is by far the most economical action, with best results for the environment.

4.2 Eradication programme

Moth plant (*Araujia hortorum*), Senegal tea (*Gymnocoronis spilanthoides*), Spartina (*Sporobolus anglicus, S. alterniflorus*), Velvetleaf (*Abutilon theophrasti*), Woolly nightshade (*Solanum mauritianum*).

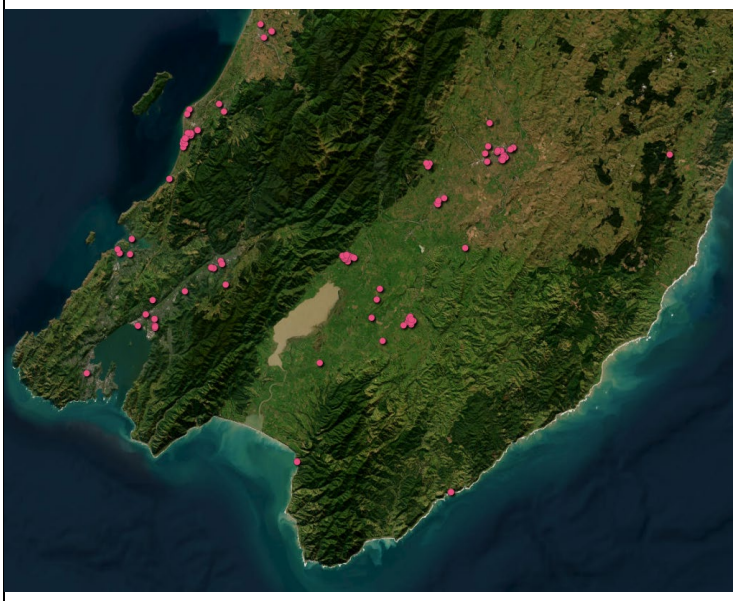
Aim: Destroy all known infestations of eradication plant species in the Wellington Region.

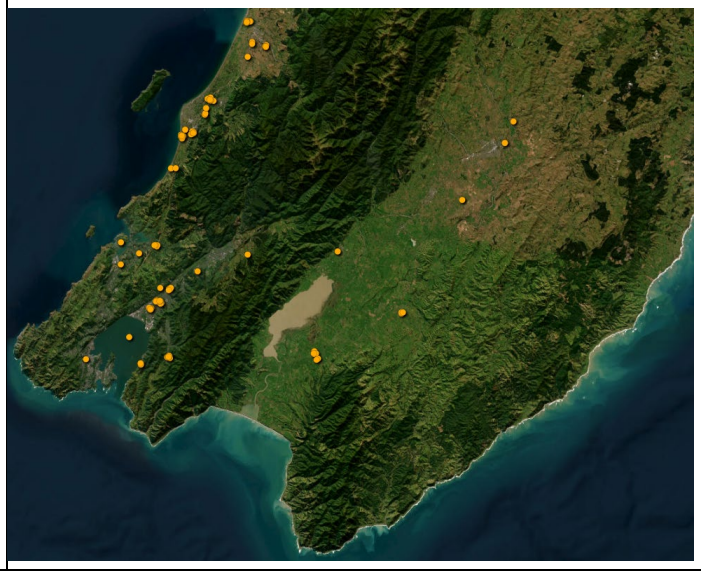
Performance Measure	Result	Details
Identify new sites New sites of Eradication plant species are identified.	Achieved	**Species** / **Number of sites** Moth plant: 5 Senegal tea: 2 Spartina: 0 Velvetleaf: 0 Woolly nightshade: 49

Species	Identification of new management sites
Moth plant	Sites in Raumati, Waiwhetu, Featherston, Lansdowne and Masterton.
Senegal tea	Site in Opaki, first reported site in Wairarapa.
Woolly nightshade	Sites at Ōtaki Beach, Paraparaumu, Raumati, Thorndon, multiple suburbs in Lower Hutt including Wainuiomata, Kahutara and Lansdowne near Masterton.

Performance Measure	Result	Details
Incident investigation and response Response to reports from the public on eradication plants will initially be responded to within five working days and actions completed within 20 working days.	Achieved	Two reports received, and responded to within the timeframe.

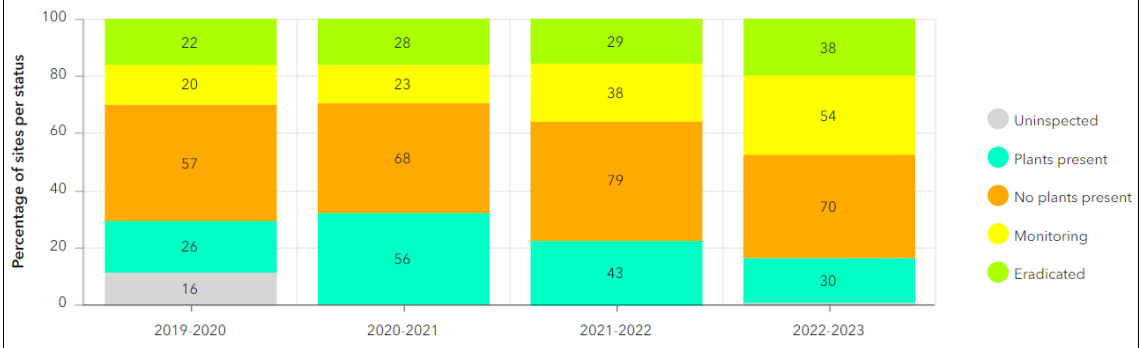
Performance Measure	Result	Details
Best practice management All management sites visited on scheduled best practise rotation.	Partially achieved	Refer species details next page.

Eradication species management site visits 2022/23		
Species	**Results**	**Details**
Moth plant	Achieved	100 percent of control work completed. Active sites shown below. 
Senegal tea	Partially achieved	93 percent of control work completed (due to an access issue at one site). Active sites shown below.  Hand removal of Senegal tea from a pond: 

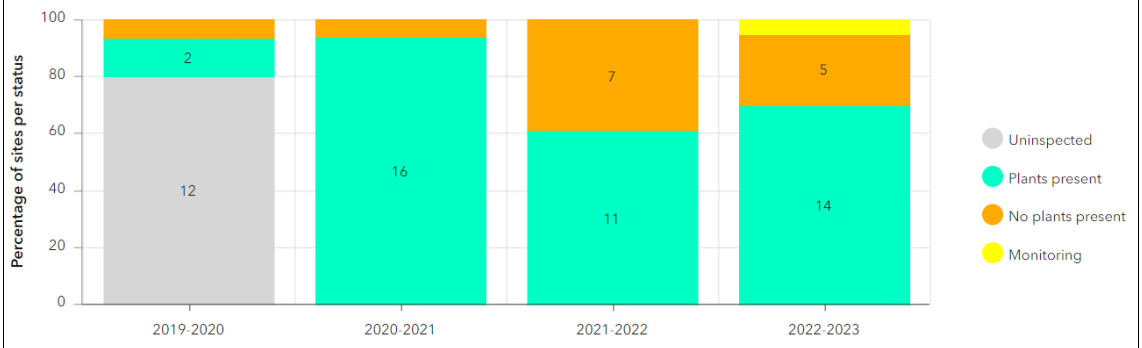
Spartina	Achieved	100 percent of control work completed. Biosecurity detector dog searched sites and found no plants. Active sites shown below. 
Velvetleaf	Achieved	No control work was required. Active sites shown below. 
Woolly nightshade	Partially achieved	99 percent of control work completed (road works limited some access). Active sites shown below. 

Performance Measure	Result	Details
Progress towards eradication Annual decrease in number of adult plants observed or in the infestation area of existing sites.	Achieved	Refer species details below.

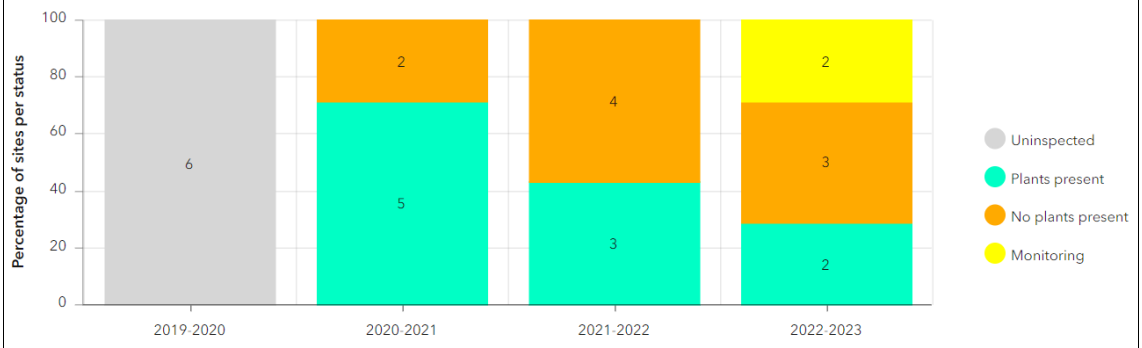
Moth plant site status change over time:



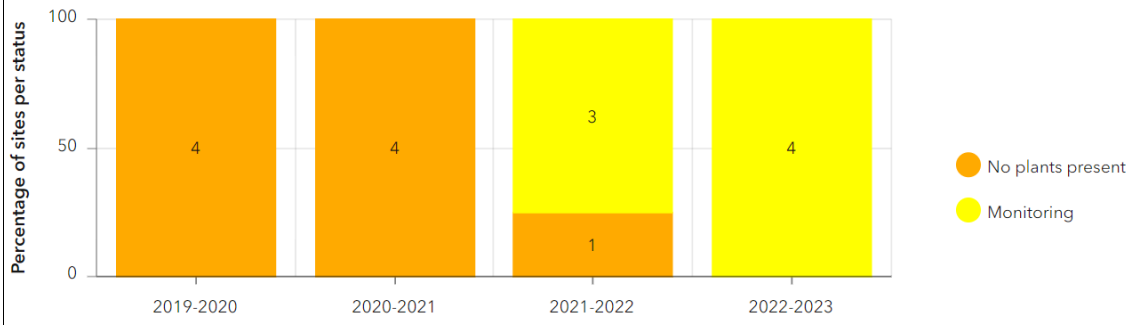
Senegal tea site status change over time:



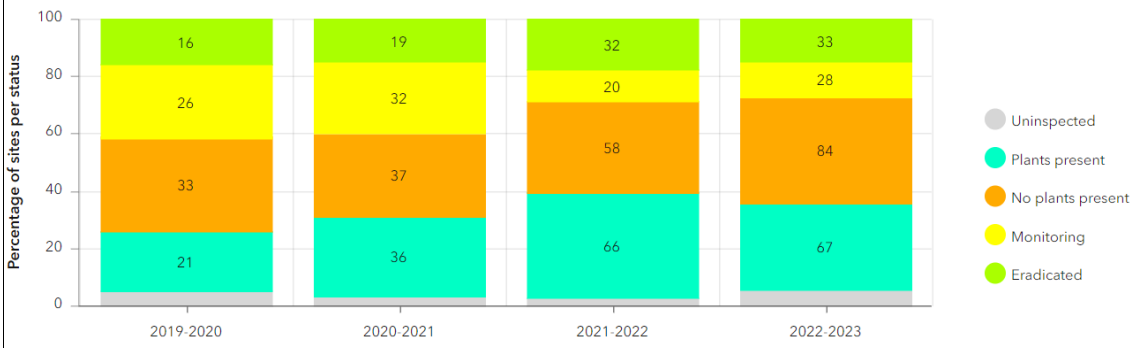
Spartina site status change over time:



Velvetleaf site status change over time:



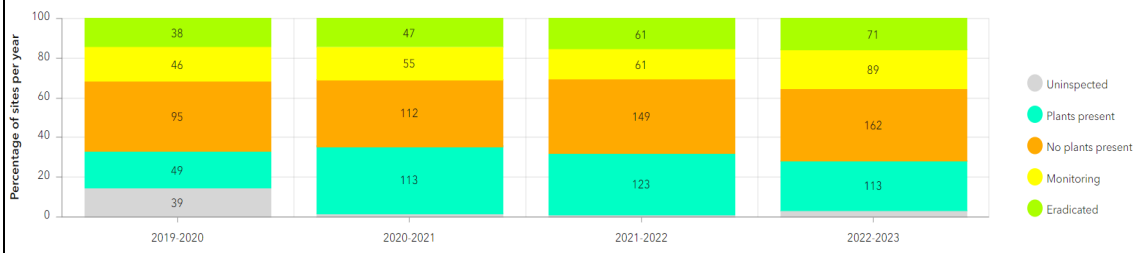
Woolly nightshade site status change over time:



Summary table for Eradication species

Eradication species	Total active sites	Number of sites eradicated	Number of adult plants	Number of juvenile plants	Infestation Area	% of sites with plants present
Moth plant	165	9	6	2,703	2.04ha	18%
Senegal tea	20	0	54	838	9ha	70%
Spartina	7	0	4	5	1.76ha	29%
Velvetleaf	4	0	0	0	16m2	0%
Woolly nightshade	193	1	74	466	10.35ha	35%

Overall progress for Eradication species:



Biodiversity Outcomes
Working to eradicate these pest plants within the timeframe of the Regional Pest Management Plan means we maintain and/or allow the improvement of biodiversity, allowing for the improved integrity of native ecosystems and robustness in the face of a changing climate. By eradicating velvetleaf we keep a significant agricultural weed out of the region – this plant is reported to have reduced crop yields overseas by up to 70 percent, which our farmers can well do without experiencing.

4.3 Progressive Containment programme

Purple loosestrife (*Lythrum salicaria*), Wilding conifers: European larch (*Larix decidua*), Douglas fir (*Pseudotsuga menziesii*) and pine species (*Pinus spp*.).

Aim: Progressively contain and reduce the geographic distribution* of progressive containment plant species in the Wellington Region.

Performance Measure	Result	Details
Incident investigation and response Initial investigations for all reported sightings or discoveries of purple loosestrife or wilding conifers undertaken within five working days and decisions documented within 20 working days.	Achieved	Four reports received, investigations undertaken and decisions documented within the timeframe.
Note that we only take action for these species if they are in certain areas – • Purple loosestrife in wetlands or waterbodies identified as specific outstanding waterbodies and wetlands in the Natural Resources Plan for the Wellington region; • Wilding conifers in the Pakuratahi Forest KNE site where the alpine and sub-alpine ecosystems are at risk.		
Performance Measure	**Result**	**Details**
Best practice management All management sites visited on scheduled best practise rotation.	Achieved	Refer species details below.

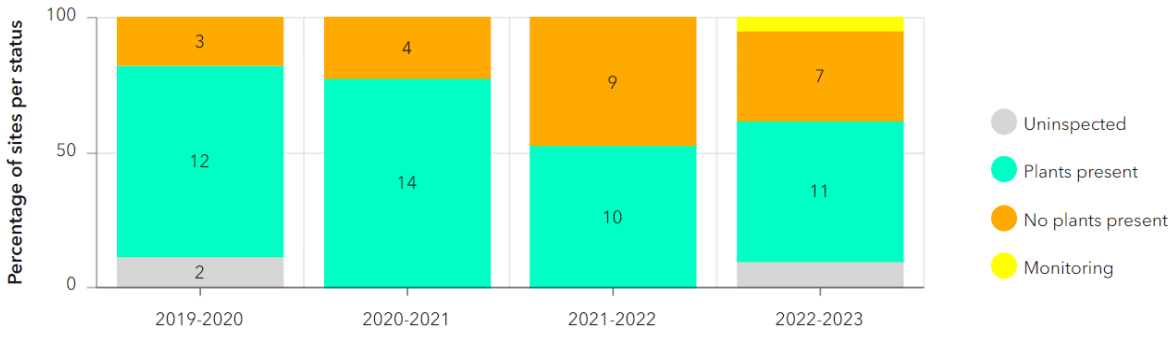
Progressive containment species management site visits 2022/23		
Species	**Results**	**Details**
Purple loosestrife	Achieved	Two new sites found in Paekākāriki. 100 percent of control work completed. Active sites shown on next page. A third site in Wairio Wetland (Wairarapa Moana) was identified by the Department of Conservation (DOC) but was not logged in our database until the 2023-24 financial year due to a lag in inter-agency reporting. Control work was completed at this site. Our reporting will be amended next year when DOC provide data on adult and seedling numbers: our figures are likely to increase as substantial numbers of plants were present.

Purple loosestrife continued		 Purple loosestrife flowering at a wetland site: 
Wilding conifers	Achieved	In 2022/23 work continued controlling scattered wilding *Pinus contorta* around the Marchant Ridge (Kaitoke) site but we have not yet begun on the core area. We completed programmed work to remove *Pinus contorta* in the Ladle Bend and upper reaches of Back Track (Pakuratahi forest) site in October 2022. 100 percent of control work completed.

Wilding conifers continued		Active management sites shown below, top end of Hutt Valley. 

Performance Measure	Result	Details
Progress towards eradication Annual decrease in number of adult plants observed or in the infestation area of existing sites.	Achieved	Refer species details below.

Purple loosestrife site status change over time:



Wilding conifer site status change over time:

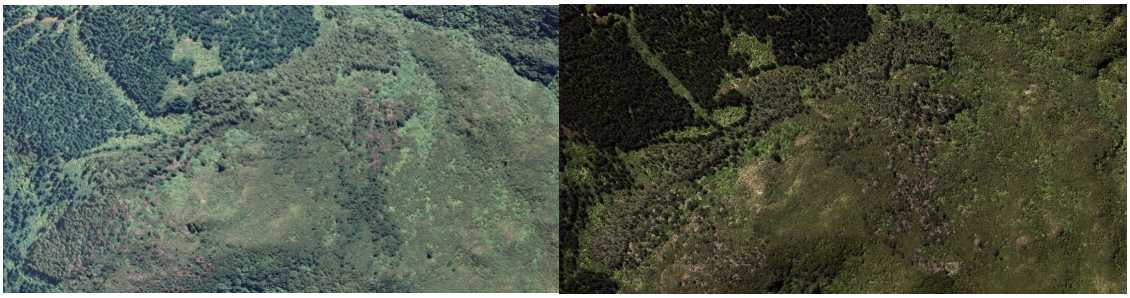
Progress at our three management sites – Marchant Ridge, Ladle Bend and the upper reaches of Back Track – will be best be shown be vegetation coverage in aerial photographs over time.

Aerial imagery taken in 2017 and 2021 show few differences at this time, but on close inspection the rust colour of dead conifers can be seen.

Marchant Ridge 2017 and 2021:

Ladle Bend 2017 and 2021:

Upper reaches Back Track 2017 and 2021:



Summary table for Progressive Containment species						
Progressive Containment species	**Total active sites**	**Number of sites eradicated**	**Number of adult plants**	**Number of juvenile plants**	**Infestation Area**	**% of sites with plants present**
Purple loosestrife	21	0	110	345	111.58ha	52%
Wilding conifers	2	0	200+	500+	16.6ha	100%

Biodiversity Outcomes
Controlling purple loosestrife (with the intent to eradicate) in natural and outstanding wetland sites prevents the formation of tall, impenetrable stands that would quickly dominate this habitat type, reducing food sources and habitat for native fish and bird species. While it looks pretty, it invades pasture on farmland, blocks drainage and causes flooding. It is also difficult and expensive to bring it under control once established, with methods involved being controversial due to the intensity of management techniques required. We support the proposed introduction of biocontrol agents to help manage this species, which Horizons Regional Council is currently seeking approval for. Managing wilding conifers at Ladle Bend and Maymorn Wetland in Pakuratahi forest prevents their encroachment into these wetland areas, which would eventually lead to drying out of the wetland as well as shading from conifers which would affect the native plant species present and reduce habitat for native species. At the Marchant Ridge, Kaitoke site we seek to prevent the spread and slow dominance of the native biodiversity by wilding conifers. The issue is often not apparent until conifer saplings reach the age and height at which they emerge above the native canopy.

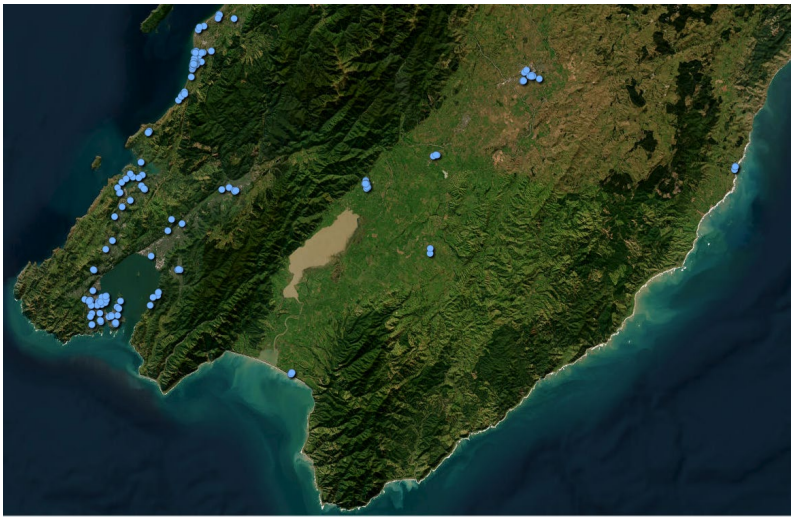
4.4 Sustained Control programme

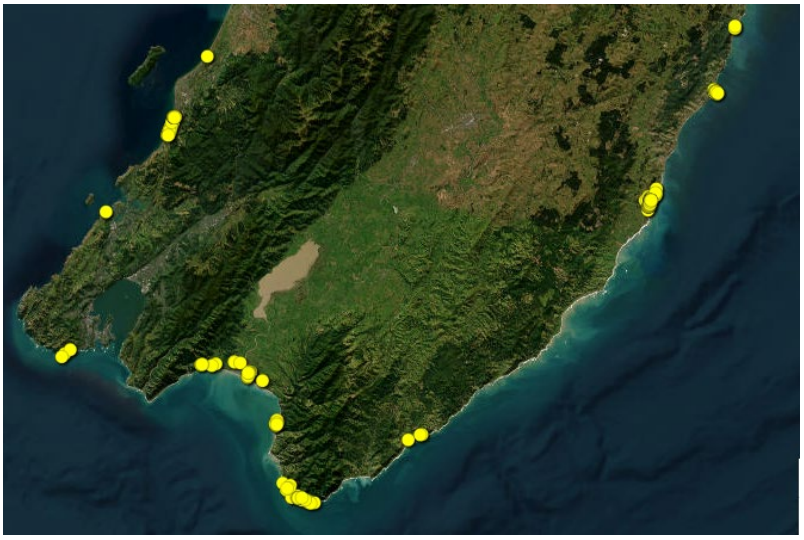
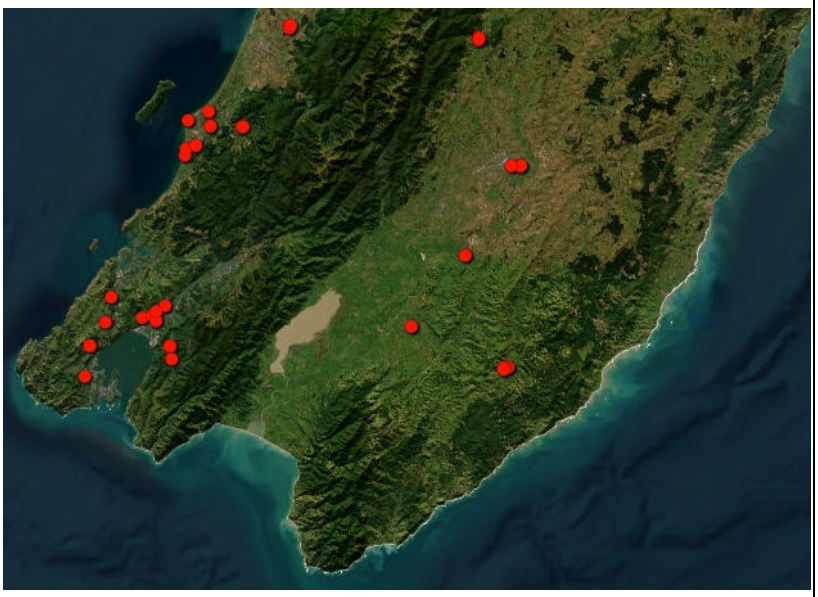
Blue passionflower (*Passiflora caerulea*), Boneseed (*Chrysanthemoides monilifera*), Climbing spindleberry (*Celastrus orbiculatus*), Eelgrass (*Vallisneria spiralis*, *V. gigantea*).

Aim: Control sustained control plant species to reduce their spread and minimise adverse effects.

Performance Measure	Result	Details
Incident investigation and response Initial investigations for all reported sightings or discoveries of sustained control plants undertaken within 10 working days and decisions documented within 20 working days.	Achieved	Seven reports received and investigated within the timeframe.

Performance Measure	Result	Details
Best practice management All management sites visited on scheduled best practise rotation.	Partially achieved	Refer species details below.

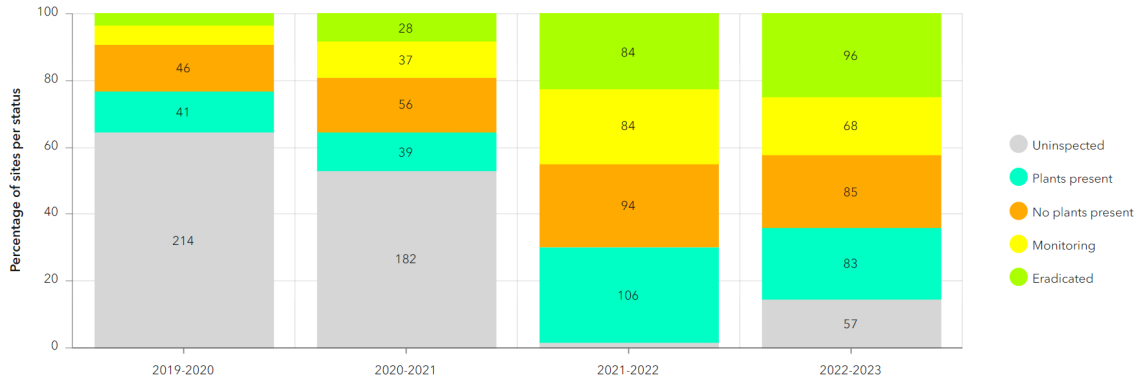
Sustained Control species management site visits 2022/23		
Species	**Results**	**Details**
Blue Passionflower	Partially achieved.	97 percent of control work completed (resources re-prioritised to respond to Alligator weed incursion). Active management sites shown below.  12 sites classified as eradicated this year.

		New sites found in Raumati, Paekākāriki, multiple Wellington suburbs, Petone, Featherston and Masterton.
Boneseed	Partially achieved	99 percent of control work completed (resourcing limitations). 34 sites classified as eradicated this year. New sites found at Castlepoint, Cape Palliser/Mātakitaki-a-Kupe, Ngawi, Whatarangi, Riversdale Beach, and Lake Ferry. Areas also surveyed include Ocean Beach, Western Lake Road, Mangatoetoe and Whitireia. Active management sites shown below. 
Climbing spindleberry	Achieved	100 percent of scheduled control work completed. 12 sites classified as eradicated this year. Active management sites shown below. 
Eelgrass	Achieved	100 percent of scheduled control work completed. Active sites dug out in Masterton had substantially less material than the previous year. Three sites classified as eradicated this year. Active management sites shown on next page.

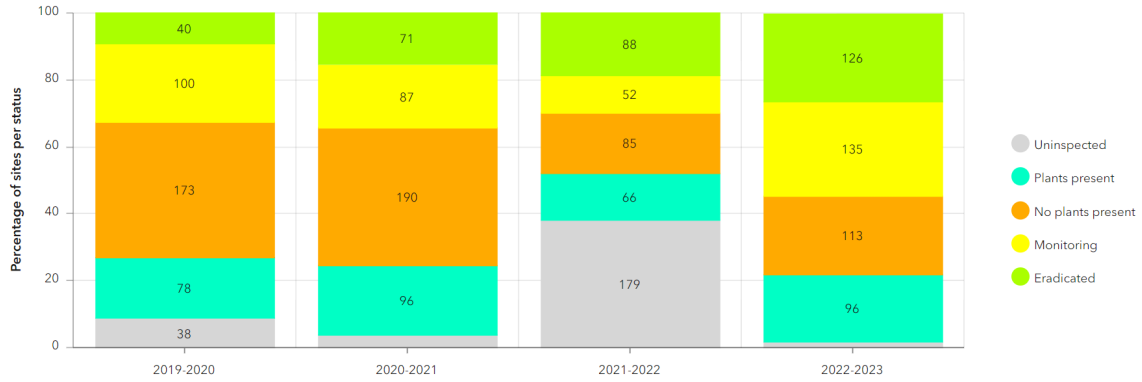
Eelgrass continued		 Eelgrass active management sites shown above.

Performance Measure	Result	Details
Change in Site status Annual decrease in number of adult plants observed or in the infestation area of existing sites.	Achieved	Refer species details below.

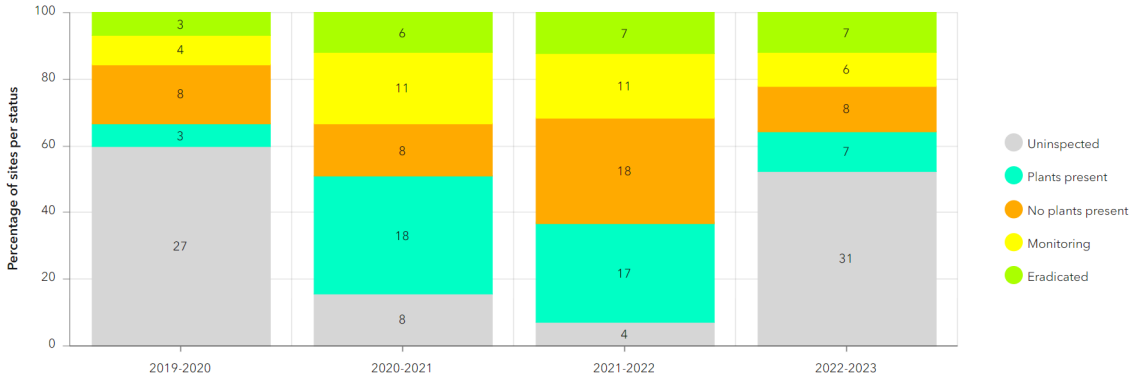
Blue passionflower management site status change over time:



Boneseed management site status change over time:



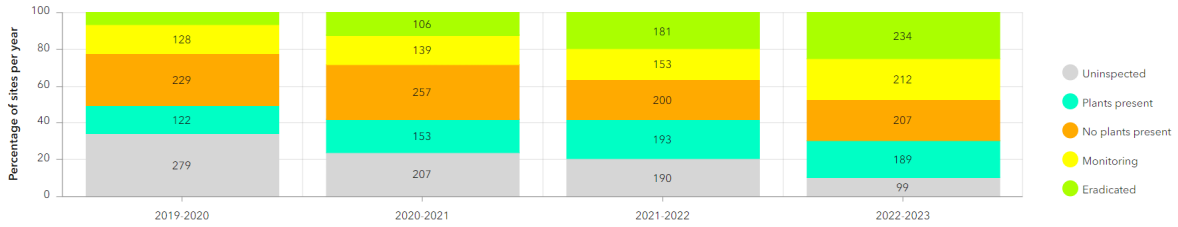
Climbing spindleberry management site status change over time:



Eelgrass management site status change over time:

Summary table for Sustained Control species						
Sustained control species	**Total active sites**	**Number of sites eradicated**	**Number of adult plants**	**Number of juvenile plants**	**Infestation Area**	**% of sites with plants present**
Blue passionflower	305	12	235	2,960	4.59ha	27%
Boneseed	386	34	868	673	619.69ha	25%
Climbing spindleberry	52	0	44	52	27.61ha	13%
Eelgrass	13	3	37	31	3.48ha	23%

Overall progress for Sustained Control species:



Biodiversity Outcomes

Boneseed can be referred to as an ecosystem modifier as it can significantly change a habitat when left unchecked, reducing landscape heterogeneity with a monoculture of boneseed forming over time.

We have identified non-productive coastal habitats of high biodiversity value where the indigenous species and environmental values should be protected from colonisation of boneseed. One boneseed plant can produce 50,000 seeds in a year and is dispersed by birds, so the threat this plant offers is very real.

Blue passionflower and climbing spindleberry are both aggressive and invasive climbers that can smother forest canopies, may cause canopy collapse and underneath the vines, and native species may fail to regenerate due to the lack of light.

The work we do to reduce the density and prevent the spread of eelgrass means the natural rivers, lakes and wetlands in our region are not choked by this plant, which would lead to sedimentation, flooding and loss of habitat for native species.

4.5 Site led programme

Banana passionfruit (*Passiflora mixta*, *P. mollissima*, *P. tripartita*), Cathedral bells (*Cobaea scandens*), Old man's beard (*Clematis vitalba*)

Aim: Control and reduce the geographic distribution and/or extent of these species within the Hutt City Council Territorial Authority boundary (programme delivered by the Hutt City Council).

Performance Measure	Result	Details
Incident investigation and response Provide compliance enforcement assistance to the Hutt City Council (HCC) within 10 working days of receiving a request.	Achieved	Three banana passionfruit reports and one old man's beard report passed on to HCC for action within the timeframe.
Note that Hutt City Council have also added climbing asparagus and pampas to their programme, which we will update in our Regional Pest Management Plan 2019-39 at the first opportunity.		

4.6 Key Native Ecosystem programme

Pest plants as per (but not limited to) the RPMP Harmful Organism RPMP list. Species to target are decided individually at each site.

Aim: Protect and restore representative examples of original indigenous ecosystem types of high value in the Wellington Region (58 sites, approximately 48,000 ha). Below is the pest plant control component of this program.

Performance Measure	Result	Detail
Ground based weed control Complete ground-based weed control at 55 sites.	Achieved	Control delivered at 55 sites.
Performance Measure	**Result**	**Detail**
Aerial based weed control Complete aerial-based weed control at three sites.	Achieved	Control delivered at three sites.

Biodiversity Outcomes

In addition to the more formal monitoring programmes GW has in place, our Environment Restoration team also uses a simpler means of assessing how sites are progressing, by means of a 'traffic light' system. Ecological integrity and ecosystem pressures are gauged for each ecosystem type present at the site.

This assessment is made five yearly when the KNE plan for a particular site needs to be reviewed. Only those completed in the 2022 year are shown below. In 2027, a second assessment will demonstrate trends for those same sites, and it could be inferred as to how helpful our management techniques are. Because of the cyclic nature of the assessments, each year we will have more information available that allows comparisons to be made.

These assessments fill a gap where formal monitoring is not in place and gives us a track record for the sites we work on. We want to see improvement over time, with green being the ideal status in this assessment. If you are interested in more detail about sites or the assessment method, please contact our Environment Restoration team via info@gw.govt.nz.

Key for the table below:

Ecosystem type is stated (eg/ duneland, wetland).

Ecological integrity is an indication of ecosystem type representation, indigenous dominance, species occupancy and ecosystem function.

The colouring of each box denotes the state of the ecological condition – red is poor, orange is moderate, green is good.

The arrow denotes the ecological trend – down is worsening, up is improving, sideways indicates no perceived change.

Ecosystem pressures factors in whether a site is fenced, the range and abundance of plant and animal pests, and the intervention work that is occurring to mitigate these issues.

The colouring of the box denotes the state of the ecosystem pressures – red is high, orange is medium, green is low.

The arrow denotes the trend in ecosystem pressures trend – down is increasing, up is lessening, sideways indicates no perceived change.

KNE Ecological Assessment and Trend Analysis Summary for 2022							
KNE site	**Ecological Integrity**			**Ecosystem pressures**			
Belmont - Dry Creek	Forest ↔			Forest ↑			
Belmont – Korokoro	Forest ↔			Forest ↔			
Belmont - Speedys	Forest ↔			Forest ↔			
Karehana Bay Bush	Forest ↔			Forest ↔			
Peka Peka Coast	Duneland ↓	Estuary ↓	Wetland ↑	Duneland ↔	Estuary ↓	Wetland ↑	
Sulphur Wells	Forest ↔			Forest ↔			
Tauherenikau Bush Remnants	Forest ↔			Forest ↑			
Tora Coast Bush	Forest ↑			Forest ↑			
Opouawe River - White Rock	Braided river ↔	Wetland ↓		Braided river ↑	Wetland ↓		
Wi Tako Ngatata	Forest ↔	Wetland ↑		Forest ↔	Wetland ↔		

4.7 National Pest Plant Accord

Aim: Prevent the sale, distribution and propagation of a set list of plants within the Wellington Region.

Performance Measure	Result	Details
Incident investigation and response Initial investigations for all reports of pest plants on the National Pest Plant Accord list undertaken within five working days.	Achieved	One report received.
An instance of yellow flag iris being given away on Facebook was referred to the Ministry for Primary Industries (MPI) for action. We inspected stalls selling plants at fairs, farmers markets, car boot sales, and other more formal events such as the Wairarapa Garden Fiesta and Martinborough Fair and were pleased that no NPPA species were seen. Following the discovery of alligator weed in Lower Hutt we also attended the Lower Hutt plant fair – no NPPA plants were present. African love grass at Peka Peka was reported to us by Waka Kotahi, who also controlled it.		
Performance Measure	**Result**	**Details**
Events Events that sell plants monitored and retail outlets visited.	Achieved	Eight events attended, one instance of an online sale reported.

4.8 National Interest Pest Response programme

Aim: Eradicate National Interest Pest Response (NIPR) plants from the Wellington Region, as directed by the Ministry for Primary Industries.

Performance Measure	Result	Details
Identify new sites New incursion sites of National Interest Pest Response plants are identified.	Achieved	One water hyacinth site reported by a contractor, report passed on to MPI.
MPI's National Interest Pest Response programme manages eight active sites in the Wellington region. Cape tulip accounts for four sites, salvinia for one site – although this is now confirmed to be eradicated, and water hyacinth for three sites. GW is not involved in this work.		



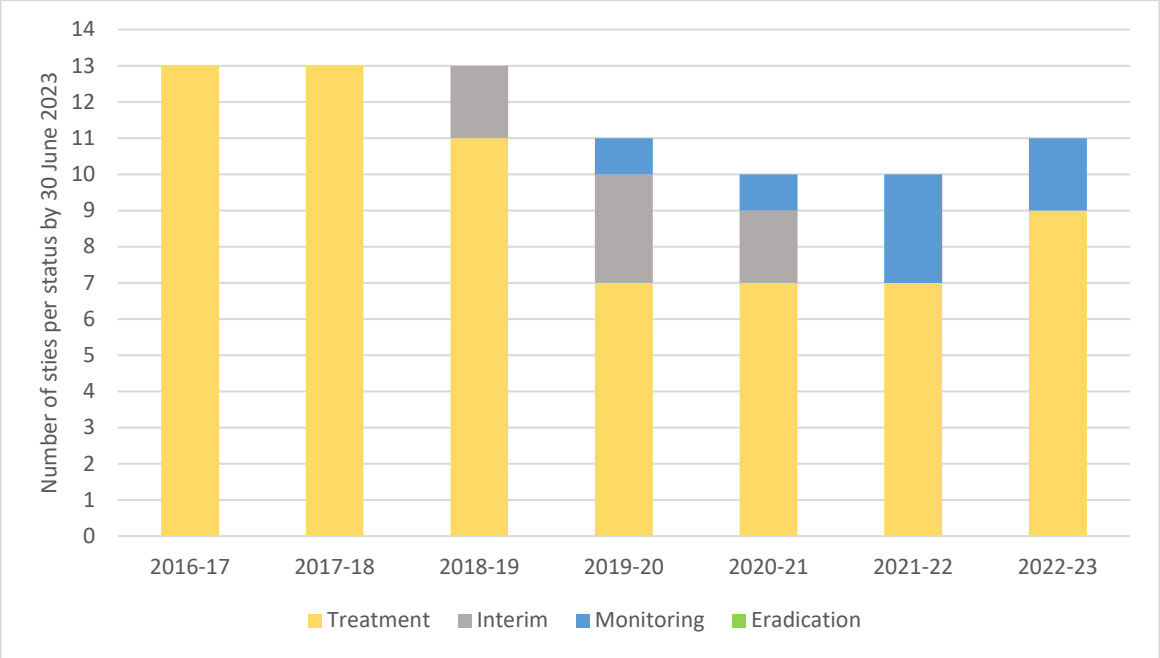
Bottom photo -salvinia; upper left – Cape tulip, Photo credit Takver-04october2014; upper right – water hyacinth, Photo credit Annie Lamb.

NIPR species	Identification of new management sites
Manchurian wild rice	One new site was found in a drainage channel that had previously been heavily infested, so the discovery was not unexpected. One of sites has had no plants present previously needed control work, returning it to an active status. This meant an increase in the total treatment area, but all sites were accessible from the ground and able to be controlled twice. Environmental DNA sampling in Whareroa Stream detected the genus *Zizania*, which led us to survey Queen Elizabeth Park - finding no infestations. Our total number of sites is now 11, at 15.32 hectares total size, which includes buffer areas around the actual plants to allow for the extensive rhizome systems.

Performance Measure	Result	Details
Incident investigation and response Response to reports from the public on National Interest Pest Response plants will initially be responded to within five working days and actions completed within 20 working days.	Achieved	No reports received.

Performance Measure	Result	Details
Best practice management All management sites visited on scheduled best practise rotation.	Achieved	Ground based control undertaken twice at all sites this year, reaching sites inaccessible the previous year.
Performance Measure	**Result**	**Details**
Progress towards eradication Annual decrease in number of adult plants observed and in the infestation area of existing sites.	Partially Achieved	Plants present at nine of 11 sites. Total infestation area increased by 1.08 ha, a result of control work not carried out in the 2021-22 year due to resource consent issues.

Change in Manchurian Wild Rice infestation status for the Wellington region



Treatment sites have live foliage. Interim sites have had no live foliage found for up to two years. Monitored sites have had no live foliage found for two to ten years. After ten consecutive years of no live foliage found, a site is classified as Eradicated.

4.9 Biocontrol programme

Aim: Undertake Biocontrol for prioritised target weeds in the Wellington region.

Performance Measure	Result	Details
Release and transfers of biocontrol agents Biocontrol agents are released (directly from Manaaki Whenua Landcare Research) or transferred from other translocation sites.	Achieved	$95,000 spent on eight Biocontrol agent releases plus our contribution to ongoing research.
Four releases of tradescantia yellow leaf spot fungus were made to sites in Featherston, Upper Hutt and Naenae. The fungus has also self-introduced to other areas around the region, including Stokes Valley and Pauatahanui. Four releases of old man's beard gall mite were made to sites in Masterton, Karori and two locations around Upper Hutt. There was also a report of ragwort flea beetle self-introducing in Moonshine Valley, with the closest release site being 3.5km away (released in 2002). We submitted to the Environmental Protection Agency in support of an application to import and release a biocontrol agent for Sydney golden wattle, and in support of Waikato Regional Council's application to release a moth plant biocontrol agent.		
Performance Measure	**Result**	**Details**
Progress towards establishment Monitor agents until it is determined that a given agent has successfully established and is self-spreading or has failed to establish.	Achieved	Refer species details below.
Manaaki Whenua Landcare Research (MWLR) encouraged us to collect old man's beard samples from around the region to check for gall mites as they can spread quite far very quickly (but are not visible to the naked eye). We analysed samples from three of our release sites in Masterton and Mauriceville and found gall mites 1-5 meters from the original release plants. They may well have spread much further. In Wairarapa we checked green thistle beetle sites for agent presence, with the intention to collect beetles for transfer to other sites. However, the agents were also present at the sites we intended to transfer them to, so no further work was required. Two sites monitored for Honshu white admiral butterfly in Kahutara showed no life stages of the agent, but this does not mean it has failed to establish. Monitoring of a tradescantia yellow leaf spot fungus release site in Featherston showed the rust is establishing, having travelled up to 13m from the release plant within a year. Two sites of ragwort in Featherston and Masterton were checked for ragwort flea beetles (present at both sites) and ragwort plume moth (none found). Nationally, a study on nodding thistle biocontrol agents (the nodding thistle crown weevil and nodding thistle gall fly) showed a 78.9% reduction in nodding thistle density from the		

original biocontrol agent releases in 1988-1998, to the revisit assessments in 2013-2021. The data is correlative but there is no other obvious reason for the reduction, and this is an excellent case study showing the appeal and success of biocontrol agents.

MWLR are currently investigating multiple evergreen buckthorn sites around the region (Carterton, Riversdale, Ōtaki, Wellington City) for the range of New Zealand species (insects and pathogens) already present on the plant, as they look into potential biocontrol agents for buckthorn.

Summary of Biocontrol agent status for 2022/23

Biocontrol Agent	Release year	Number of Releases	Monitoring Results
Boneseed leaf roller	2007	8	Suspect failure
Broom gall mite	2009	800+	Widespread
Broom leaf beetle	2009	3	Uncertain
Broom psyllid	1995	1000+	Widespread
Broom seed beetle	1994	600+	Widespread
Broom shoot moth	2008	3	Uncertain
Buddleia leaf weevil	2007	100+	Widespread
Darwin's barberry seed weevil	2016	4	Present
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
Hemlock moth	-	-	Widely established
Japanese Honshu white admiral butterfly	2017	11	Uncertain
Mistflower gall fly	2001	3	Established
Mistflower fungus	2009	1	Established
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
Old mans' beard gall mite	2021	4	Established
Privet lace bug	2015	1	Failed
Cinnabar moth	2006	abundant	Widespread
Ragwort plume moth	2012	11	Established
Ragwort flea beetle	1988	abundant	Widespread
Smilax rust	2020	19	Uncertain
Californian thistle flea beetle	1994	2	Failed
Californian thistle gall fly	2006	1	Failed

Californian thistle leaf beetle	1993	3	Failed
Californian thistle stem miner	2010	2	Uncertain
Green thistle beetle	2008	200+	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 leaf beetle	2011	12	Established
Tradescantia stem beetle	2012	10	Uncertain
Tradescantia tip beetle	2013	9	Uncertain
Tradescantia yellow leaf spot fungus	2018	10	Establishing

Biodiversity Outcomes

Biocontrol agents become a useful and cost-effective option when, sadly, pest populations are common, abundant, and well beyond the scope of management apart from in site-led initiatives.

A good example is boneseed, a pest plant species which we only control in particular areas of coastal habitat, such as Cape Palliser/Mātakitaki-a-Kupe.

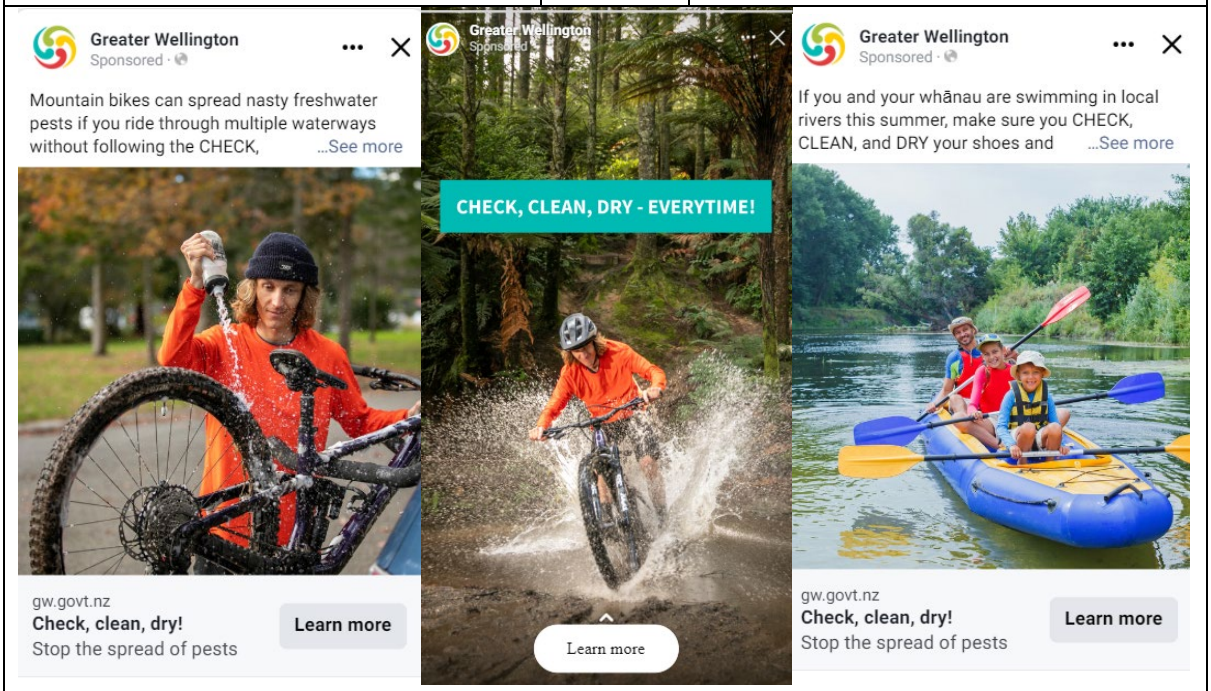
When biocontrol agents can cause sufficient damage, such as to the boneseed plant shown below, left, this can reduce the competitive advantage of that species to the point where it is present but no longer a threat – in this case capable of developing into a monoculture that dominates the landscape, causing a decrease in the diversity of species present and even modifying the habitat itself.

Boneseed, on the left showing damage from a biocontrol agent, Cape Palliser/Mātakitaki-a-Kupe, on the right: an area we aim to keep free of boneseed.

4.10 Check, Clean, Dry programme

Aim: Keep waterways in the Wellington Region free of invasive freshwater pests.

Performance Measure	Result	Details
Promote CCD message Six outdoor/freshwater events are attended. Fifteen social media posts are produced during summer.	Achieved	Events attended: Big Bang Adventure, WakaAma Hoe Tonga Regionals (Henley Lake), Crazyman (Lower Hutt), Xterra (Queen Elizabeth Park), and the Karapoti Classic. Three other events we would have attended were not held. Nine unique social media posts were used multiple times throughout summer. Two paid ads ran over the main three month period. Messaging was distributed to community newsletters and mailing groups.



Some of our social media posts.

Performance Measure	Result	Details
Waterside CCD signs maintained Review and maintain 74 waterside signs a minimum of two times a season.	Achieved	All signs were checked, all signs have been replaced within the last two years.

5. Kīrearea | Pest Animals

5.1 Exclusion programme

Wallaby (*Macropus rufogriseus*, *Macropus eugenii*).

Aim: Prevent the establishment of wallabies in the Wellington Region.

Performance Measure	Result	Details
Identify new sites New incursion sites of wallabies are identified.	Achieved	No incursions
Incident investigation and response Initial investigations for all reports undertaken within five working days. Response plans developed and implemented within 20 working days.	Achieved	Initial investigation of six potential incursions was undertaken within five working days.

Investigation and responses:

Carterton: In December 2022 we received a report of a live wallaby sighted in rural Carterton. Our investigation determined it was not likely to be a wallaby. We carried out a site inspection, interviewed the person who gave the report and completed a local letter drop.

Remutaka Hill Road: Also in December 2022 we received a report of a dead wallaby on the side of State Highway 2 over the Remutaka Hill Road. Staff inspected the sighting location and found a small brown goat carcass. No further investigation was required.

Memorial Cricket Pitch: In January 2023 we investigated a report of possible wallaby scat, north of Smith Creek Shelter in the Tararua Ranges. No conclusive wallaby scat or browsing sign was found. Trail cameras were put out, with no images of wallabies captured. Three scat samples were analysed by MWLR and assessed as being deer.

Ōtaki Forks: At the end of January 2023, we investigated a possible wallaby sighting on the Field Track just off Ōtaki Forks (Tararua Ranges). Again, no conclusive signs of wallaby, either scat or browsing, were found. A single scat sample was taken from the track on route to the target area and analysed by MWLR – it did not contain wallaby DNA. Three trail cameras were deployed covering animal tracks, with another four deployed in other likely habitats close to the initial search site. No wallaby images were captured. Dogs (non-specialist) were also used as part of the widened search. Checks were done at night using a thermal camera in the second half of February. No wallabies were seen. The wallaby dog conducted a search of the area in March and did not find any indications of wallabies.

Featherston Twin Bridges: In February 2023, we investigated a possible wallaby sighting near Featherston in the Remutaka Ranges. The ground was quite soft and muddy, but no wallaby tracks were visible. Two scats were collected and MWLR again confirmed they did

not contain wallaby DNA. Trail cameras located in the area did not capture any wallaby images.

Goat Rock track Pakuratahi: Following a report of a wallaby sighting we installed cameras and a undertook night inspection with a thermal camera. An injured possum was observed but no wallabies.

All six investigations are considered complete, with no wallaby incursions.

Surveillance sites:

Kaitoke: Our cyanide operation period was completed and warning signs removed early in the year.

Wallaby surveillance continued throughout the year, using trail cameras and a wallaby detection dog as part of the post control six monthly surveillance programme which continued for 24 months. No wallabies were ever detected by either means.

An Exclusion programme report received from MWLR estimated a 98% probability that we would have detected a wallaby in the Kaitoke operational area with the detection tools we used (dog and cameras) if there was a wallaby present.

Biodiversity Outcomes

By eliminating our wallaby incursion of 2021-22, we have prevented a substantial range expansion of the species from occurring. Currently, wallabies in the North Island are found on Kawau Island in the Auckland region and in the Rotorua Lakes area. Containing them to these areas – preventing their spread – makes eradication possible.

The damage wallabies do (damaging native forests and preventing regeneration, destroying habitat for native species, competing with livestock for feed resources, increasing erosion risks and decreasing water quality) are magnified when added to the impacts caused by other invasive herbivores already present.

Keeping wallabies out of our region prevents a decrease in the resilience and quality of our native biodiversity.

Tauherenikau River wallaby sighting site – habitat we want to ensure remains wallaby free.

5.2 Eradication programme

Rook (*Corvus frugilegus*)

Aim: Eradicate all rooks from the Wellington Region.

Performance Measure	Result	Details
Identify new sites Historic rookeries and new reported rookeries are surveyed.	Achieved	108 rookeries surveyed. Eight breeding rookeries identified.
Nine active sites were initially surveyed, with a further site at Tīnui checked after a report from the landowner, (six nests confirmed from the ground although no rooks were seen or heard at this particular site). Two of these sites did not prove to be breeding rookeries. Surveillance of historic rook prone areas in the Wellington/Kāpiti Coast area failed to turn up any signs of recent activity in terms of rookeries or rooks sighted. This was a positive result as we aim to keep the Wellington/Kāpiti Coast rook free. It has been a number of years now since an active rookery was treated there.		
Performance Measure	**Result**	**Details**
Best practice management Control (by aerial nest treatment or ground control) of rooks at all known sites is undertaken.	Achieved	**Nest type** / **Number controlled** Nests with eggs or chicks: 21 Fresh nests without eggs or chicks: 29
In the previous year, one active rookery with at least five nests was missed from the baiting regime due to access issues. In October 2022 this was treated along with the other Wairarapa rookeries, using DRC 1339 gel toxin which was applied to nests at ten rookeries. At two of these rookeries only empty nests were found and treated. We found and treated the same number of nests containing eggs or chicks as the previous year, but there were 19 less empty nests found and treated this year.		
Performance Measure	**Result**	**Details**
Progress towards eradication Annual decrease in number of rookeries.	Achieved	Three less rookeries surveyed this year than in 2021-22, same number of breeding rookeries remain.

Using the accepted industry method for estimating population size (see www.bionet.nz publication A6), it is possible the Wellington region has around 95 birds present, most of which would be male and will eventually die out without breeding.

In theory we are tracking at an estimate of 22 birds less than the previous year, with five less active nests. This is despite one rookery going untreated last year.

However, the rook population over the Wellington region is significantly larger than the industry estimate calculates. In a post script, we can confirm that at least 120 birds were seen during the 2023-24 season survey.

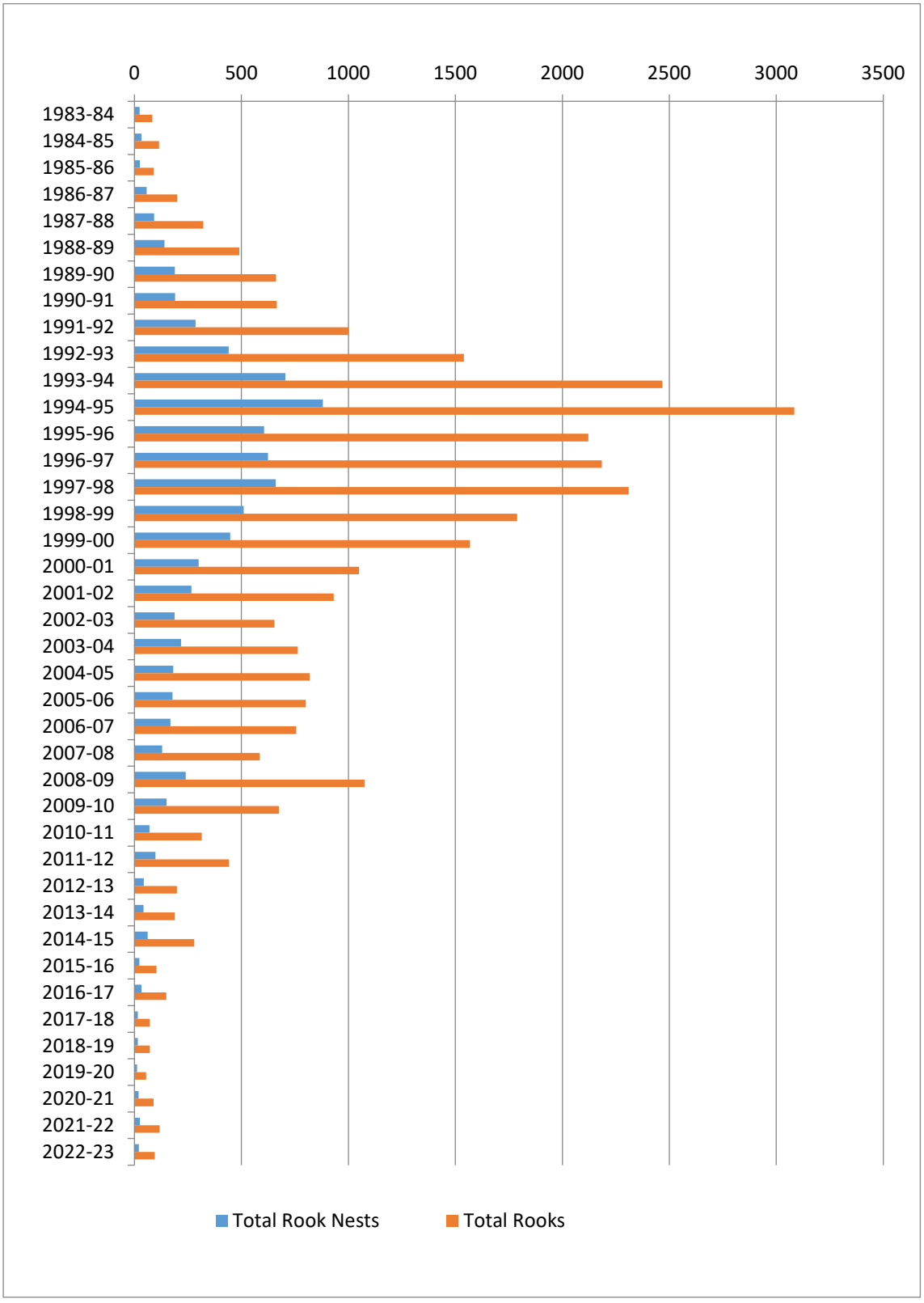
Biodiversity Outcomes

Overall, a very good result again this year. A rookery that was missed from control last year due to access issues was successfully treated this season with the landowner now onboard with our eradication goals.

Horizons Regional Council completed their annual rook nest baiting over three days. It was reported that there is now an expansive 'rookery free' buffer to the north of Greater Wellingtons boundary. This is a significant achievement following years of co-ordinated aerial nest baiting by both Councils.

Rooks are primarily an agricultural pest and tend to return to selected fields every day until the food resource (such as sprouting seeds) runs out – which is devastating for the crops in question. Without control, rook populations can increase rapidly and spread across the landscape quickly, causing significant financial costs to farmers.

Trends in rook and rook nest numbers over time for the Wellington region



5.3 Sustained Control programme

Feral rabbit (*Oryctolagus cuniculus*), Wasps (common wasp – *Vespula vulgaris*, German wasp – *V. germanica*, Australian paper wasp – *Polistes humilis*, Asian paper wasp – *P. chinensis*).

Aim: Sustained control of rabbits to minimise adverse effects to the environment and maintain populations below Level 5 McLeans Scale (See Appendix 2).

<table>
<tr><th>Performance Measure</th><th>Result</th><th>Details</th></tr>
<tr><td>Public enquiries

Response to public enquiries about feral rabbits undertaken within 10 working days.</td><td>Achieved</td><td>
<table>
<tr><th>Type of enquiry</th><th>Number received</th></tr>
<tr><td>Sale of control measures</td><td>26</td></tr>
<tr><td>Enquiries</td><td>163</td></tr>
</table>
</td></tr>
<tr><td colspan="3"></td></tr>
<tr><th>Performance Measure</th><th>Result</th><th>Details</th></tr>
<tr><td>Cost-recovery management

Appropriate control undertaken at sites for:

• Hutt City Council (HCC)
• Kāpiti Coast District Council (KCDC – where shooting was only permitted for half the year
• South Wairarapa District Council (SWDC)
• Wellington City Council (WCC)
• Te Awa Kairangi – Hutt River
• GW’s Recloaking Papatūānuku programme.</td><td>Achieved</td><td>Feral rabbit management sites:
<table>
<tr><th>Area</th><th>Rabbits shot</th></tr>
<tr><td>HCC</td><td>8 (5 sites)</td></tr>
<tr><td>KCDC</td><td>1,131 (24 sites)</td></tr>
<tr><td>SWDC</td><td>55 (1 site)</td></tr>
<tr><td>UHCC</td><td>70 (4 sites)</td></tr>
<tr><td>WCC</td><td>419 (36 sites)</td></tr>
<tr><td>Te Awa Kairangi/Hutt River</td><td>261 (11 sites)</td></tr>
<tr><td>Recloaking Papatūānuku</td><td>729 (8 sites)</td></tr>
</table>
</td></tr>
<tr><td colspan="3">Pindone and magtoxin control

We used 27.775L of pindone concentrate, which corresponds to 5,555kg of pindone carrot bait applied to the region, and 535kg of pindone pellets (note the pellets are used for both possums and rabbits) during the year. We manufacture and apply carrot bait to private landowners, at their cost. The wet weather experienced over the 2022/23 summer helped to reduce client enquiries for rabbit control. However, ongoing wet weather over the year also hindered our efforts to carry out rabbit control.</td></tr>
</table>

Key areas of control were adjacent to the Waka Kotahi Kāpiti Coast expressway, and a number of lifestyle blocks.

Magtoxin is a useful tool during breeding season for controlling young rabbits that won't be eating bait. This was used in several reserves in Waikanae.

Night shooting

We carry out night shooting throughout the year for rabbit control around the region, often on a monthly schedule for particular areas or sites. This is both to reduce rabbit numbers, and in some cases to specifically protect planting sites.

Our work in Hutt City Council sites, which has been ongoing for a number of years, has resulted in sites consistently showing very little to no sign of rabbits. We have been able to shift our focus to other parks and reserves in the HCC area where, after initial thermal surveys, we identified new populations worthy of control. The original sites, such as Petone Beach are checked six monthly.

Other key areas we work at include night shooting for plant protection Lake Domain, Onoke Spit and Kahutara Lagoon all around Wairarapa Moana, and in our regional parks to assist with the Recloaking Papatūānuku work program which aims to plant almost one million trees, shrubs and grasses every year across the whenua, alongside our rivers and in our parks.

Pūkaha/Mount Bruce is another stand out site, where we are involved with pest management and have been providing advice on rabbit control. Pūkaha Trust do a lot of rabbit control and a new Rabbit Working Group has staff employed to plan and run a three year rabbit control program around the farmed areas bordering Pūkaha/Mount Bruce (also targeting predators in and around the Pūkaha buffer area: see Section 6.3 for more information on our predator control work in the Pukaha buffer).

<table>
<tr><th>Performance Measure</th><th>Result</th><th>Details</th></tr>
<tr><td>Monitoring
Night counts to assess regional trends.</td><td>Achieved</td><td>Average rabbits per kilometre:
<table>
<tr><th>Zone</th><th>2021-22</th><th>2022/23</th></tr>
<tr><td>Western</td><td>4.4</td><td>13.67</td></tr>
<tr><td>Eastern</td><td>-</td><td>1.82</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Hutt River</td><td>1.1</td><td>0.2</td></tr>
<tr><td>Waikanae River</td><td>9.9</td><td>19.2</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>
</td></tr>
</table>

We first used the rabbit night count methodology in 2021-22, along the Te Awa Kairangi/Hutt River and the Waikanae River.

This year rabbit night count routes were set up along the Wellington City Council's Skyline Walkway (Western zone), and on six Wairarapa properties (Eastern zone), with night counts conducted in May 2023.

The line on a Mount Bruce property had the highest count with 62 rabbits recorded over 10 kilometres. Rainfall annually on this property is generally greater than on other counted properties.

In addition to night counts we put 40 fly traps out at 13 sites around the region (seven in the east, six in the west) for rabbit virus sampling. Samples were sent away to MWLR for analysis but results were yet to be received by the end of the reporting period.

Biodiversity Outcomes

Night shooting removed 3,719 rabbits from the environment, and 153 hares. We can't account for the number of rabbits removed due to pindone or magtoxin control, but the outcomes are a reduction in the level on the Modified McLean Scale of rabbit infestation (see Appendix 2).

Combined with targeted removal of pukekos and possums, this takes a significant amount of browsing pressure off new plantings in the region. Most of the hares (101) were controlled in regional parks around Recloaking Papatūānuku restoration sites.

Aim: Sustained control of wasps to minimise adverse effects to the environment and protect human health.

Performance Measure	Result	Details
Public enquiries Response to public enquiries about wasps undertaken within 10 working days.	Achieved	**Territorial Authority** / **Number of nests reported** CDC: 1 HCC: 3 KCDC: 8 MDC: 3 PCC: 4 SWDC: 0 UHCC: 9 WCC: 15 Total: 43 One more enquiries than the previous year.

Performance Measure	Result	Details
Cost-recovery management Appropriate control undertaken at sites.	Achieved	We refer landowners to contractors, and only undertake control ourselves on public land and where a nest is a threat to public health. In 2022/23, there was only one nest we controlled ourselves.
Biodiversity Outcomes		
Wasps are controlled for the threat they present to the general public, and in industries such as apiculture, viticulture, forestry and agriculture. The occurrence of wasps, whether *Vespula* (common and german wasps) or *Polistes* (paper wasps) species at high densities in native ecosystems are a threat to native invertebrates from predation and competition for food resources.		

6. Kaupapa - whakahaere ā-pae | Site led programmes

6.1 Predator Free Wellington

Mustelids (ferrets – *Mustela furo*, stoats – *M. erminea*, weasels – *M. nivalis*), Possum (*Trichosurus vulpecula*), Rats (*Rattus norvegicus*, *R. rattus*).

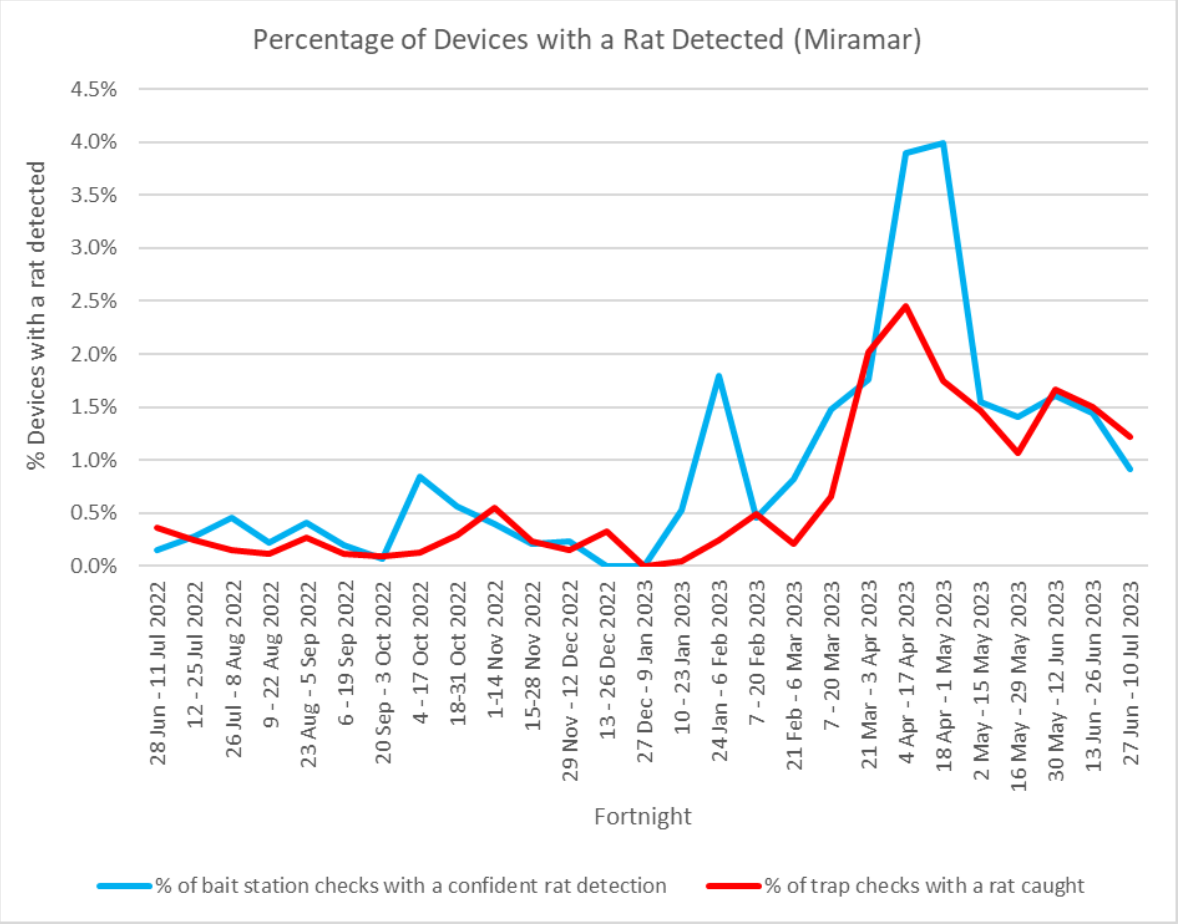
Aim: Eradicate mustelids, possums and rats from land contained within the boundaries of the Predator Free Wellington initiative (Phase one - Miramar Peninsula; Phase two - Island Bay to CBD).

Performance Measure	Results	Details
Community engagement Permission gained from land owner /occupiers to work on private land. Community enabled and trained to commence predator control work in Phase two. Support for project from community maintained.	Achieved	Permissions gained to install about 7,500 predator control devices. It is estimated a further 1,000 are required for full coverage. This would give a base grid of 50 metres by 50 metres, with an additional layer of device infill based on habitat type. Many Community Rangers have been trained to complete work in the Phase two operational zone. Volunteers have now installed predator control devices in the virtual barrier, designed to protect the eradication zone in the Phase two area. This is an extremely large community led piece of work. School talks were delivered, Owhiro Bay Fair and Newtown fair attended. Students from the Predator Free apprenticeship scheme were hosted. Predator Free Wellington filmed with a UK TV show, which aimed to showcase NZ life and culture (https://www.youtube.com/watch?v=wcp1BfPUeOc).

Performance Measure	Result	Details
Progress towards eradication Eradication of target species in the Miramar Peninsula	Partially achieved	**Devices currently in Phase one area** / **Number of devices** Bait stations: 6,752 Rat traps: 1,618 Mustelid traps (BT200's): 1,338 Camera Traps: 415 By August 2022 in the Phase one area (Miramar Peninsula) it was taking an average of over 600 trap

		checks to find a rat within the team's operational area in the southern part of the peninsula, with more and more areas 'closed down' operationally due to zero evidence of rats. Towards the end of the financial year, there was approximately 792 hectares - well over half the peninsula – showing no rat evidence and only requiring close surveillance from trail cameras. At the time of writing only 16 hectares remains of active pest control over the whole Phase one Miramar Peninsula area. Refer to species details below.
Species	**Result**	**Details**
Norway rat	Eradicated	Norway rats have been eradicated from the Phase one operational area. There were several incursions through the year, detected by camera traps. Two Norway rats were caught. In Rongotai a Norway rat population established a large den network under a boulder along Cobham Drive. Bait on a wire lowered down into the burrows has been very successful for control.
Ship rat	Ongoing	Numbers of ship rats are very low in the Phase one area, as recorded through camera images, chew card detections, bait take, trap checks and a rat detection dog which follows up on 'inactive areas' to track down remaining rats. Hotspots where rats are present are targeted until their presence is no longer detected. Only 16 hectares remain of known rat activity. Over 450 cameras are deployed to detect any incursions over the cleared areas.
Ferret	Eradicated	No evidence of ferrets in the Phase one area.
Stoat	Eradicated	In 2022 three stoat camera detections were noted, all within 85 metres at Oruaiti Reserve, with the most recent image on 3 December 2023. This discovery delayed the progression north of the rolling front, as we wanted to ensure that the stoat was either caught or posed no functional risk to the eradicated areas (is not pregnant).

		By the end of the year the stoat was no longer detectable and presumed gone or dead.
Weasel	Eradicated	No evidence of weasels in the Phase one area.
Possum	Eradicated	Miramar Peninsula has been 'possum free' since 2006. However, we responded to one possum sighting by installing a camera, wax tag and chew cards and a bait station. Only a cat was seen on camera and there is no further evidence of a possum.



Biodiversity Outcomes

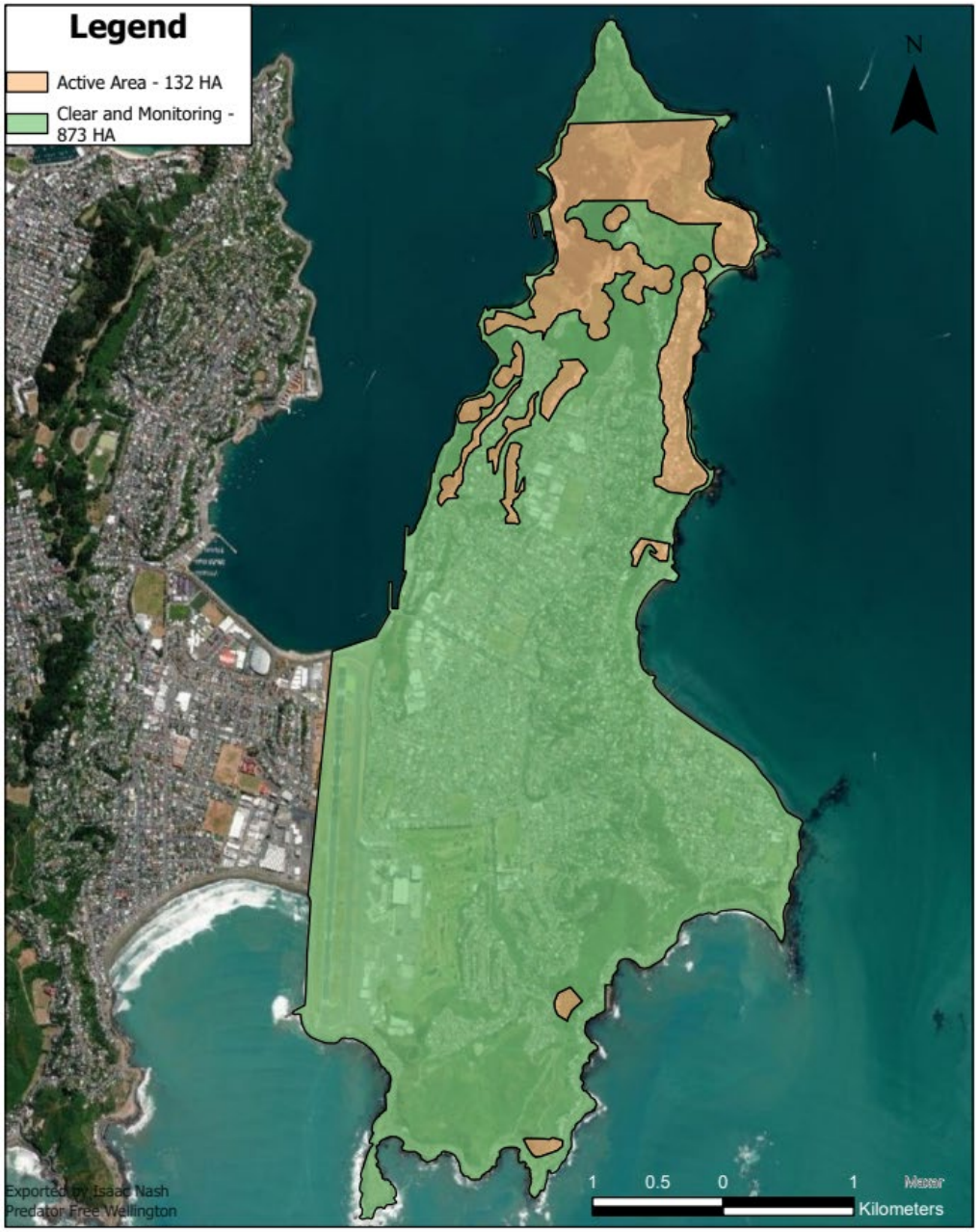
Tens of thousands of native birds are killed by introduced predators every night in New Zealand. Of the seven predators targeted by Predator Free 2050, ship rats are the only one known to remain on the Miramar Peninsula, and at record low levels.

A Wellington City Council survey recently found that there are no longer any native birds categorised as at risk in the capital. It also found higher bird numbers in Miramar, with a 71 percent increase in the mean number of native birds per (bird) count between 2017 and 2022.

The increase in native birds has been driven by a 550 percent increase in pīwakawaka (NZ fantails), a 275 percent increase in riroriro (grey warblers) and a 49 precent increase in tūī.

Kārearea (falcon) have been successfully breeding on Miramar for several years now and for the first time, species such as kākāriki (red crowned parakeet) and kākā have been recorded on detection cameras.

Lizards and wētā are also thriving, with a 200 percent increase in tree wētā, and anecdotal increases in geckos (such as the ngahere and raukawa gecko) and skinks.



Hectares Cleared

As of 11th July 2023

Greater Wellington
Te Pane Matua Taiao

PREDATOR FREE WELLINGTON

6.2 Regional Possum Predator Control programme*

Mustelids (ferrets – *Mustela furo*, stoats – *M. erminea*, weasels – *M. nivalis*), Possum (*Trichosurus vulpecula*), Pest cat (*Felis catus*).

Aim: Control possums and other predators that are a serious threat to our native biodiversity and economy.

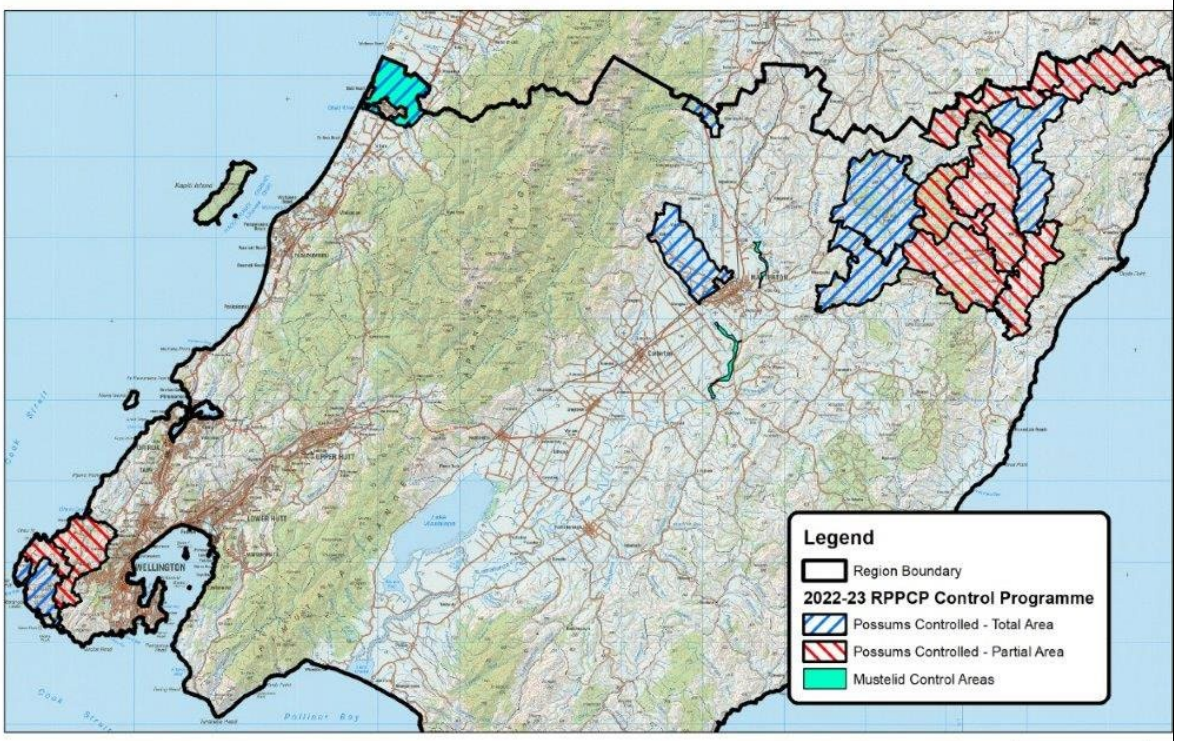
Performance Measure	Result	Details
Possum management Planned control at all possum management sites completed (80,349 ha).	Partially achieved	Refer site details below.

Summary of 2022/23 management activities			
Site	**Whaitua (catchment)**	**Area (ha)**	**Control activities completed?**
McLays	Ruamahanga	863	Yes
Waitawhiti	Ruamahanga/Eastern Wairarapa	5194	Completed remaining 1039 ha from 21/22 programme
Waingawa	Ruamahanga	5220	yes
Ōtaki	Kāpiti	3,694	Yes
Mākara	Te Whanganui-a-Tara	5,084	75% completed, no Feratox areas treated
Terawhiti (ground)	Te Whanganui-a-Tara	1,843	35% completed.
Terawhiti (aerial)	Te Whanganui-a-Tara	2,710	Yes
Bideford	Ruamahanga	9,346	Yes
Bideford Pines	Ruamahanga/Eastern Wairarapa	4,558	Significant areas not controlled due to logging operations
Tauweru	Ruamahanga	5,677	Yes
Pakowhai	Eastern Wairarapa	5,085	Completed remaining 3,051 ha from 21/22 programme
Peaks	Eastern Wairarapa	5,146	Completed remaining 1,544 ha from 21/22 programme
Tīnui	Eastern Wairarapa	8,953	90% completed, workload exceeded budget
Tīnui North	Eastern Wairarapa	7,351	Yes
Triangle	Eastern Wairarapa	8,354	60% completed, workload exceeded budget

No possum RTC monitoring was carried out at the above sites in the 2022/23 year as we had no monitoring contractors available and no inhouse capability to do the work.

Regional Possum Predator Control Programme* 2022/23 control areas

The map below shows the 'total' areas in which we carried out 100 percent of planned possum control work, 'partial' areas in which for one reason or another possum control was not fully completed as per the plan, and areas where 100 percent of planned mustelid control was carried out.



2022/23 - RPPCP Controlled Areas.

(*referred to as the Regional Predator Control Programme as of September 2023)

Performance Measure		
Possum Monitoring Possum monitoring at selected sites achieved target of less than 5% Residual Trap Catch.	Not achieved	No monitoring was done this year.

The South Mākara aerial 1080 control operation was completed without incident: prefeed was delivered mid-April 2023 and 1080 mid-May 2023 using two helicopters to minimise the risks of wind affecting the operation.

In the Mākara area we trialled Double Tap (a relatively new product that combines diphacinone and cholecalciferol for a more effective result). Possums took the bait well, with autopsy of carcases verifying our interpretation.

Performance Measure	Result	Details
Predator management Planned control at all predator management sites completed (4,294 ha).	Achieved	Work at all sites was completed. Refer site details on next page.

Summary of 2022/23 management activities

Site	Whaitua/ catchment	Area (ha)	Number of trap services planned for the year	Ferrets Trapped	Stoats Trapped	Weasels Trapped	Pest cats
Ruamahanga	Ruamahanga	174	8	7	1	5	9
Ōtaki	Kāpiti	3,694	8	7	5	9	13
Te Whiti	Ruamahanga	426	8	11	7	16	16
Total:				25	13	30	38

The following were not targeted species but were also trapped: 720 hedgehogs, 291 rats.

Biodiversity Outcomes

In Ōtaki, the Matuku/Australasian Bittern has been spotted by a landowner surrounding our Predator Control area. The South Mākara 1080 operation has also supported the ongoing protection of the population of kiwi released in the area by Capital Kiwi.

6.3 Biosecurity Services programme

European hedgehog (*Erinaceus europaeus occidentalis*), Feral deer – fallow, red and sika (*Dama dama*, *Cervus elaphus*, *C. nippon*), Feral goat (*Capra hircus*), Magpie (*Gymnorhina tibicen*, *G. tibicen hypoleuca*), Feral rabbit (*Oryctolagus cuniculus*), Mustelids (ferrets – *Mustela furo*, stoats – *M. erminea*, weasels – *M. nivalis*), Pest cat (*Felis catus*), Possum (*Trichosurus vulpecula*), Rats (*Rattus norvegicus*, *R. rattus*)

Aim: Provide biosecurity delivery services across the Wellington Region

<table>
<tr><th>Performance Measure</th><th>Result</th><th>Detail</th></tr>
<tr><td>Small mammal management

Bait station and trapping operations completed at 31 Territorial Authority sites.</td><td>Achieved</td><td>Control delivered at 31 sites.
<table><tr><th>Territorial authority</th><th>Number of sites</th></tr><tr><td>HCC</td><td>3</td></tr><tr><td>KCDC</td><td>6</td></tr><tr><td>WCC</td><td>22</td></tr></table>
<table><tr><th>Species trapped</th><th>Number</th></tr><tr><td>Hedgehogs</td><td>314</td></tr><tr><td>Ferrets</td><td>3</td></tr><tr><td>Stoats</td><td>65</td></tr><tr><td>Weasels</td><td>43</td></tr><tr><td>Cats</td><td>5</td></tr><tr><td>Possums</td><td>416</td></tr><tr><td>Rats</td><td>964</td></tr><tr><td>Total</td><td>1,810</td></tr></table></td></tr>
<tr><td>Small mammal management

Predator trapping operations for predators at Pūkaha/Mount Bruce buffer area completed.</td><td>Achieved</td><td><table><tr><th>Species</th><th>Number trapped</th></tr><tr><td>Ferrets</td><td>28</td></tr><tr><td>Stoats</td><td>4</td></tr><tr><td>Weasels</td><td>1</td></tr><tr><td>Cats</td><td>48</td></tr></table>
The following were not targeted species but were also trapped: 431 hedgehogs, 189 rats, 3 possums.</td></tr>
</table>

Small mammal management Predator trapping operations for predators at Wairarapa Moana area completed.	Achieved	<table><tr><th>Species trapped</th><th>Number</th></tr><tr><td>Hedgehogs</td><td>427</td></tr><tr><td>Ferrets</td><td>25</td></tr><tr><td>Stoats</td><td>16</td></tr><tr><td>Weasels</td><td>19</td></tr><tr><td>Cats</td><td>33</td></tr><tr><td>Rats</td><td>169</td></tr><tr><td>Total</td><td>694</td></tr></table> The following were not targeted species but were also trapped: 5 possums.

Biodiversity Outcomes

We have many predator trapping programs around the region: one site worth mentioning is Wairarapa Moana, which has over 741 devices making up the predator trapping network, which typically are aimed to target mustelids as well as pest cats, hedgehogs, and rats.

This network caught 79 hedgehogs in February 2023 alone, as a snapshot of the population density that is currently in the region. This figure would have been significantly higher before the predator control work commenced. For example, the predator trapping at Boggy Pond/Kahutara Lagoon commenced in July 2013 and over that time hedgehog densities have decreased.

We are working together with mana whenua and other stakeholders to protect this special habitat which is breeding grounds for various wetland bird species such as Matuku/Australasian Bittern, Spotless Crake, NZ Dotterel and Banded Dotterel.

A survey and report by Shane Cotter shows that Australasian Bittern and Spotted Crake numbers are rising due to the current and past trapping efforts within the Wairarapa Moana programme and there is an increased number of male Australasian bittern evident in the surveyed wetlands.

Performance Measure	Result	Details
Feral Rabbit management Feral rabbit control completed at 50 Territorial Authority sites.	Achieved	Control delivered at 52 sites – as detailed in the Sustained Control (Rabbits) section earlier.

		Territorial authority	**Number of sites**
		Hutt City Council	5
		Kāpiti District Council	13
		Wellington City Council	34

Performance Measure	**Result**	**Details**
Ungulate management Planned control at all deer, goat and pig management sites completed (four sites).	Achieved	Control delivered at four sites: Parkway, Stokes Valley, Taita, Hine Road.

Summary of 2022/23 ungulate control for Hutt City Council

Species	Deer	Goats	Pigs	**Ungulate total**	**Hunter days**	**Kills per day**
Total	58	0	2	60	44	1.4

Performance Measure	**Result**	**Details**
Magpie enquiries Responded to owners/occupiers wanting to undertake magpie control with 15 days of receiving a request for information and/or assistance.	Achieved	72 enquiries received relating to magpies, responded to within the timeframe.
Magpie control Undertake control of magpies within 10 working days where there is a threat of injury.	Achieved	Three control operations delivered within the timeframe.

Performance Measure	**Result**	**Details**
Argentine ant* control Control of Argentine ant at Queen Elizabeth Park and Kāpiti Boating Club. (*this species is listed as a Harmful Organism in the RPMP 2019-39)	Achieved	Control was carried out late spring 2022, and in autumn. In both cases, ant numbers were low, but slightly higher in Queen Elizabeth Park. This is consistent with the very wet winter conditions, which would have drowned some nests and caused dispersal of others into drier areas, as well as the results of ongoing control which seems reasonably effective, although ants still persist.

6.4 Key Native Ecosystem programme

European hedgehog (*Erinaceus europaeus occidentalis*), Feral deer – fallow, red and sika (*Dama dama*, *Cervus elaphus*, *C. nippon*), Feral goat (*Capra hircus*),Mustelids (ferrets – *Mustela furo*, stoats – *M. erminea*, weasels – *M. nivalis*), Pest cat (*Felis catus*), Possum (*Trichosurus vulpecula*), Rats (*Rattus norvegicus*, *R. rattus*).

Aim: Protect and restore representative examples of original indigenous ecosystem types of high value in the Wellington Region (58 sites, approximately 48,000 ha). Below is the pest control component of this program.

<table>
<tr><th>Performance Measure</th><th>Result</th><th>Detail</th></tr>
<tr><td>Small mammal management

Bait station and trapping operations completed at 36 Key Native Ecosystem (KNE) sites.</td><td>Achieved</td><td>Control delivered at 36 sites.

<table><tr><th>Species trapped</th><th>Number</th></tr><tr><td>Hedgehogs</td><td>2,034</td></tr><tr><td>Ferrets</td><td>27</td></tr><tr><td>Stoats</td><td>125</td></tr><tr><td>Weasels</td><td>126</td></tr><tr><td>Cats</td><td>159</td></tr><tr><td>Possums</td><td>90</td></tr><tr><td>Rats</td><td>1,257</td></tr><tr><td>Total</td><td>3,818</td></tr></table></td></tr>
<tr><td colspan="3">The trapping results above summarise our own records as well as those of volunteers who assist us and record their data in TrapNZ.

Monitoring results can be viewed at www.gw.govt.nz under Key Native Ecosystem programme - small mammal monitoring.

Tracking tunnels are used to establish a tracking rate, expressed as the percentage of all tunnels put out for monitoring that were ‘tracked’ (footprints left behind) by the species in question. A zero tracking result stated below means the species presence was not identified in the tracking tunnels</td></tr>
<tr><td colspan="3">Hedgehogs: KNE site and tracking rate (% tunnels tracked)</td></tr>
<tr><td colspan="2">KNE site</td><td>November 2022</td><td>February 2023</td></tr>
<tr><td colspan="2">Baring Head/Ōrua-pouanui</td><td>8.3%</td><td>19%</td></tr>
<tr><td rowspan="2">East Harbour Northern Forest</td><td>Mainland Island</td><td>0%</td><td>0%</td></tr>
<tr><td>Non-treatment</td><td>0%</td><td>0%</td></tr>
<tr><td rowspan="2">Wainuiomata-Orongorongo</td><td>Mainland Island</td><td>14.3%</td><td>0%</td></tr>
<tr><td>Non-treatment</td><td>14.3%</td><td>0%</td></tr>
</table>

Catch numbers reduce over winter as hedgehogs go into hibernation. By September they are active again, and are regular non-target kills in traps set for mustelids - such as the buffer area around Pūkaha/Mt Bruce, where we are targeting predators such as mustelids and pest cats.

Note that monitoring only occurs where there is rodent monitoring happening, not at all KNE sites.

Baring Head/Ōrua-pouanui is a good case study, where intensive predator trapping of mustelids and hedgehogs is carried out in order to protect breeding banded dotterels. In the last ten years, the highest rate hedgehogs were tracking at was between November 2012 and February 2016 where tracking rate results were consistent at 82.5%. Since then, numbers have come down, though with a slight rise from the 5% results in both November 2021 and February 2022.

Mustelids: KNE site and tracking rate (% tunnels tracked)

KNE site		February 2022	February 2023
Baring Head/Ōrua-pouanui		0%	0%
East Harbour Northern Forest	Mainland Island	0%	0%
	Non-treatment	0%	0%
Wainuiomata-Orongorongo	Mainland Island	0%	0%
	Non-treatment	0%	4.8%

Continuing with Baring Head/Ōrua-pouanui as a case study, mustelids at this site have always tracked low, with slightly higher numbers in summer than winter. In the last ten years, the highest tracking rate result has been 7.5% in February 2021, after which results have consistently been zero, following the intensive trapping as mentioned under hedgehogs.

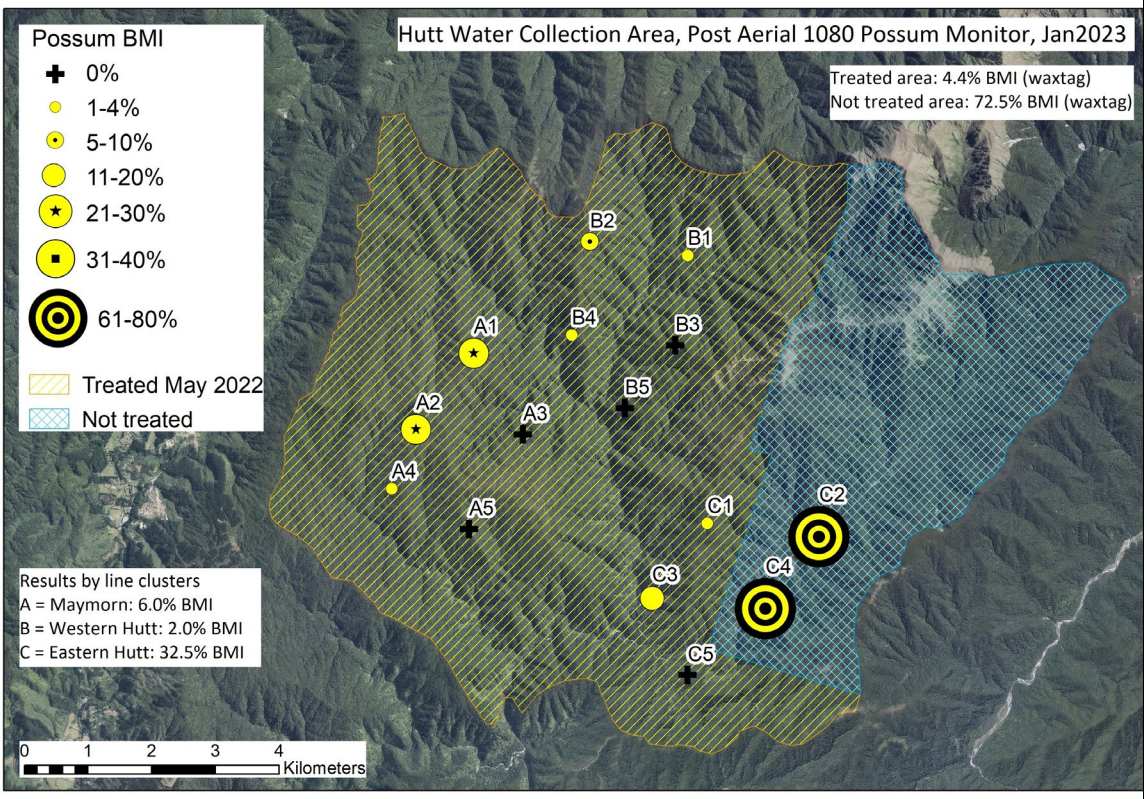
Rats: KNE site and tracking rate (% tunnels tracked)

KNE site		August 2022	November 2022	February 2023	May 2023
Baring Head/Ōrua-pouanui		0%	1.3%	0%	0%
East Harbour Northern Forest	Mainland Island	6%	2.1%	6%	24%
	Non-treatment	20%	4%	0%	20%
Queen Elizabeth Park		5%	5%	10%	35%
Wainuiomata-Orongorongo	Mainland Island	62%	2%	1%	21%
	Non-treatment	94%	83%	85%	92%

At Baring Head/Ōrua-pouanui, our case study, rats in the last ten years, tracked highest in May 2019 (at 16.3%), after which the trend has been down and since November 2020 has been 0% or very close to, due to the intensive trapping for mustelids and hedgehogs, which by default will trap rats too.

Around the region, rats were at very high densities in some locations during the 2022/23 year. Discussions between our Environmental Monitoring team, Environment Restoration team and our Pest Animals team result in decisions on the best methods to use to combat high densities of a target species.

Performance Measure	Result	Detail
Possum management (aerial) Aerial sodium fluoroacetate (1080) operation completed for Kaitoke-Hutt Water Collection KNE site.	Achieved	Aerial 1080 operation delivered.
Possum monitoring Post 1080 operation monitoring achieves target of less than 5% Residual Trap Catch (RTC) or equivalent.	Achieved	Monitoring was undertaken using the waxtag method. The average Waxtag index was 4.4% BMI (bite mark index). This is a very good result as a 1% RTC result is equal to an 8% BMI. More detail shown next page.



Approximately 3,000 hectares of the Hutt Water Collection Area remained untreated from the main control operation during the previous financial year. Prefeeding with non-toxic bait occurred on 26 May 2023 at a rate of 1kg/ha prefeed. Delivery of 2kg/ha 1080 application occurred on 13 June 2023.

In July 2022 the 1080 baits from the main operation in May 2022 were confirmed as no longer toxic. One site required 360 millimetres of rainfall before baits reached non-toxic status (red beech habitat). Another site required 415 millimetres of rainfall before baits became non-toxic (manuka habitat). More rainfall was required than normal, due to the rain falling in a short timeframe.

By the end of November 2022 possum carcases monitored for toxicity from the May 2022 control operation, at 240 metres and 600 metres altitude in the Hutt Catchment area had decomposed and were no longer a risk to dogs.

Performance Measure	Result	Details
Ungulate management Planned control at all deer, goat and pig management sites completed (12 sites).	Achieved	Control delivered at 15 sites. 966 ungulates killed.

Summary of 2022/23 KNE ungulate control activities						
KNE Site	**Deer**	**Goats**	**Pigs**	**Ungulate total**	**Hunter days**	**Kills per day**
Akatarawa Forest	5	79	7	91	50	1.8
Baring Head/Ōrua-pouanui	0	56	0	56	2	28
Belmont	0	0	0	0	9	0
East Harbour Northern Forest	22	0	4	26	26	1
Hutt Water Collection Area	45	32	14	91	40	2.3
Kaitoke Regional Park	23	5	0	28	18	1.6
Keith George Memorial Park	0	17	0	17	2	8.5
Pakuratahi	9	166	2	177	44	4
Parangarahu Lakes	3	192	7	202	13	15.5
Wainuiomata-Orongorongo	9	68	27	104	38	2.7
Wainuiomata Mainland Island	0	0	75	75	50	1.5
Other	0	39	0	39	24	1.6
Total	**174**	**654**	**138**	**966**	**316**	**3.1**

Biodiversity Outcomes

Each Key Native Ecosystem site has its own management plan for restoration and maintenance. These are long term commitments, where we collaborate with mana whenua, local councils, private landowners, other organisations, and local communities to protect the sites.

It takes many years for an ecosystem to recover from damage caused by human activities and introduced species, and the plant and animal pest control we carry out to protect native species from Invasive pests that can harm them is crucial.

Some of the key results are increases in the abundance and coverage of native species, an increase in native seedling survival and recruitment (allowing future forest regeneration), improvements in water quality, increases in habitat and resources for native species.

More information can be found at www.gw.govt.nz under the Key Native Ecosystem Programme.

Refer to **Section 4.6** for KNE assessment trend monitoring carried out by our Environment Restoration team.

The impact of ungulates is well illustrated in the following images from Wainuiomata Mainland Island, with two sets of habitat shown.

Before pig rooting:


After pig rooting:


7. He Tohutohu, He Mātauranga, He Whakaanga | Advice, Education and Engagement

Aim: Support pest animal and plant management through education and advice on pest control and impacts.

Performance Measure	Result	Details
Response to public enquiries Provide information to landowners about their responsibilities for pest control. Provide information and advice to the public regarding pest identification, impacts and control, through website information, social media, events and site inspections. Provide advice and support to community groups undertaking pest control. Provide up to date information on all RPMP pest species on our website	Achieved	**829** pest animal enquiries answered. **191** pest plant enquiries answered. Our **Pest and Weed Central** hub (find this at www.gw.govt.nz, via 'Environment', 'Pest management') receives regular maintenance and updates with species specific information.

Some of the species which were mentioned during the year resulted in the following:

- A red eared slider turtle found in an Upper Hutt waterway was removed by a reptile rescue group for rehoming.
- Canada geese information was clarified for the public on our website with details on contractors who will control these – it is the landowners responsibility.
- We have been controlling *Polypodium vulgare* sites that we could access (for example at Cape Palliser/Mātakitaki-a-Kupe).
- Known *Phragmites karka* sites are under control programmes.
- A 'Lake snow' report at Lake Onoke was investigated and no evidence of it found – staff are keeping an ongoing eye out when conducting routine monitoring work in the lake.
- Field horsetail reported at Ocean Beach has been noted, there are anecdotal reports of several sites in Wairarapa. A biocontrol agent first released in New Zealand in 2017 – the field horsetail weevil; capable of killing the plant stems – could be transferred here in future, if it is possible.



Field horsetail weevil - photo credits: MWLR; Polypium - Jeffdelonge, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=2588839; Canada geese - Lake Waiporohita (04) - 20170210.jpg

Performance Measure	Result	Details
Promotions Uptake of social media promotions	Achieved	See table below

Summary of social media interactions for 2022/23			
Item	**Main source to access item**	**No. of views**	**Average time on page**
Pest and Weed Central hub	Search engines (65%)	2,704	1min 31 sec
RPMP 2019-39	Search engines (82%)	1,152	3min 50sec
RPMP Operational Plan Report 2021-22	-	0	0

Summary of social media posts for 2022/23		
Subject	**Reach**	**Reactions, Comments, Shares**
Alligator weed (4 posts)	129,557	119
Chilean needle grass (2 posts)	65,876	35
Nassella tussock (2 posts)	57,805	19
Wallabies (1 post)	8,729	176
Moth plant (1 post)	43,125	34
Spartina (1 post)	43,737	10
Velvetleaf (1 post)	41,764	32
Purple loosestrife (1 post)	44,527	31
Blue passionflower (2 posts)	44,103	39
Climbing spindleberry (1 post)	37,992	19
Eelgrass (1 post)	39,992	15
Stoats (1 post)	2,685	58
Non RPMP Aquatic plants / Koi carp / CCD (6 posts)	42,180	296
1080 advisory (1 post)	25,357	144
PFW / possums (2 posts)	14,025	202
Other (4 posts)	18,173	276
Total	**656,411**	**1,486**

8. Whakarāpopototanga Pūtea | Financial Summary for 2022/23

The table below outlines budget, actual expenditure and the variance for delivering the Plan.

Species or Site led	Programme	Pest Animals or Pest Plants	Budget	Actual	Variance
Species led	RPMP	Pest Animals	$2,403,188	$2,065,502	$337,686
		Pest Plants	$2,061,354	$1,771,231	$290,123
	National	Pest Plants	$53,171*	$33,500 (MWR, CCD)	n/a
Site led	PFW	Pest Animals	$4,037,351	$3,480,125	$557,226
	RPPCP	Pest Animals	$2,612,797	$2,556,898	$55,899
	Biosecurity services	Pest Animals	$235,389*	$340,312	n/a
	KNE	Combined	$1,637,226	$1,535,919	$101,307
Totals – excluding external revenue			**$12,751,916**	**$11,409,675**	**$1,342,241**

*external revenue for this work (MPI funded Manchurian wild rice control and Check Clean Dry programme. Territorial authorities fund pest animal management in some of their regions).

Ngā Āpitihanga | Appendices

Appendix 1: Chemical Controls in use by GW to implement the Plan in 2022/23.

Herbicides:

Clopyralid (Void)

Diquat (Reglone, Dy-Quat)

Glyphosate 360, 450, 510, 540 (Roundup, Agpro Glyphosate, Cut and Treat Gel)

Haloxyfop-P-Methyl (Agpro Haloxyfop 100, Ignite)

Metsulfuron-Methyl 600 (Escort, Agpro Meturon, Zeal, Met Gel)

Picloram (Tordon Brushkiller XT, Vigilant II Gel, Tordon 2G granules)

Triclopyr 600 EC (Grazon, Agpro Triclop 600, X-Tree Wet & Dry)

Triclopyr 360 Triethylamine (Garlon 360)

Vertebrate Toxic Agents and insecticides:

1080 pellets (RS5, No 7)

Brodifacoum (Pestoff pellets, Pestoff High Strength, Final blocks)

Bromadiolone (Contrac blocks)

Cholecalciferol (cereal pellets and Feracol paste)

Cyanide (Feratox bait bags and pellets)

Diphacinone (50D, Ratabate - Strikers and paste, Ditrac)

Diphacinone and Cholecalciferol (Double Tap)

DRC 1339 paste (rook nest baiting)

Fipronil (Vanquish ant bait, Vespex wasp bait)

Magtoxin (fumigant pellets)

Pindone (rabbit pellets, liquid concentrate)

Appendix 2: Modified McLean Scale

Scale	Rabbit Infestation
1	No sign found. No rabbits seen.
2	Very infrequent sign present. Unlikely to see rabbits.
3	Pellet heaps spaced 10m or more apart on average. Odd rabbits seen; sign and some pellet heaps showing up.
4	Pellet heaps spaced 5-10m apart on average. Pockets of rabbits; sign and fresh burrows very noticeable.
5	Pellet heaps spaced 5m or less apart on average. Infestation spreading out from heavy pockets.
6	Sign very frequent, with pellet heaps often less than 5m apart over the whole area. Rabbits may be seen over the whole area.
7	Sign very frequent, with two or three pellet heaps often less than 5m apart over the whole area. Rabbits may be seen in large numbers over the whole area.
8	Sign very frequent, with three or more pellet heaps less than 5 metres apart over the whole area. Rabbits likely to be seen in large numbers over the whole area.

For more information, please contact Greater Wellington:

Wellington office
PO Box 11646
Wellington 6142

Upper Hutt office
PO Box 40847
Upper Hutt 5018

Masterton office
PO Box 41
Masterton 5840

www.gw.govt.nz
info@gw.govt.nz
T 04 384 5708

January 2024