



Biodiversity Projects Snapshot

2022/23

Thriving biodiversity is essential to a thriving natural environment. When our environment is rich in biodiversity, nature can better provide the many benefits we rely on. Our indigenous biodiversity continues to be adversely affected by human activity across both Waitaha Canterbury and Aotearoa New Zealand.

The common threats to biodiversity remain the same; introduced animal and pest plants, and continuing land use change and intensification. These threats continue to, and have the potential to further, inflict landscape-wide ecological devastation on biodiversity values.

Environment Canterbury's approach to biodiversity is to focus on protecting and maintaining what remains, specifically in our vulnerable priority wetland, braided river, freshwater and terrestrial ecosystems. This is achieved by working collaboratively with others, by being efficient with the available resources, and leading by example on our own land. Our approach to biodiversity project design and delivery also allows us to monitor and assess the effectiveness of the work undertaken, given that the actions employed to address the threats to biodiversity values are generally understood as the best approach.



This report covers the majority of biodiversity projects completed over the previous financial year (or multiyear projects still being delivered) across Waitaha, by Environment Canterbury operations or science staff, agencies we work with, by contractors or community organisations, or volunteers from the general public.

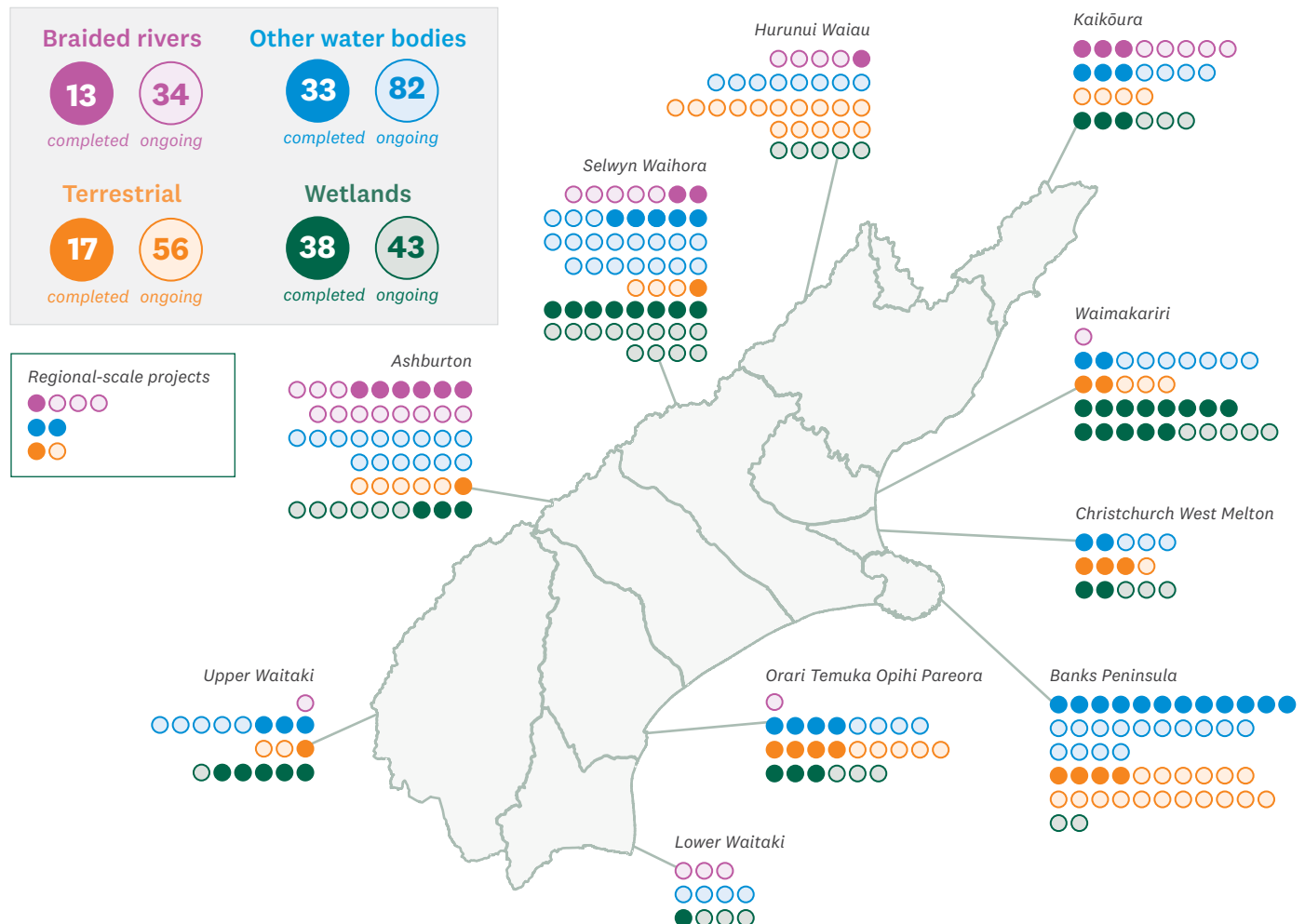
These projects centre on our priority areas – ranging across wetlands, braided rivers, terrestrial and freshwater ecosystems and habitats. The projects range from sites with high biodiversity values with threats that can be managed by non-regulatory actions, to projects with lower biodiversity values, to funding of research or the development of a strategy or implementation plan. The biodiversity projects mentioned in this report do not account for all of the biodiversity work undertaken by Environment Canterbury; for example the Braided River Revival programme also involves projects with biodiversity outcomes.

At the start of the year we reported that over \$1.1M of funding was allocated to new and existing multiyear biodiversity projects across the region, covering our broad focus areas: braided river revival projects, wetlands protection and enhancement, fish habitat and passage remediation, priority habitat restoration and regionwide terrestrial projects.

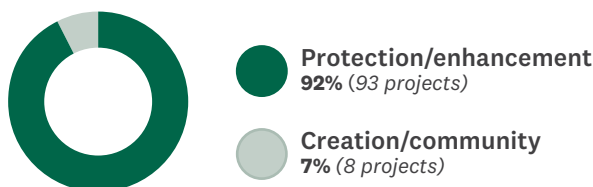
Key projects data 2022/23

Over the 2022/23 financial year, our biodiversity staff developed, advised and supported projects with specific biodiversity outcomes.

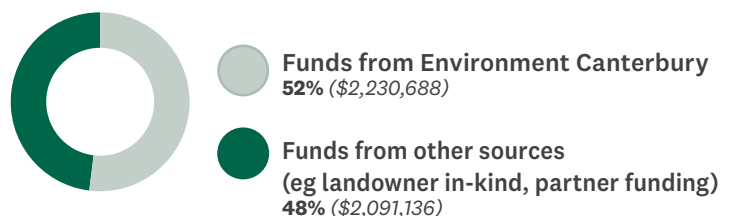
This work closely aligns with the Environment Canterbury 2020 – 2023 Strategic Direction, specifically: decisive action for healthy freshwater; land and coastal ecosystems; helping communities be well prepared for changes in the natural environment; accelerate regeneration of the natural environment; building community engagement and action; and leading climate change resilience.








Nature of completed projects 2022/23



Funding source of completed projects 2022/23



Completed 22/23 project metrics					
	Planting area 45ha	Length of protective fencing 41,306m	Weed control area 83,222ha	Natural fish habitat improved 1,537m²	Pest control area 2835ha
	Number of plantings 44,450	Fencing benefit area 6,732ha	Weed control benefit area 291,720ha	Fish passage enabled 1	Pest control benefit area 102,155ha

Braided rivers

Braided river systems are a rare geological feature evident in only a handful of other countries. More than 60 per cent of Aotearoa New Zealand's braided rivers are right here in Canterbury.

These unique river systems support a vibrant and diverse ecosystem that stretches from the mountains to the sea, ki uta ki tai. A wide variety of birds, fish, reptiles, invertebrates, plants, lichens, mosses and fungi, many of which are now threatened or endangered, have adapted to thrive in these challenging and dynamic environments, each of them dependent on one another.

Over time, the ecological and biodiversity values of our region's braided rivers have deteriorated as a result of weeds and pest animals, water abstraction, land development, river control works and encroachment, climate change and damage from recreational use. These once-thriving biodiversity hotspots need our help to protect their endangered ecosystems from extinction.

We address these issues in one of four ways:

- With a clear focus on high value biodiversity, eg upper catchments, regional priorities, investment in determining what works.
- Community engagement and awareness – community led/strong involvement (BRaid, river care groups).
- Managed areas/infrastructure – projects with biodiversity benefits (eg berm transition project).
- Mixes of above, where they overlap.

Biodiversity focus/regional priorities

- Our focus is on the management of high value areas to protect and restore ecosystem health and natural character. These actions contribute towards meeting the [CWMS braided river goals and targets](#), Canterbury Biodiversity Strategy goals, and the Environment Canterbury Long-Term Plan (LTP) levels of service. The majority of the work we implement is weed and predator control which aims to halt and reduce weed invasion, protect native plants and wildlife, and improve nesting success of braided river birds.
- Weed control was completed in six sites across the region. This work protects and enhances habitats and natural characteristics. A weed control strategy was given to projects in the upper Waimakariri. A strategy review was completed for the upper Rakaia River. Surveillance and control work was undertaken at the same time.



Endangered black-fronted tern pair sheltering and feeding chicks.

- Predator control increases survival chances for threatened or vulnerable breeding braided river birds such as the black-fronted tern, black-billed gull and wrybill. Work was carried out at 12 sites around Canterbury this year. This included determining breeding success in the upper Ashburton/Hakatere and lower Waimakariri rivers.
- Island enhancement earthworks was undertaken at three sites to ensure weed-free, flood resistant islands are surrounded by good channels with predator control and outcome monitoring. This included trialling chick shelters to prevent from overheating.
 - Oystercatchers were studied this year to look at their lifecycle to understand movements, mortality and causes, and habitat use. This species was chosen because they are less threatened than other braided river birds. One technique involved tracking chicks to determine survival and causes of mortality using tiny backpack transmitters.
- A bird viewing platform and signage was completed at Dotterel Point to increase awareness and reduce disturbance.
- Invertebrate investigations are underway at two sites after flooding.
- River bird survey data was standardised and entered into a GIS mapping system, making the use of river sections and changes in bird numbers in the region more visible and accessible.
- Tracking southern black-backed gulls/karoro to determine movement and feeding patterns at two sites.



Black-fronted tern chick sheltering under an A frame chick shelter (one of two designs).

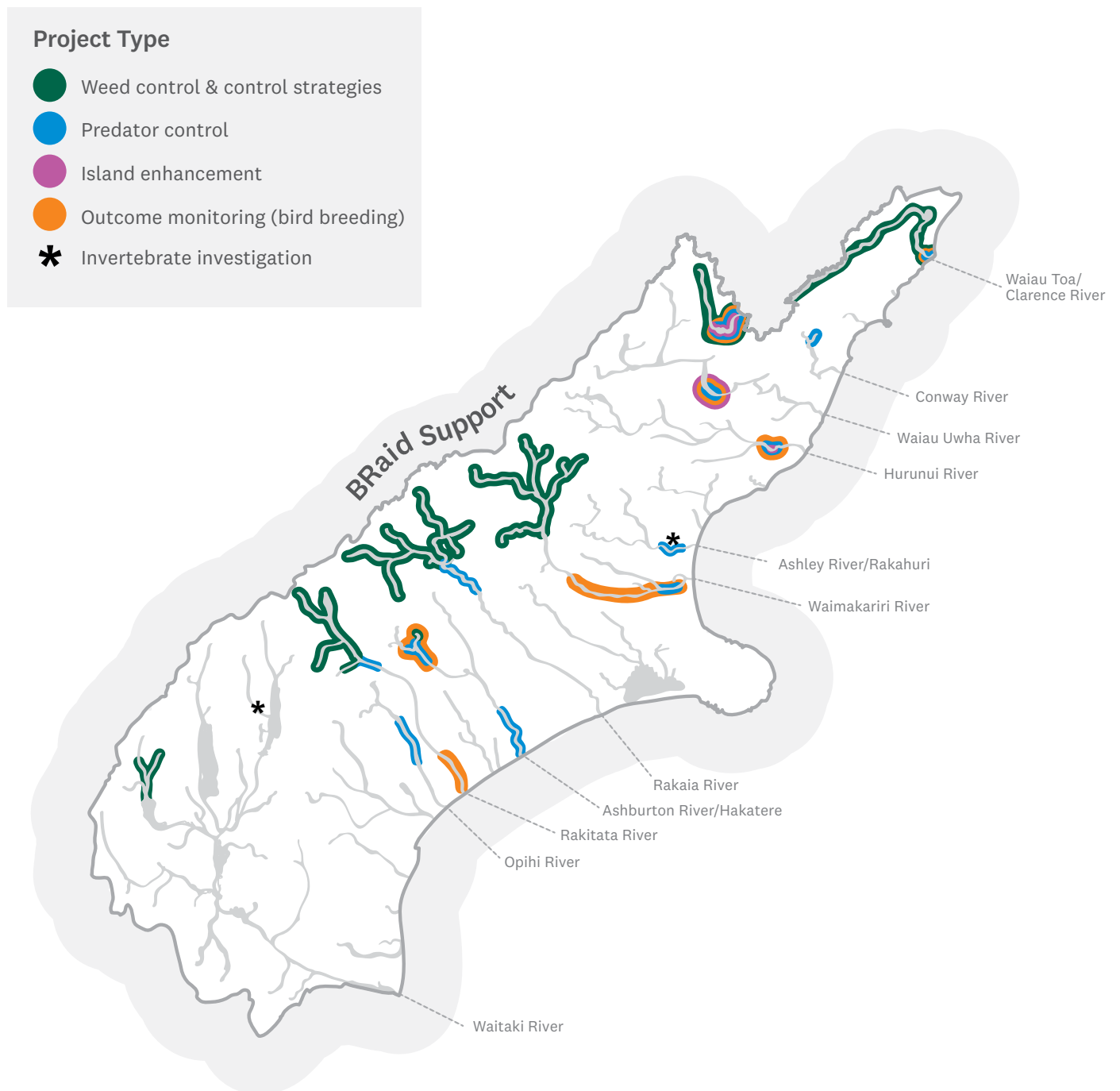


Predation of endangered black-fronted tern chick by southern black-backed gull (a common native species).

Our stories

The studies below highlight some of the ground work in our key priority areas to improve habitats for our indigenous species.

Braided river project funding support





Wildlife Management International Ltd

Hurunui and Waiau Braided River Birds Flagship Programme – stage two

This river bird protection project on the Hurunui and Waiau Uwha Rivers involves braid island enhancement, predator trapping, and monitoring. It aims to improve the breeding success of black-fronted terns and other river birds, ultimately increasing their populations.

Two islands were enhanced for the 2022-23 breeding season, NIWA Island on the Hurunui River and Shark's Tooth Island on the Waiau Uwha. Enhancement to Shark's Tooth Island included widening the channel previously connected to the mainland and raising the island height by approximately 50cm.

With this enhancement only one nest was lost in the highest flooding event of 2022/23.

The enhancement of the island was not only successful in preventing flooding but also in deterring cats and other mammalian predators from crossing. No evidence of predators of any kind was observed, whereas 53% of nests on the mainland near the island were predated by cats.

Of the nests on the island, 96% successfully hatched one or more chicks, compared to 63% on the natural islands monitored. Nearly 250 predators were caught in traplines on the Hurunui and Waiau Uwha rivers during this time.

Other ongoing braided river projects

Some of the other projects in this space will positively impact biodiversity values on our precious braided rivers. For more on this, check out our stories:

- [A community collaboration has protected threatened gulls on the Charwell River](#)
- [A major weed control project in the Dobson and Hopkins valleys is headed for stage two](#)

Berm Transition Project

The purpose of Braided River Revival Whakahaumanu Ngā Awa ā Pākihi is revival of the mauri of braided rivers, ki uta ki tai - and to align collective action at a landscape level to achieve that goal.

There is both an external focus - the alliance for collective action with mana whenua partners, other agencies and communities, and an internal alignment focus, albeit working closely with others, to integrate Environment Canterbury's functions, roles and responsibilities.

There are several projects being delivered by the braided river revival team. Berm transition projects are one of several climate resilience projects funded by Kānoa, the Ministry of Business, Innovation and Employment.

Berm transition projects seek to improve berm vegetation resilience through targeted weed control and under-planting of condition-hardy evergreen native vegetation. Once established, these sites will provide increased resilience against pest vine damage, plant disease and improved regrowth potential following flooding.

- Over 50 project sites on 23 rivers throughout the region being delivered as part of the berm transition projects.
- Installation of over 250,000 native plants into the modified lower reaches.
- Nearly \$2M of weed clearance in braided riverbeds.
- Over 1200ha of targeted weeding to reduce species like Old man's beard, Sycamore and wild hops.
- [We have a new hub of braided river content on our website if you would like to understand our rivers better](#)



Wetlands

Wetlands once covered large areas of New Zealand. Today, they are a rare and at-risk ecosystem, with about 90 percent (by area) lost in the last 150 years due to human impact.

Despite their decline, wetlands remain a vital part of Canterbury's ecosystem. They provide a haven for a vast range of native plants and wildlife, including rare and threatened species.

They also offer protection against flooding and can store large amounts of carbon. The small area of wetlands left needs our help, so that they can prosper and be enjoyed by future generations.

This year our biodiversity summer students were tasked with gathering information from Lees Valley for an ongoing project to protect one of the region's most at-risk wetlands.

Lees Valley, in the Waimakariri district, is an intermontane basin with a number of wetlands scattered throughout. The threat to wetland biodiversity values from weeds has never been greater, as new species continue to arrive on our shores, the old threats such as grey willow and crack willow march on across the landscape finding new wetlands to smother.

Making matters more difficult, willows have no status in the Canterbury Regional Pest Management Plan, so managing them in wetlands is voluntary. Following several years of consultation with landowners in Lees Valley, the idea was agreed upon to eliminate willows in Lees Valley.

Understanding the extent of the issue is key to success, so the students undertook remote mapping to understand willow spread in the valley, followed by ground truthing to confirm presence. The mapping and ground truthing has allowed us to estimate the resources required to control the willows.



Lilly's swamp, a 70-hectare wetland. The blue line indicates the wetland boundary and the pink icons are the current identified willows.

Te Waihora Weed Strikeforce

Over the past 12 months, the [Weed Strikeforce \(WSF\) team carried out weed control in 18 management blocks](#) over 614ha, using 2,640 labour hours to reduce infestations of grey willow and crack willow, among other weeds.

WSF is a weed control initiative jointly funded by DOC and Environment Canterbury. The programme is undertaken by a permanent team of nine staff and started in 2018.

The primary area of focus is around Te Waihora targeting exotic weeds such as grey willow, crack willow, reed canary grass and yellow flag iris. Grey willow is the top priority as it presents the greatest and most immediate threat to the lake margin's indigenous biodiversity.

The overall vision for the initiative is for native dominated ecosystems to flourish around the Te Waihora lake shore, with no invasive weeds present.

After completing the first phase of the programme, which lasted three years and focused on weed control around the lake margin, phase two (years four to six) has seen management blocks extended beyond the immediate Te Waihora margin.

These blocks are selected based on known weed infestations or sites of high biodiversity value which are threatened by weeds. For more information, head to our [Wetlands Hub](#).



Willow canopy replaced by native vegetation at Te Waihora

Dickeys Reserve

The Dickey's Reserve wetland protection project is a multi-year project working with key partners.

It aims to restore a 13ha-lowland swamp through weed control, improving habitat for native flora and fauna such as the critically endangered Australasian bittern.

Over the past 12 months works have included baseline monitoring with photopoints and four permanent wetland vegetation plots; the undertaking of fish surveys over two days which showed that the site was good habitat for longfin eel, additionally Bittern feathers were found during the survey, confirming their presence; and the completion of willow control, fencing off the wetland from stock, and planting of over 1000 native trees.

This is an ongoing project and Environment Canterbury has allocated further funding for the following year after an initial grant of \$20,000.



Dickeys Reserve from above

Cora Lynn Wetland Restoration



Crack willow trees in the Cora Lynn wetland spring ecosystem

This project was delivered collaboratively and represents one of the many projects within the nationwide berm transition project.

Willow control at this location is both a benefit to biodiversity as well as increasing river capacity during flooding or high-water periods.

- This 26ha spring-fed wetland is located downstream of Bealey Spur in the Upper Waimakariri River catchment, on mixed-ownership land. It is compromised by the encroachment of crack willow, reducing the diversity of the ecosystem and habitat for indigenous fauna.
- Willow control was completed by drilling and filling with glyphosate herbicide by contractors, working to a wetland restoration plan.
- Permanent photopoints and wetlands vegetation monitoring plots were installed and will be used to show changes to the vegetation community following control.

Managing Wetlands as Farm Assets project update

This project worked with a cross-section of farmers to provide advice and share knowledge about the benefits wetlands offer the farming system and the wider community.

Fourteen demonstration sites were set up and each focused on the unique requirements of the wetland. This saw focus areas of protection, such as fencing, weed control and restoration planting.

The demonstration sites covered a range of wetlands across the different farming systems and varying ecological zones of Canterbury, and included three sites focusing on constructing a wetland. The overall project concluded in June 2023.

Some of the key messages to come out of the programme are that while there has been historical loss of wetlands, more and more farmers do understand the benefits of wetlands on their own farms and in the catchments they are farming in, and that there is a willingness from farmers to protect, restore and enhance wetlands; however they need support, both technical and to a lesser extent, financial, to help them with their wetlands. Ultimately, each wetlands is unique and farmers should take time to observe and understand what is needed.

Many of the farmers involved commented that management of the farm was easier once the wetland was fenced off, and that they do see their wetlands as an asset and a valuable part of their farming operation.

To see more on each wetland demonstration site, follow this link to NZ Landcare Trust storyboard: [NZ Landcare Trust \(arcgis.com\)](https://www.landcare.org.nz/storyboard). Each of the wetland demonstration sites has a short video of the farmers journey through the project which you can view [here](#).



Fish habitat/passage

Living Springs weir

We are a partner of the Whaka-Ora Healthy Harbour programme which aims to restore the ecological and cultural health of Whakaraupō/Lyttelton Harbour as mahinga kai.

The Living Springs weir project is restoring native fish passage in the Allandale Stream. The current concrete weir impedes upstream passage for native fish, especially inaka/whitebait which are not a strong climbing species.

Surveys in nearby streams show that tuna/eel, kōaro/climbing galaxias and banded kokopu are present. Improved passage is likely to benefit these species as well and potentially strong climbing bully species such as redfin bully. The new ramp will provide a way for fish to bypass the weir and reach more habitat upstream.

The effectiveness of the ramp will be monitored to make sure fish are able to use it to swim above the weir. Other passage barriers exist upstream so more remediation work may be required before the whole stream is accessible. This is the first project to use our global fish passage barrier remediation consents.

Global Fish Passage Resource Consents

The regional biodiversity team was recently granted consents allowing for remediation of fish passage barriers around the region. This will allow for remediation on barriers like culverts that impede migratory native fish.

Use of the consents is limited to projects that follow the NZ Fish Passage Guidelines and only on rivers less than 4m wide and structures less than 4m high.

The projects all go through a series of checks including assessment by a freshwater ecologist, and must meet a number of conditions to ensure the water, riverbed or riparian margins aren't negatively affected by the works.

The global consent makes it quicker and easier to undertake simple remediations on existing barriers, and there a number of projects in the planning stages that will be able to use this process.



Rakaia hāpua project

This multi-agency project saw staff undertake fortnightly seine¹ net surveys of the Rakaia Hāpua fish community over a six-month period. These surveys followed pilot studies on the same waters.

The survey methods were designed so that results could be compared with data obtained during historic Rakaia Hāpua fish surveys in 1980/81. Although the entire fish community was of interest, survey methods targeted smelt populations during the peak spring to autumn migration period of Stokell's smelt.

Here's a summary of what we found:

- Fewer Stokell's smelt, īnanga and Chinook salmon today, and more yellow-eye mullet, common smelt and common bully than in 1980-81.
- Common smelt, īnanga, black flounder and common bully were generally smaller in length today. There were more juvenile yellow-eye mullet in 2021/22 than in 1980/81.
- Stokell's smelt were by far the most dominant species during summer 1980/81, whereas 2021/22 surveys showed they now form a small fraction of the overall hāpua community.
- Common smelt were the dominant fish species during 2021/22 surveys. Overall, smelt numbers have substantially decreased in the Rakaia Hāpua, regardless of their species.



The observed changes correlate with anecdotal observations of surveyed river users. Notably, the salmon and smelt fishery has declined. Many of the fish population changes observed cannot be explained by methodological inconsistencies between the historic and 2021/22 surveys and are more likely to be symptomatic of changes to the riverine or ocean environments where migratory fish live.

Further investigation of these environmental changes is critical to understanding and protecting the fish communities of braided river hāpua and the ecological, cultural and recreational values that depend on them.

¹ A seine net is a fishing net which hangs vertically in the water with floats at the top and weights at the bottom edge, the ends being drawn together to encircle the fish.

Sycamore Control at Lake Pearson

A drone was used to find sycamore infestations threatening native beech forest near Flock Hill and Lake Pearson.

Sycamore is a weed tree that forms dense stands and is shade tolerant, allowing it to outcompete and displace native vegetation. Sycamore is well established along the riparian margins surrounding Lake Pearson and has started to spread south, threatening the margins of existing native beech forest.

Drone footage showed infestations on farmland prior to ground control, allowing for improved planning and efficient use of resources.

Mature trees and larger juveniles were controlled using the drill method and smaller trees and seedlings were controlled by cutting the stems or hand pulling. Other weed species were also controlled in the proximity of the sycamore infestations. Further control is needed in the area to eradicate sycamore from the catchment.



Rakaia Gorge biodiversity protection

Rakaia Gorge is known for its diverse mixed hardwood forests, bluff communities, shrublands, tussock grasslands, two large wetlands and 16 threatened or at-risk plant species.

Its location at the transition of the mountainous high country and the biodiversity-poor Canterbury Plains adds to its value, particularly for faunal habitat and as a source for restoration.

These values are threatened by a number of well-established and establishing weed species, including sycamore, cherry, cotoneaster, and wilding conifers. Control of these weeds is of high priority for protecting ecological values.

The gorge is a hazardous environment, but the risks were mitigated by using a drone to survey the land beforehand, providing an insight to the hazards and the density and location of weed species, helping create a targeted approach.

The drone flight was carried out in autumn when the species changed colour and it will double as a [monitoring tool to measure changes in canopy composition](#) over time.



White Rock Limestone weed control project



Eco Abseil Limited.

Canterbury Biodiversity Strategy and Department of Conservation funding was used to send an abseiler over a rocky outcrop to target wild thyme and monitor threatened plant species.

This project supports the biosecurity team's wild thyme control programme and other weed species on White Rock; a limestone outcrop in Loburn.

Limestone outcrops like White Rock provide for naturally uncommon ecosystems that are inhabited by rare plants adapted to calcareous rocks and soil.

Threatened indigenous species at White Rock include the nationally critical Waipara Gentian and the nationally endangered Limestone Sunhebe and Enys's gingidia.

Wild thyme and other weed species outcompete indigenous species and without ongoing weed control, significant decline of indigenous species is highly likely.

Me Uru Rākau

Me Uru Rākau is a biodiversity regeneration and community enablement programme. Its focus is to protect and enhance indigenous biodiversity, often with mahinga kai, water quality and erosion control outcomes, community involvement and ownership of the projects.

This increases the collective action and shared understanding of the community and is a long-term commitment to biodiversity regeneration and catchment scale biodiversity outcomes.

The first two years of the programme focused on sections of the Waiau Uwha catchment. In this time, Me Uru Rākau delivered:

- Six riparian planting projects with more than 20,000 eco-sourced natives planted.
- Five native bush protection and regeneration (75ha in total), with some becoming QEII covenants.
- One protection/regeneration project of exceptional ecological value.

Collaboration with Ngāti Kuri and Te Rūnanga o Kaikōura

As part of the Berm Transition Project at Oaro, the programme provided \$15,000 for the specialised training in weed control and native planting to support the rūnanga delivery of the work.

Outcomes included:

- Educational predator control programme with Waiau school.
- Riparian vegetation clearance workshop.
- Collaboration with Lottery Bush conservation group.
- Collaboration with Amuri Irrigation Company – 13,000 eco-sourced plants and biodegradable guards donated for various eco-restoration projects on farmland.

Fencing/protection of native forest

- The Doone retirements – 1ha of Kahikatea remnants fenced off and will become QEII covenants.
- Lottery Bush – 180ha native bush, deer fencing
- Mt Terako retirements – three blocks of native forest fenced, nearly 20ha in total.
- Riparian woody weed control.
- Aerial Basket Willow control – Mason, Lottery, Wandle rivers basin wholly funded in partnership with river engineers.
- Fyfe Downs wetland willow control.

Wetlands protection/enhancement

- Mount Highfield Wetland restoration – fencing of a 4.5ha area.
- Dalmer family farm wetland enhancement – fencing of a 3.1ha area.

The Gates – remnant forest stand protection

The Gates is a 1500ha hill country sheep, beef and forestry farm near Waiau. Me Uru Rākau supported a retirement and protection of remnant manuka forest, growing on steep hill sides, surrounded by farmland. Aside from the dominant manuka, the bush is also a home to native species such as podocarp and hardwood broadleaf species, kanuka, coprosma, pittosporums, and cabbage trees. Over 1500m of existing sheep and beef fence was upgraded to be deer-proof and more than 22km of new deer-proof fence was constructed. This will see 25ha of native bush protected from feral deer and livestock.

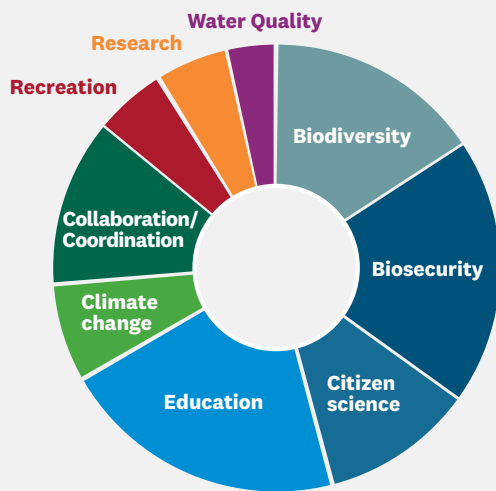


The Gates saw over 1500m of existing fencelines upgraded this year.

Working with the community

The 2022/23 Community Partnerships Programme aims to build on the capacity and capability development within community organisations that has occurred over the past few years. Our community organisations across the region continue to deliver projects that improve their local environment through education, collaboration and on-the-ground action.

Waitaha Action to Impact projects distribution 2021/22



We identified broad categories and stakeholders told us which categories the projects we funded were contributing to. The main types of projects were focused on biodiversity, biosecurity and education, with several projects also focusing on collaboration and coordination.

Additionally, projects had more than one focus and contributed to multiple categories. Many projects have multiple funders, with Environment Canterbury funds covering particular aspects of an event or activity. For this reason it was not straightforward to identify outputs directly resulting from WAI funding, but the following is an overview of the activities supported.

The Waitaha Action to Impact (WAI) Fund

In 2021, Environment Canterbury created the Waitaha Action to Impact (WAI) Fund, for projects supporting building community engagement and action for a better environment. We allocated \$205,190 and 19 projects were funded in year one; with 14 of them receiving multi-year funding.

Year one projects achievements:

- Holding over 90 events or volunteer days.
- Weekly activities groups for children.
- Planting over 8,300 trees.
- Picking up around four tonnes of litter.
- Deploying over 140 new traps, and signing up 351 new households for Predator Free Port Hills (each receives a trap when they join).
- Checking traplines.
- Growing seedlings for future plantings.
- Creating or purchasing educational resources.
- Online directory/map that connects 311 community groups, and a calendar to publicise their events.
- Installing trail cameras to monitor traps.
- Undertaking surveys or research.
- Planning work to underpin future project implementation and community engagement.



Each line represents an individual foraging trip by a koraro (little blue penguin) – Kororo monitoring project.

WAI Fund year two allocations

In year two the available funding increased to \$600,000. We received 66 applications, totaling over \$1.3 million. Twenty applicants were selected to receive funding, in addition to the 14 projects already receiving multiyear funding. The successful applicants are listed below:

Zone	Grant recipient	Project title	Funding awarded
<i>Hurunui Waiau</i>	Hurunui Biodiversity Trust	Linking Community and Biodiversity Outcomes	\$20,000
Waimakariri	Te Kōhaka o Tūhaitara Trust	Tūhaitara Coastal Park rehabilitation	\$5,000
CHCH West Melton	Summit Road Society	Avoca Valley community engagement programme	\$6,000
	Christchurch Envirohub	Community-led mapping and directory	\$24,000
	Avon-Heathcote Estuary Ihutai Trust	Estuary restoration, protection and enhancement	\$30,000
	Port Hills Park Trust Board	Mt Vernon Park Enhancement project	\$10,000
	Opawaho Heathcote river Network	Ngā Puna Wai – restoring the mauri of urban freshwater springs	\$29,980
	Summit Road Society	Predator Free Port Hills	\$20,000
	Styx Living Laboratory Trust	Pūharakakanui Awa Freshwater Education & Awareness Project	\$20,000
	Richmond Community Garden Trust	Riverlution Evo Park rain gardens	\$11,100
	Sustainable Ōtautahi Christchurch	Speak for the Planet	\$5,000
	Christchurch Envirohub	Te Tuna Taone/Urban Eel	\$20,000
Banks Peninsula	Living Springs Trust	Living firebreak design for the Port Hills	\$14,850
	Hidden Valley Conservation Trust	Hidden Valley Conservation Quick Start	\$9,695
	Helps Pōhatu Conservation Trust	Kororā (little blue penguin) monitoring at sea	\$30,000
	Le Bons Bay Environmental Education Trust	Le Bons Bay Inanga Restoration project	\$6,000
	Ōtamahua/Quail Island Ecological Restoration Charitable Trust	Ōtamahua/Quail Island 2023 planting	\$5,000
	Wainui Residents Association	rewild Wainui, predator control	\$14,496
	Wairewa Rūnanga	Improving water quality and fisheries in Wairewa	\$30,000
	Banks Peninsula Conservation Trust	Feral Pig Control (Te Waihora catch-ments)	\$30,000
Selwyn Waihora	Arthur's Pass Wildlife Trust	Feral cat eradication	\$12,000
	Waimakariri Ecological and Landscape Restoration Alliance (WELRA)	Implementation of the Upper Waimakariri River Weed Control Strategy	\$24,000
	Craigieburn Trapping Alliance	Monitoring Project	\$2,586
	The Fantail Trust	Trapping and planting in the Rakaia Gorge	\$5,250
Ashburton	Bike Methven	Mt Hutt Forest Bike Park XC Rejuvenation Project	\$20,000
	Staveley Campsite Committee	Staveley Camp Forest regeneration project	\$30,000
Orari Temuka Opihi Pareora	Mackenzie Community Enhancement Board	Opihi River Revegetation project	\$16,560
	Orari River Protection Group Inc Soc	Trapping Predators and weed eradication	\$6,500
	Peel Forest Outdoor Pursuits Charitable Trust	Peel Forest river corridor trapping project	\$6,500
Upper Waitaki	Mackenzie Basin Wilding Trees Trust	Raising awareness of wilding conifer risk	\$10,000
Lower Waitaki	Hakataramea Sustainability Collective	Community Native Nursery, Biodiversity Education and River Protection	\$30,000
	Sustainable South Canterbury Trust	Eco Centre Launch and Progression	\$10,000
Regional	Braid	Braided River biodiversity restoration	\$24,000
	Sea Cleaners Trust	Sea Cleaners Lyttleton Activation	\$30,000

Muriwai o Whata bioblitz

More than 1100 observations of about 250 different species were claimed by members of the public at the Muriwai o Whata bioblitz event.

A bioblitz is a communal citizen-science effort to record as many species within a designated location and time period as possible.

Along with Te Rūnanga o Ngāi Tahu and Te Taumutu Rūnanga, we couldn't think of a better way to celebrate World Wetlands Day and biodiversity as a whole.

The event provided us with a snapshot of the environment, helping us protect and enhance this important area. Muriwai o Whata and the surrounding area is culturally significant for Te Taumutu Rūnanga, descendants of the great ancestors Ruahikihiki and his son Moki.

For Taumutu, Muriwai o Whata is the spiritual home of tuna/eels. Pūrākau/mythology refers to Muriwai o Whata being the first home of Tuna, who descended from the heavens as it was too dry and arid near the sun. Tuna resided in the hapua/lagoon for several years until one day he offended a local wahine.

Because of the offence, the locals were angry and set about to catch and kill Tuna, which they did. They cut Tuna up and cast his body parts into the ocean. These body parts then turned into different species of eels; such as the head of Tuna, which became the conger eel, and the tail became the lamprey.



Urtica was one of about 250 unique observations on the day.

Tuna/eel, kēkēwai/crayfish, pātiki/flounder and kōtuku ngutupapa/spoonbill are just some of the unique wildlife known to live in the area.

The iNaturalist app was used to capture the observations on the day. Our principal biodiversity advisor for wetlands, Jason Butt, said Muriwai o Whata is a treasured environment, but one that is not fully understood yet.

"We have a lot of gaps in our knowledge about what is actually here, in terms of plant species in particular. To inform our actions and next steps, we really want to start filling those gaps. Filling those gaps will help us understand what's here, and the food webs that exist currently.

"We have all this open water, which has aquatic plants in it, but it's also really important for invertebrates, fish, and birds," he said.



Click the image to see the video.

Biodiversity Project Effectiveness

A significant component of Environment Canterbury's biodiversity programme is on-the-ground projects in partnership with willing landowners, agencies, non-government organisations, rūnanga and others on private and public land. While Environment Canterbury provides regular reporting of project outputs and expenditure, reporting on the effectiveness of projects and the outcomes achieved has been limited. To address this gap, the Biodiversity Project Effectiveness Workstream provided an opportunity to monitor and reassess previously completed biodiversity projects.

Biodiversity projects were selected from projects four years prior, which allowed for the time lag factor between actions taken and the benefits being seen.

What was done

In 2022/23, 11 project sites were measured by experienced biodiversity staff for intermediate-term effectiveness, by assessing standardized outcomes for different actions (e.g. fencing, weed control, planting, animal pest control, mahinga kai). Additionally, the likelihood of longer-term effectiveness was measured by assessing a variety of factors (physical and ecological context and connectivity, and site management).

What we found

Over five years of the programme, the results have indicated that project effectiveness in the medium term was generally high and mostly on track to meeting the project outcomes. The long-term effectiveness has been assessed at a moderate to high likelihood of achieving a successful outcome. We also found that the projects with both legal protection, such as a covenant, and being actively managed by the landowner averaged higher scores for both intermediate and longer-term effectiveness.

Results

Year	Projects assessed	Site has legal protection	Site is actively managed	Average intermediate score (out of 5)*	Average long-term score (out of 3)**
2018/2019	12	7	4	4.0	2.6
2019/2020	13	3	12	4.1	2.4
2020/2021	15	9	11	3.7	2.4
2021/2022	15	5	15	4.1	2.4
2022/2023	11	7	10	4.3	2.5

* a score of 5 means that the outcome is met, there is a tangible positive outcome and there are no risks to achieving the outcome.

** a score of 3 means that there is a high likelihood of long-term effectiveness and no tangible negative impacts.

Coldstream creek and coastal wetland, Ashburton Zone

This project, at the coastal reaches of Coldstream Creek, north of the Rangitata River, protected and enhanced a stretch of the creek and a significant and at-risk coastal wetland. This was achieved by strengthening existing fencelines surrounding the creek and wetland, undertaking targeted weed control and a small amount of restoration by re-introducing native species to the wetland.

The effectiveness assessment showed an increase in vegetative cover along the riparian margins of the creek and an increase in certain areas in the wetland of harakeke. However, long-term outcomes will be challenged by invasive weed species and coastal erosion and inundation of stones and driftwood into the wetland.



Wetland Feb 2023. Note the loss of 1 metre from the coastal terrace and the inland extent of driftwood.

Biodiversity on our land

Environment Canterbury continues to lead by example and increases biodiversity protection on our land. Here are some examples of work on council-owned land:

Threatened native birds protected from predators in Waimakariri

Predator control operations and monitoring was carried out for black-billed gull, black-fronted tern and white-fronted tern nesting colonies in the lower Waimakariri River. An end-of operation report discussed factors influencing bird breeding success and recommendations for future work in predator control and monitoring.

Southern black-backed gulls are a major predator of other ground-nesting native birds. Baited poison was used as control, and 871 black-backed gulls were removed from the area over the course of the breeding season.

A temporary trapline was set up to protect a colony of black-billed gulls and white-fronted terns nesting from mammalian predators such as rats, hedgehogs, mustelids and cats. An additional temporary trapline was installed near a section of river known from previous years to support a relatively high population of nesting banded dotterel and wrybill.

Between September and January, seven hedgehogs, five weasels, two stoats and one rat were trapped.

Although not specifically targeted for control, Australasian harrier was noted as an additional threat to braided river nesting birds. The report also suggested that more research is needed into mice and their interactions with braided river birds.

Flood Events

There were four major flood events on the Waimakariri River over the course of the bird breeding season, the largest on 3 November 2022.

Monitoring nesting success of threatened braided river birds

Banded dotterel

Seven breeding nests of banded dotterel were monitored over the breeding season. Three of the monitored pairs successfully fledged a total of four chicks. Two nests failed, likely due to predation, one was predated by a harrier, and the last nest was washed out in the November 2022 flood event.



Wrybill

Four wrybill breeding nests were monitored. Two were washed out in floods and eggs/chicks lost. One nest with a single egg was abandoned, probably following embryo death in an early October cold snap. One monitored breeding pair successfully fledged a single chick.

Black-fronted tern

Four black-fronted tern breeding colonies were monitored, but two of these were washed out early in the breeding season. Nests of five black-fronted tern breeding pairs were monitored from within the two remaining colonies. Two of the monitored nesting pairs successfully fledged one chick each; two nests failed during incubation, probably due to human disturbance; another nest was abandoned. A further three chicks were observed to fledge successfully from these colonies, in addition to the two recorded from monitored individual nests.

Black-billed gull

One black-billed gull colony was monitored. This colony began to establish prior to the large November flood. Early nesters failed due to flooding, but the colony re-established later in the month and grew to about 300 breeding pairs in December. The first chick in the colony was observed on 23 December, with the highest numbers of chicks (11) recorded on 30 December. The colony's first fledged chick was observed on 3 January. However, over the following week the colony was disturbed by humans, abandoned and no other chicks were fledged.

White-fronted tern

Approximately 30 breeding pairs of white-fronted tern established nests within the black-billed gull colony described above. Again, only one white-fronted tern chick was observed to successfully fledge before the colony was abandoned due to human disturbance.

Conclusion

The 2022-23 season was difficult for threatened birds breeding on the lower Waimakariri River. While predator control efforts focused on southern black-backed gulls, hedgehogs, mustelids and cats, monitoring showed that other predators also had an impact on breeding success.

Monitoring showed flooding and human disturbance were significant factors in the generally low level of threatened bird breeding success recorded.



Kowhai Bush Kaikoura South Island Robin. Photo credit: Heath Melville

Kōwhai Bush predator control for populations of native forest birds

Kōwhai Bush is an ecologically significant area within council administered river protection reserve land south-west of Kaikōura.

Native forest birds living in Kōwhai Bush are threatened by mammalian predators and their forest habitat is threatened by invasive weeds. Since 2015, we have undertaken monitoring and intensive predator and weed control to protect the flora and fauna of the reserve.

Monitoring mammalian predator numbers showed initial control efforts had reduced their populations. Current trapping efforts appear to be keeping numbers of some pest species in check, in particular, cats and mustelids. But numbers of other species appear driven by factors other than council control efforts, such as weather conditions and food supply.

Previous native forest bird monitoring suggested predator control had increased nesting success. By contrast, South Island robin numbers appear to have increased since pre-2015 and remain relatively stable over the last three years.

Comparisons between counts have previously been difficult due to a lack of monitoring consistency. A more rigorous monitoring programme has been in place for the last two seasons for South Island robin, including banding and annual counts.

Over time this new monitoring programme will provide more data on abundance, breeding success and survival of this species at Kōwhai Bush and allow for analyses relating to predator catch data.

Weed control will require increased resourcing, particularly if further areas are retired from grazing and are anticipated to require subsequent and additional weed control. Another potential issue is the impact of browsing mammals (ungulates, pigs, possums) on native vegetation. Further monitoring of browsing mammal impacts is also required, and control may become necessary.

Kaikōura river protection reserves

Weed control sites were focused on native forest areas in Kōwhai Bush, Waimangarara River and Luke Creek river protection reserves. The programme involved containment control of old man's beard; together with eradication of isolated infestations of banana passionfruit at Luke Creek and giant Himalayan lily in Kōwhai Bush and Luke Creek. Weed control at these sites was greatly extended by the Kaikōura berm transition project which saw control of pest weed and tree species over an additional 180ha.

West Melton reserves

The West Melton reserves contain ecologically significant dryland vegetation and habitats for indigenous fauna on land that was formerly part of the Waimakariri River braidplain. In 2022-23, invasive shrub weeds and tree weeds were controlled at sites managed for dryland ecological values.

Otukaikino reserves

Grey willow was controlled within a spring-fed stream and associated wetland tributary of the Otukaikino River, downstream of the Dickey's Rd bridge.

Ahuriri Reserves

Ecologically important freshwater wetland habitats are present in the Ahuriri Reserves on the true left side of the Halswell Canal, near Motukarara where native wetland vegetation has naturally re-established following removal of stock grazing. In 2022-23 grey willow saplings and yellow flag iris had been spreading within raupō and were controlled.

Kaitorete lakeshore

Scattered infestations of the following weed species were controlled in saltmarsh wetland and adjoining dryland habitats: gorse, broom, sweetbrier, tree lupin, ice plant, boxthorn and apple.

Stour River

The Stour River reserve is near the confluence with the South Ashburton. Weed works here involved containment control of Scotch broom infestations together with control of scattered tree and shrub weeds: sycamore, rowan, elm, tree lupin and cut-leaved blackberry.

Biodiversity partnerships

Partnership Programmes

The Partnership Programmes team delivers operational programmes in partnership with mana whenua and other organisations. There are four programmes managed by the team – Te Mōkihi (Mackenzie Country), Whaka-Ora Healthy Harbour (Lyttelton Harbour), Whakaora Te Waihora (Lake Ellesmere), and Fish Screens.



Conservation Volunteers NZ contributed to the community trapping programme.

Whaka-Ora Healthy Harbour programme

Now in its fourth year, the programme is a catchment-wide focused programme to restore the mauri of Whakaraupō/Lyttelton Harbour. Multiple restoration projects are underway, with many community-led projects focused on planting, pest control and pest plant removal.

Kaimahi for Nature, led by Te Rūnanga o Ngāti Wheke is a large project of habitat enhancement and revegetation of Rāpaki land, while also supporting 10 additional sites across the catchment to help local community activity.

A new animal pest project, called WOPP, now has a coordinator employed by Conservation Volunteers NZ, partially funded by the programme to manage community trapping. This year, the programme has also funded Conservation Volunteers NZ for 40 days to bring in volunteers for harbour-wide weed and plant control. Projects to improve fish passage and the marine environment are also underway.

Fish Screens programme

Fish screens prevent fish from entering places they aren't supposed to be in, such as stock drinking water and irrigation networks. We have improved internal compliance processes, with the aim to guide consent holders to upgrade or replace their fish screens, so that both indigenous and exotic fish species are better protected. It is intended that these compliance processes include mātauranga Māori.



In-field monitoring of a fish screen.

Whakaora Te Waihora programme

Whakaora Te Waihora is an operational programme of the Te Waihora Co-Governance, with the long-term goal to restore and rejuvenate the mana, mauri and ecosystem of Te Waihora/Lake Ellesmere (www.tewaihora.org). Some significant projects being led or supported are: Whakaora Te Waikēkēwai, restoring the mid-lower reaches of Te Waikēkēwai/Waikēkēwai Stream; Whakaora Te Ahuriri, the restoration of Ahuriri Lagoon; co-funding the Weed Strikeforce, controlling willows and woody weeds enabling the regeneration of lakeshore habitats; and, convening the Whakakōhanga Kōrero forum, to nurture conversations and cooperation to progress the restoration of Te Waihora.



An on-site hui to design the Te Repo o Papatahara wetland adjacent to the Ngāti Moki marae, for the Whakaora Te Waikēkēwai project (in the Whakaora Te Waihora programme).

Pest Free Banks Peninsula Te Pataka o Rakaihautu

Pest Free Banks Peninsula (PFBP) is a collaborative and community-led programme to protect and enhance biodiversity on Banks Peninsula, the Port Hills and Kaitorete through widespread elimination of animal pests.

The programme originated in the Banks Peninsula Conservation Trust's Ecological Vision 2050 and was formalised through a Memorandum of Understanding signed by 14 foundation signatories, including Banks Peninsula Conservation Trust, Environment Canterbury, Christchurch City Council, Selwyn District Council, Department of Conservation, Rod Donald Banks Peninsula Trust, Summit Road Society, The Cacophony Project, Living Springs, and the five Banks Peninsula Papatipu rūnanga: Ōnuku rūnanga, Te Taumutu rūnanga, Wairewa rūnanga, Te Rūnanga o Koukourārata, and Te Hapū o Ngāti Wheke (Rāpaki) Rūnanga.

The dominant goal of the programme is to progressively eliminate mammalian pests from the peninsula and Kaitōrete while continuing to protect existing biodiversity. Within this goal are several objectives which make up the current work programme.

Objective 1

Eradicate feral goats from the Peninsula by 2024 and develop a control programme for feral pigs.

Objective 2

Eliminate possums from the Extended Wildside by 2026 whilst also suppressing stoats and feral cats.

Objective 3

Commence expansion of Extended Wildside elimination programme by 2026.

Objective 4

At least 3000 households participate in backyard trapping on the Port Hills by 2025.

Objective 5

Possum, rat, feral cat, hedgehog and mustelid populations are reduced to low levels in 1,000ha of the southern Port Hills biodiversity hub by 2024.

Objective 6

Eliminate possums, mustelids, hedgehogs and feral cats from Kaitōrete by 2025.



The two priority areas for the programme over the past year has been the mustelid, hedgehog and feral cat eradication from the 5,000 hectare Kaitōrete area and the possum elimination in the 23,000 hectare Extended Wildside area which stretches from the Akaroa Heads north to Okains Bay. Support has been provided to catchment groups in the Extended Wildside for trapping of mustelids and possums. Additionally, feral goats have been targeted and eradication operations have occurred in the McQueens and Prices Valleys, and good progress has been made following the formation of a feral pig committee with surveillance and trapping of hundreds of animals. This has only been made possible with the funding and efforts of the landowners along with the agencies, Rod Donald Trust and BPCT.

For more information, [read more here](#).





Image above: Banks Peninsula

A hedgehog-free Kaitōrete thanks to conservation dog

Pest Free Banks Peninsula (PFBP) have shown that hedgehogs can be removed from Kaitōrete, one of two project elimination sites for the programme. It is believed this is the first time a proof of concept has been achieved on mainland New Zealand and outside of a fenced sanctuary.

A three-step detection method was used to determine the area was free of hedgehogs. This included an array of leghold traps and trail cameras, followed by a number of sessions with the programme's hedgehog conservation dog, Nightshade.

Nightshade consistently picks up hedgehogs in front of the programme's trapping network, but zero detections behind it. PFBP dog handler Karin Bos explains.

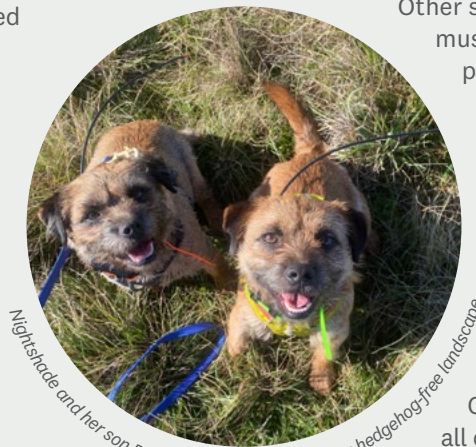
"Nightshade showed no sign of hedgehogs within the containment zone of 45 ha on any of the passes through the site. With nothing in the leghold lines either or showing up on cameras, we are confident there are no remaining hedgehogs in this area."

PFBP Senior Team Lead, Tim Sjoberg agrees. "Dogs' sense of smell is so sensitive that the possibility of the highly trained dog missing a hedgehog on multiple passes is remote".

They have achieved this milestone through an intensive trap network, using a mixture of live capture traps and kill traps, to target a range of pest species under the elimination strategy.

Other species targeted on Kaitōrete include mustelids (weasels, stoats and ferrets), possums and feral cats. With the network beginning at the western end, they have progressively moved the traps eastward, as an area is cleared. The backdoor from the west has been closed with a network of traps and an active fence system.

With PFBP's partners, the Department of Conservation, Christchurch City Council and Environment Canterbury, all contributing to research and control on Kaitōrete, and support from papatipu rūnanga, community groups and landowners, this is a programme that has serious backers in the pest-free movement.



Nightshade and her son Bob are both contributing to a hedgehog-free landscape.

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