



BIOSECURITY PLANTS

1 ACTIVITY OVERVIEW

1.1.1 The Biosecurity Plants programme seeks to safeguard the regional economy and environment from damage caused by harmful pest plants, and to prevent invasive plants transforming productive land and the region's natural biodiversity. This is achieved by delivering the following four programmes:

- Incursion response – Responding to 'new to the region' incursions and assisting in transitioning to long-term management if appropriate;
- Regional Pest Management Plan implementation – Implementing pest plant management programmes described in Horizons' **Regional Pest Management Plan (2017) (RPMP)**;
- Biological Control Programme – Undertaking biological control agent programmes including supporting community-led projects, and distribution and monitoring of agent populations across a wide range of pest plant species; and
- Advice, promotion and awareness – Providing advice and information to the public about best- practice pest plant control and behaviour to prevent the spread of pest plants.

1.1.2 The pest plant management activity links with a range of national and regional policies and strategies as further outlined in the Natural Resources and Partnerships Group's Operational Plan.

2 ANNUAL PLAN TARGETS

2.1.1 A summary of the Annual Plan targets and progress to date is provided in Table 1. Progress reporting for the zero-level goal is limited to an annual tandem summation of all managed sites against their previous status (age, risk class) and the physical number and area of plants.

Table 1 Biosecurity Plants Annual Plan targets for 2020-21.

Performance Measures for Levels of Service	2020-21	Progress to Date
Any exclusion category pest plants that are found in the region are promptly managed, with an initial response plan completed within two weeks and then enacted (if not enacted before two weeks).	Number of response plans required. Percentage where a response plan has been produced within two weeks (target 100%) Number of response plans enacted with their specified timeframes (target 100%)	One response is in progress after <i>Sagittaria platyphylla</i> , an aquatic plant, was confirmed in Pioneer Highway Drain and the Mangaone River in November 2020. Response plan initiated, initial control works completed January 2021; surveillance and late season follow-up at dump site and in-stream is taking place.
Number of managed sites at zero-levels increases for pest plants identified for eradication in the Regional Pest Management Plan.	Overall percentage of managed sites at zero-levels (ZL) increases by 10% per annum, from the start date of the RPMP; 2020-21 target is 71%.	ZL% at start of the year ¹ 84%; (2019-20 result: 84%)
Number of managed sites at zero-levels increases for pest plants identified as progressive containment – mapped in the Regional Pest Management Plan.	Overall % of managed sites at zero-levels increases by 10% per annum from the start date of the RPMP. 2020-21 target is 70%	ZL% at the start of the year, 73%. (2019-20 result: 73%)
Financially support the national bio-control agent development programme and report annually to Council on this programme.	Financial support provided and annual report to Council	Financial support provided and an overview annual report provided below. Fuller reporting from Landcare Research is on track for delivery by the end of the financial year.
Monitoring of some released biological agents will be completed to assess establishment and host damage (using the national protocol).	20 assessment plots will be monitored	Assessment of agent release sites across a range of species completed. Establishment of new agents, tradescantia leaf rust, tutsan beetle and field horsetail weevil, with range expansion of others occurring.
Pest plant enquiries received are responded to within three working days.	95% of enquiries will be responded to within three working days	Approximately 98% of Pest Plant Team enquiries responded to within three working days. Achieved.

¹ The Annual Report to Environment Committee is available at:
<http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Annex%20C%20Biosecurity%20Activity%20Plants.pdf>

3 INCURSION RESPONSE

3.1 Programme overview

- 3.1.1 The Incursion Response Programme aims to provide immediate and effective assistance for all national or regional biosecurity incursions and any transitions to long-term management. This is a function detailed by a Memorandum of Understanding between the **Ministry for Primary Industries (MPI)** and regional councils.

3.2 Activity Update

- 3.2.1 Staff are engaging with farmers to plan infection zone (paddock) utilisation and surveillance following the 2016 velvetleaf incursion in Horizons region via fodder beet crops. As part of subsequent management operations Horizons funds the use of a surveillance dog at the most optimal time of year for velvetleaf detection. The find shown in Figure 1 was six weeks after the dog surveyed this known infection zone and highlights the potential for-late season growth and maturation. The farmer subsequently destroyed this crop.



Figure 1 Seedbank velvetleaf found in historic cropping paddock at Fordell, Whanganui (R.Sicely)

4 REGIONAL PEST PLAN IMPLEMENTATION

4.1 Programme overview

- 4.1.1 The Biosecurity Plants activity is strongly linked to the delivery of Horizons' Regional Pest Management Plan 2017-37, which can be reached via the following link². The activity reporting is arranged in sections as per the RPMP groupings for pest management programmes as outlined in Table 2. More information on these groupings is on page 25 of the RPMP.

Table 2 Activity Summary for Biosecurity Plants.

Aim	Programme	Key Deliverables	YTD Progress
Preventing establishment	Exclusion Programme	Keep unwanted pest plants that are not already present out of the region.	Searching for: No locations/plants this period.
Eradicating	Eradication Programme	Controlling and reducing the prevalence and extent of Eradication species.	Species targeted for control this period are alligator weed, climbing <i>alstromeria</i> and woolly nightshade.
Rolling back	Progressive Containment Programme	Contain and reduce the geographic distribution of the pest plant to an area over time.	Species controlled this period are banana passionfruit, boneseed, Darwin's barberry and pest pines.
Maintaining low densities	Progressive Containment – un-mapped	Ongoing control to reduce species' impact and spread to other properties.	Site inspections for production plants and responding to boundary complaints.

4.2 Activity Update

Preventing establishment - Exclusion Programme

- 4.2.1 For pest plants that are in New Zealand but not in our region, our goal is to prevent establishment. We aim to detect these plants before they become widely established in the region and facilitate a quick response through appropriate funding that will enable the control or management of these species on ratable land. There are 11 species in this category and Chilean needle grass is an example.
- 4.2.2 The November 2020 *Sagittaria platyphylla* (delta arrowhead) discovery was controlled in January 2021 using diggers to completely remove all plants in the Pioneer Drain, Palmerston North. The plants were transported to a secure site managed by Palmerston North City Council, where they were dumped onto weed mat and fenced to allow for decomposition.

² <http://www.horizons.govt.nz/HRC/media/Media/Pests/2017-2037-Regional-Pest-Management-Plan.pdf>

- 4.2.3 The dump site has been monitored in conjunction with the alligator weed programme and we have found that the mass of plant and sludge material was not drying out quickly so the piles were spread across twice the area and treated with herbicide. This appears to be working and we will continue monitoring over the coming months.



Figure 2 Palmerston North pioneer Drain *Sagittaria platyphylla* infestation. (C.Davey)

Eradication Programme

- 4.2.4 High-risk species that should be totally removed from the region are managed via the Eradication Programme. There are 18 species in this category and at the start of this year our information reported that 84% of the 1,624 sites were at zero levels.
- 4.2.5 The alligator weed (*Alternanthera philoxeroides*) surveillance and control programme was scheduled to continue to the end of May. For the Mangaone Stream control operation we trialed two new detection methods: samples of water were taken for eDNA testing and a pest plant detector dog was used. eDNA is a new surveillance tool for pest plant biosecurity, which comes with limitations due to its relatively recent development. We sampled below a known site to use as a control, and another site some distance downstream to give an indication of a reach able to be sampled with confidence, as well as above the last known location of alligator weed in the catchment to indicate whether we had located the most upstream start of the infestation. The results for this reach showed alligator weed was detectable, but possibly not over a reach of any considerable distance.
- 4.2.6 Sky, the alligator weed detection dog, is still in training so we tested its ability on flat paddocks adjacent to the Taumarunui effluent ponds in our restricted area, as well as alongside the Mangaone Stream. The trip coincided with a bad weather event making detection difficult; however, the dog and handler were able to locate previously discovered test plants. This was a positive sign of its detection abilities and the trainer has since modified the search environments to include a broader range of habitats.
- 4.2.7 In February and April the Mangaone Stream was searched by wading and using canoes, with the assistance of the Horizons Fish Passage Team. About 10 single plant sites were discovered in the known stretches. The rate of growth surprised the team, with plants reaching approximately 60 cm in length in just six weeks. All plants were

removed and some areas of the bank were sprayed to make removal easier. Five key sites are being visited weekly, where possible, to continue active surveillance of the site.

- 4.2.8 We carried out a major excavation at Benmore Avenue and under the Highbury Avenue bridge in early March. Approximately 60 tonnes of gravel was extracted from the stream and transported to Bonnie Glen waste disposal site using Higgins', Alan Gibson's and Horizons' trucks. No alligator weed has since been found at the site.
- 4.2.9 TVNZ picked up the broader alligator weed story and ran it on the 6pm TV One News. Horizons excavation work featured, along with Waikato Regional Council staff and a concerned farmer.



Figure 3 Long reach digger removing rooted alligator weed plants in gravel beach. (K.Hoggard)

- 4.2.10 A Taumarunui alligator weed site continues to be monitored and vegetation of other plants sprayed to allow easier discovery of any new shoots from the treated root fragments. The original 6 ha fenced area has been reduced to about 4 ha due to concentrated control and surveillance efforts in removing alligator weed from the outer edge of the infestation.
- 4.2.11 After some months of planning, consultation with iwi and notification of affected landowners, Horizons submitted a Risk Assessment Plan to the Environmental Protection Agency (EPA) to use the herbicide metsulfuron on the Senegal tea (*Gymnocoronis spilanthoides*) in the Kuku Stream, south of Levin. Work was undertaken after approval was received.
- 4.2.12 Staff walked the first half of the Kuku Stream in the last week of March and sprayed the Senegal tea plants. The following day they canoed the final stretch of the deepening stream bed. In line with Horizons Monitoring Plan for application of

herbicides over water, the treatment area and downstream reaches were walked 24, 48 and 72 hours after spraying to monitor for any adverse results. None were observed and control results were promising three weeks later.

- 4.2.13 African feather grass (*Cenchrus macrourus*) control has been completed for the season. Two days were spent in the lower Whanganui River controlling a number of sites from Pipiriki (77 km up river from Whanganui) down to Kemp's pole. Some sites were surprisingly large and equally surprising in that they had not been seen during previous years' control work. Seed heads were removed and plants sprayed.
- 4.2.14 Despite annual control and removal of all seed heads prior to maturation, the number of sites in the Whanganui River trench has remained steady for many years. Horizons works in partnership with the **Department of Conservation (DOC)** and shares the work in the river with DOC staff, who work above Pipiriki. To establish the source of re-establishment of the infestation, we carried out a further search and discovery operation far inland. More than two weeks of contractor time was required to spray the large and scattered infestation that originated from an old homestead. The reduction in the viable amount of seed produced at this site will have a significant impact on future African feather grass control programmes.



Figure 4 A very large area of African feather grass was discovered this year in the Mangatiti catchment of the Whanganui River (R.Bashford)



Figure 5 Mangatiti African feather grass distribution map.

Rolling back – Progressive Containment programme

- 4.2.15 Where population levels or difficulty and expense of control prevent achievement of a region-wide zero-density objective, high-threat pest plant species will be managed under a Progressive Containment objective. For each species managed this way, an active management zone is defined within which the pest plant species will be controlled wherever are found, as in the Eradication designation
- 4.2.16 The Progressive Containment programme is split into species that are mapped (e.g old man’s beard and banana passionfruit) and species that are unmapped (e.g gorse and tutsan).

Progressive Containment - Mapped Species

- 4.2.17 Eleven Progressive Containment species fall into the mapped category (e.g. old man’s beard). This year started with 73% of 2,721 sites in actively managed sites at zero levels in the zones. A new version of the WEEDS software that the team use to track and report activity has provided a more robust method of defining sites. As a result, the number of individual sites was altered to combine search areas with multiple smaller sites within a homogenous operational area and count them as one site. This meant a reduction in site numbers. The measure of the percentage of sites at zero

levels remains a sound interpretation of progress towards our targets, and the newer data measures of "Extent" (maximum area of known distribution) and "Area" (area of occupancy by an organism) allow the team to better communicate the hectares of land to be searched for pest plants, which should decrease over time.

- 4.2.18 The Ministry of Primary Industries-Horizons National Wilding Control Programme contract is well on the way to being completed this year. At the time of writing nine of 46 Operational areas have been completed, with the majority of others having work started and ongoing. Feedback from stakeholders is that they are expecting to complete their programmes; the DOC Hawkes Bay programme, which is large and covers much of the Kaweka Forest Park, is progressing but will not be completed until the end of June.
- 4.2.19 The ongoing control and the extra allocation of funds, which allows a shorter return period and more time on the site, has enabled our long-term programmes to progress. An update follows:
- 4.2.20 Ohinewairua Station is a success story with only wilding 298 trees found and only four coning. This is down from a high in 2016-17 of 8,464 with 154 coning.
- 4.2.21 Hihitahi Central operational area has also been successful with 119 trees treated and the only one coning was a large tree that had been treated but was not completely dead. The last time Hihitahi was treated we found 712 trees with 24 coning. Very few trees should be found in the next treatment round in three years.
- 4.2.22 Raketapauma wetland has been surveyed and aerial spot spraying operations completed. Aerial basal control is to be completed by the end of April and ground work was ongoing until the end of May. Aerial support is needed for some of the ground work. A shelter belt found when ground truthing another site is to be removed by Treescape Ltd in early May. This shelter belt consists of 60 medium-sized coning *sylvestris* and some large coning *contorta*.
- 4.2.23 Tongariro Management Unit: This management unit has been awarded a further \$110,000, split between Horizons (\$10,000) and DOC-Whakapapa (\$100,000). All work is contracted to be finished on time and in full from these parties. DOC Taupo and Waikato Regional Council were still to complete their programmes.

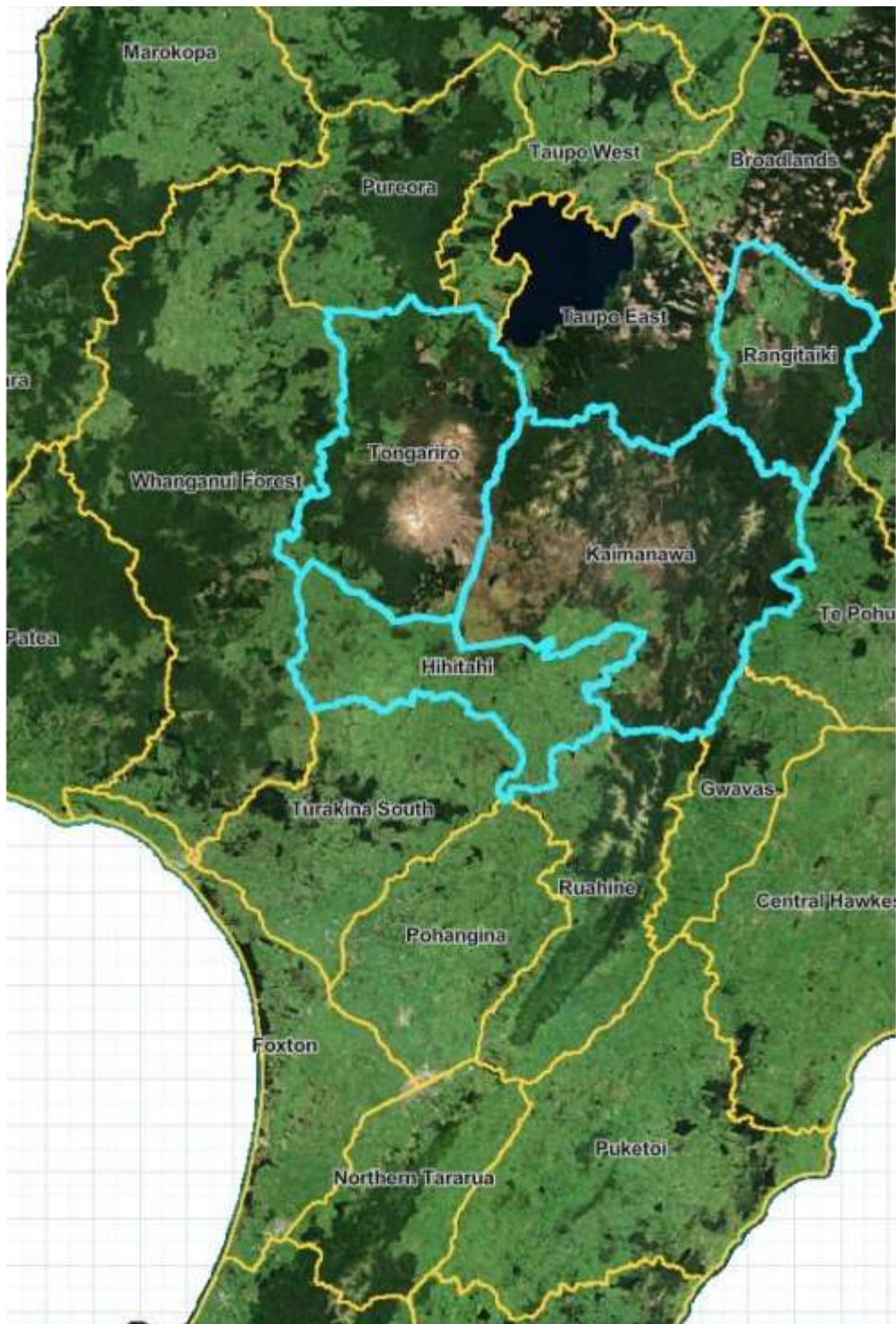


Figure 6 Currently funded Management Units of the Central North Island Regional Coordination Group. NB Hihitahi and Tongariro MUs are now combined under the name Tongariro and Rangitaiki is under Bay of Plenty Regional Council.

Progressive Containment – Unmapped Species

- 4.2.24 Fifteen Progressive Containment species fall into the unmapped category (e.g. gorse). These species are generally widespread but some parts of the region are clear and it is desirable to keep them clear. This programme does not have a strong information base to report on progress against these weeds. Horizons' involvement is primarily through regulation via the Good Neighbour or Clear Land rules of the **Regional Pest Management Plan 2017-37 (RPMP)** and through non-regulatory advice or, in some cases, by biological control. For occupiers of large land areas, farmers and other organisations we have the ability to allow responsibility to be acknowledged and actions planned via Approved Management Plans. The intent of these plans is to meet the objectives of rules and contribute to the outcomes of the RPMP by eradicating or reducing the spread of pest plants from the place/s occupied or managed by the plan-maker.
- 4.2.25 Species we dealt with during the October-December reporting period included blackberry and gorse. A small number of Good Neighbour complaints were received.

Table 3 Summary of Good Neighbour Rule activity for the period July 2020-June 2021.

Description	Reporting Period				2020-21 totals
	1	2	3	4	
Boundary complaints received and actioned outside of compliance	2	1	4	0	7
Required to Clear notices (RTCs) issued	0	0	0		0
Notices of Direction (NODs) issued	0	0	0	0	0
Notices resolved in this period	0	0	0	0	0

- 4.2.26 Staff have spoken to territorial authorities (councils) and Crown agencies in Horizons region about their Pest Management Plan obligations and agreement has been reached on pest programmes with five of the seven councils. The agreements are in the form of **Approved Management Plans (AMPs)** which set out how the entity will achieve its RPMP obligations. The Crown entities – **Department of Conservation (DOC)**, **KiwiRail**, **Land Information NZ (LINZ)** and **NZ Transport Agency (NZTA)** are engaged and are at various stages of reaching an agreement.

Table 4 Summary of Pest Management Plan documents with Territorial Authorities and Crown Entities.

TA/ Crown Agency	Approved Management Plan	Memorandum of understanding	Notes
Ruapehu District Council	27/08/2020		
Rangitikei District Council	18/02/2021		
Whanganui District Council	27/08/2020		
Manawatu District Council	30/09/2020	Consultation	
Tararua District Council	3/09/2020		
Palmerston North City Council			Waiting to receive AMP
Horowhenua District Council	1/09/2020	Consultation	
NZTA – Southern	27/08/2020		
NZTA - Northern			Consultation staff dependant
KiwiRail			Being worked on
DOC			Consultation - ongoing
LINZ			Consultation - ongoing

4.2.27 Horizons has drawn up a **Memorandum of Understanding (MOU)** template for use with district councils. This was deemed necessary to ensure we were giving due recognition to the requirements within the RPMP and utilising a robust document which sets out long-term expectations of operating under the RPMP and pest plant management for all parties. The document is with two councils for consultation and, following feedback, the remaining councils will be offered copies through ongoing RPMP engagement.

Progressive Containment – Unmapped aquatic species

4.2.28 Aquatic pest plants are also part of the Progressive Containment – Unmapped grouping of the RPMP and are grouped together on the basis that they are aquatic pests managed the same way for the same objectives. Eel grass, egeria, hornwort, lagarosiphon and reed sweetgrass are aquatic pest plants included in the Progressive Containment section of the RPMP 2017-37. Their distributions are not yet mapped with any certainty and our aim is to progressively contain or reduce the number of sites affected across the region, to prevent further spread and to reduce adverse effects on the environment.

4.2.29 No control work has been undertaken but these species are the main topic of advocacy by the Check Clean Dry advocacy programme.

5 BIOLOGICAL CONTROL

5.1 Programme overview

- 5.1.1 Many entrenched pest plants in the region are now the target of our Biological Control programme, which aims to assist the development of insects and diseases to control a wide range of pest plants and to release, distribute and monitor those agents within the region.

5.2 Activity Update

NATIONAL BIOLOGICAL CONTROL COLLECTIVE

- 5.2.1 The national collective has been financially supported this year. The programme supports projects against nine pest plant species, with Horizons championing old man's beard and field horsetail. Banana passionfruit and Japanese honeysuckle are of direct benefit to the region. A fuller report will be made available to Councillors when Landcare Research makes it available.

TRADESCANTIA RUST - UPDATE

- 5.2.2 The Whanganui tradescantia rust release site has successfully dispersed spores from the planted material to adjacent plants. While damage at this stage is minimal, finding established fungi is encouraging and will add to the insect agents, building up numbers in the region. Using this location as a nursery for agents to be distributed to future sites will be able to take place once the rust has spread to enough plants to allow potting and removal of infected rooted material.



Figure 7 Tradescantia yellow spot fungus on plants in Whanganui. (R.Sicely)

FIELD HORSETAIL

- 5.2.3 The Landcare Research science technician contracted to work under the **Sustainable Farming Futures Fund (SFFF)** project for the Rangitikei Horsetail Group confirmed in February the wild establishment of the field horsetail weevil at two sites in our region – Tangimoana and Scotts Ferry. A field day was held 28 April to close-out the nine-year project and inform the community of interest about the development, next steps and all things horsetail management. There were about 30 attendees. Landcare supplied live weevils for release on the day, adding to the numbers of the weevils at Scotts Ferry.
- 5.2.4 Funding is needed for ongoing field horsetail weevil breeding and colony maintenance at Lincoln, at an expected cost of about \$15,000 a year. Depending on the project finances and the National Biocontrol Collective budget, Horizons and other local councils may need to consider supporting this initiative for the next few years. This amount is much reduced from the expected \$40,000 for high intensity mass rearing due to the recent discovery of small wild populations and progress on a cheaper, more resilient breeding method.



Figure 8 Paul Peterson and Arnaud Cartier from Landcare Research talking through the ins and outs of biological control agent rearing and what to expect in a few years post-agent release.(C.Davey)

6 INVESTIGATION

6.1 Programme overview

- 6.1.1 A number of plants present in the region may have the potential to become economically and ecologically damaging. This output contains the Pest Plant Investigation programme and the **National Pest Plant Accord (NPPA)**.

6.2 Activity Update

- 6.2.1 No work was undertaken in this programme during this period.

7 ADVICE, PROMOTION AND AWARENESS

7.1 Programme overview

- 7.1.1 The aim of the Awareness Programme is to alert the community to the issues, threats and solutions for weed management in order to ensure region-wide best-practice pest plant management. This includes responding to enquiries from the community and undertaking collaborative projects.
- 7.1.2 Staff hosted the Palmerston North Forest and Bird Society at the Mangaone Stream and gave an informative talk about the vast range of aquatic/riparian species, both friend and invasive within this urban stream.
- 7.1.3 Staff presented to the Whanganui Garden Club during April to talk through the National Pest Plant Accord, roles and responsibilities. The presentation had a local slant as Whanganui is regarded as one of the more verdant cities in New Zealand, with its ease of growing introduced species.
- 7.1.4 The Check, Clean, Dry Advocate talked about the risk of didymo and other aquatic weeds to 557 people fishing at Lake Otamangakau in Tongariro, 73 at other locations, 447 campers, 87 people in accommodation venues and 47 general public.

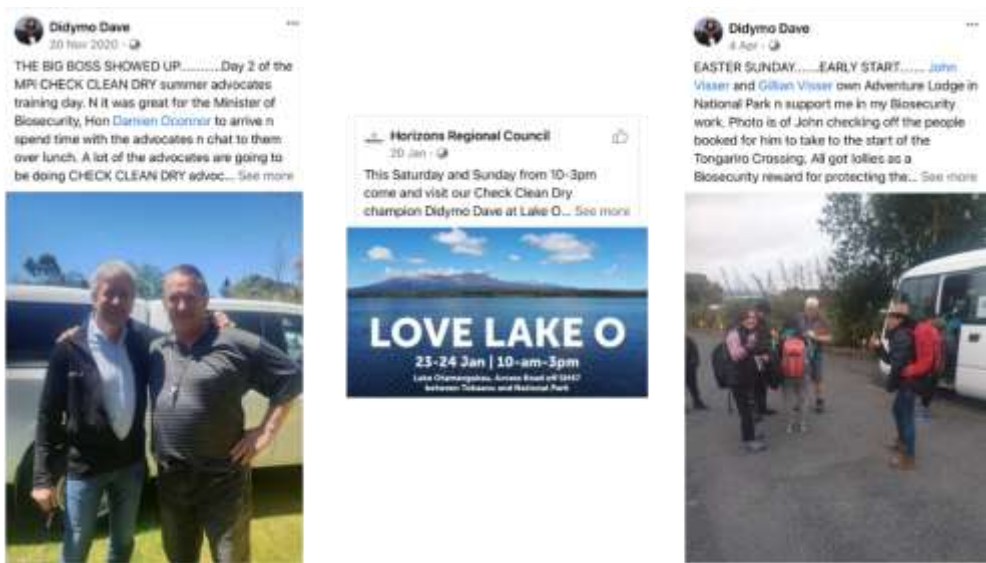


Figure 9 Check, Clean, Dry Advocate Dave Cade out and about in our region spreading the message to care and do the right thing.

7.2 Activity Update

- 7.2.1 The pest plant team received 85 enquires during January-April and 98% were attended to within three working days.
- 7.2.2 There were many responses to our press articles regarding alligator weed as well as enquires driven by visible and flowering plants such as old man’s beard at this time of year.

8 COLLABORATIVE PEST PLANT CONTROL

8.1 Programme overview

- 8.1.1 Collaborative projects undertaken by Horizons staff and external stakeholders provide a team approach to managing weeds in some challenging environments. Working with others and providing advice and leadership has delivered some excellent results that otherwise would not have eventuated. A summary of this activity is provided in Table 5.
- 8.1.2 Desert Road imagery for gorse has been turned into a distribution map (Figure 9). The results of the ongoing control in the project area show a big reduction in dense infestations since the beginning of the project, however these appear to have been targeted at the expense of the outliers, visible as small amounts of plants at the fringes. The map of the 2020 gorse distribution shows an increasing spread of moderate-density and low-density populations. This information will help guide management options into the future as it supports an early hypothesis that outlier control is as important as removing dense clusters. Landcare undertook a comparative change analysis and the results in the map in Figure 10 highlight the outcome of leaving outliers to chase dense stands.

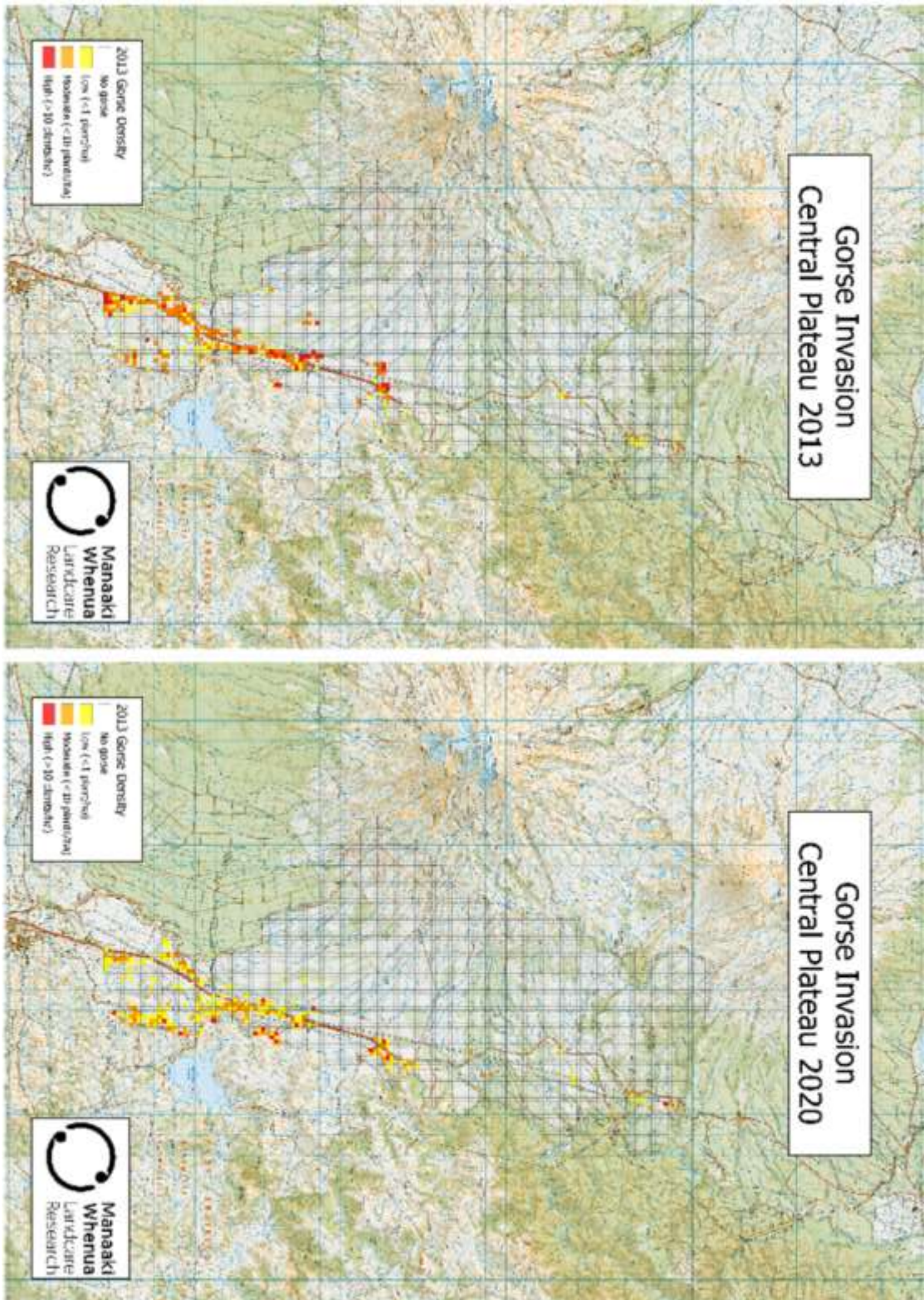


Figure 10 Comparative gorse distribution maps, 2021. (Landcare Research)

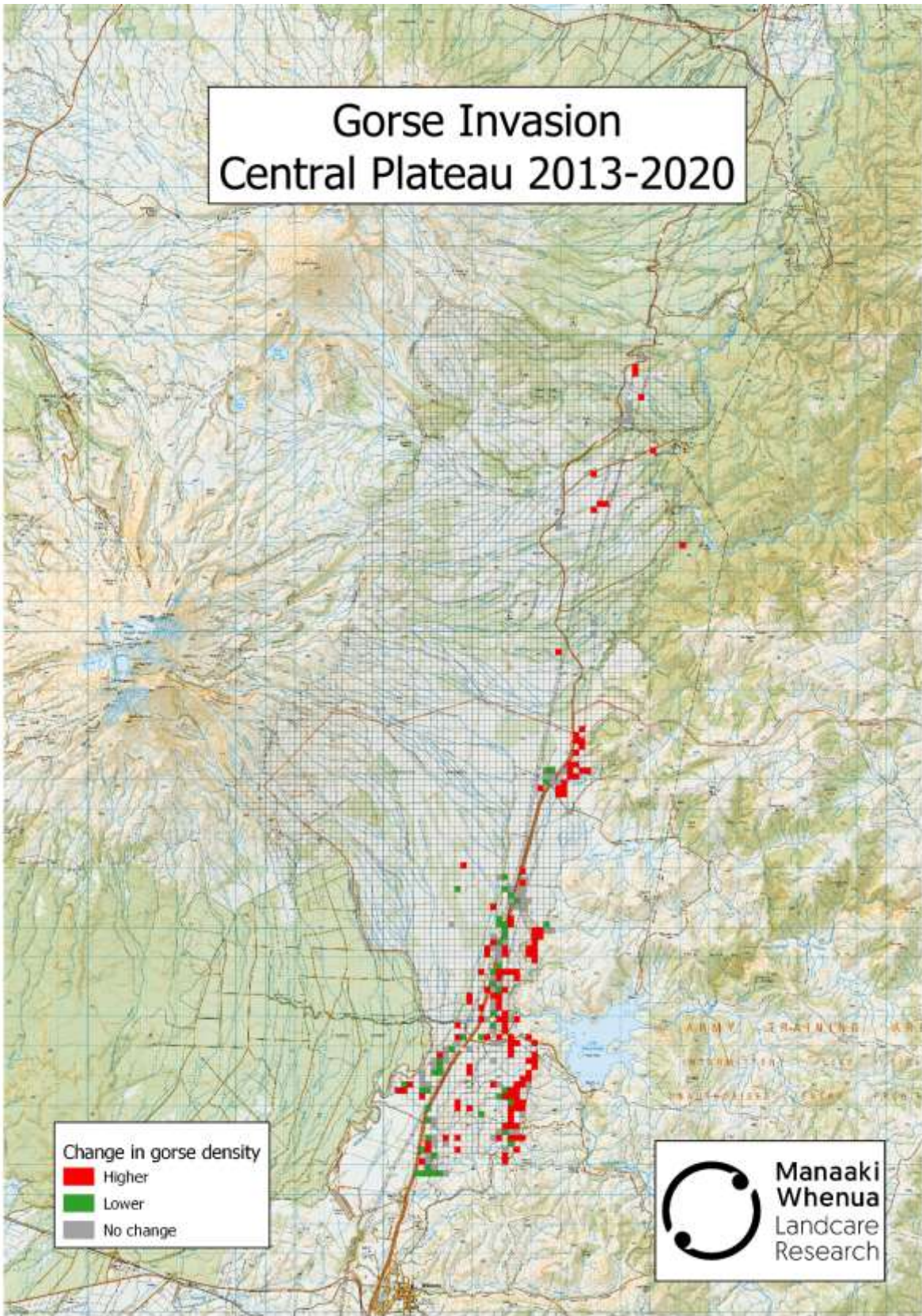


Figure 61 Score of reducing or increasing density (Landcare Research)

Table 5 Collaborative Pest Plant Control Projects.

Project	Key Deliverables	YTD Progress	Horizons Role
Wilding Conifer – Central North Island Regional Coordination Group (RCG) – Fundholder and Chair	<p>Work with partners and other stakeholders re:</p> <ul style="list-style-type: none"> ▪ Planning for management unit (MU) activity and reporting ▪ Managing the budget ▪ Annual meeting scheduled <p>Deliver on annual work programmes as agreed by RCG. In 2020-21 the Tongariro MU (\$434,100) and for the Kaimanawa MU (\$691,250) of National Programme funding with a total work package across all partners of \$2,299,902.</p>	At the time of writing, nine of 46 Operational areas had been completed with the majority of others having work started and ongoing.	<p>Contracted to Government as the agency for managing Central Government funding for this activity in the broader area.</p> <p>Horizons' Kaimanawa MU operational areas are completed with a reduction in coning trees and area of occupancy compared to previous visits. The Tongariro is a new Management Unit in 2020-21 and is partially complete.</p>
Waimarino-Tongariro National Park Darwin's barberry control programme	Coordinated control across public and private land to increase protection of previously cleared areas.	Programme underway.	Organiser of control programmes on private land.
Rangitikei Horsetail Group	Support group activity with population releases and monitoring.	Meeting held and final field day for Sustainable Farming Fund (SFF) held.	Partner to group and access to weevils and advice.
Desert Road Invasive Legume Control Group	<ul style="list-style-type: none"> ▪ Relationship between parties maintained. ▪ Memorandum of Understanding maintained and implemented. ▪ Coordinated action in priority areas undertaken against target species. 	Meeting held and collaboration agreements signed. Gorse distribution and abundance map completed.	Coordinate meetings and collaborative activities.
Freshwater Biosecurity Partnership Programme and Check, Clean, Dry (CCD) advocacy programme.	Representing Horizons at a national forum to champion behaviour change and freshwater protection. Attendance at high-risk events and strong advocacy with the main users of waterways in our headwater areas.	Check, Clean, and Dry advocate has been engaging with public at our region's waterways.	Provide and manage the programme in the greater region.

Craig Davey
BIOSECURITY PLANTS COORDINATOR

Rod Smillie
BIODIVERSITY, BIOSECURITY & PARTNERSHIPS MANAGER

Dr Jon Roygard
GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS