



Image: Kororā (Little blue penguin)



# Biodiversity snapshot

## 2020/21

Essential to thriving nature is thriving biodiversity. Having environments that are rich in biodiversity means that nature can better provide the benefits we rely on. However, our indigenous biodiversity continues to be affected by humans and continues to decline across Canterbury and Aotearoa New Zealand.

The common threats to biodiversity in Canterbury remain introduced pests and continuing land use change and intensification. While some of the most important ecosystems and habitat are found in public conservation land, much of Canterbury's remaining indigenous biodiversity is on privately owned land. In response, Environment Canterbury has a regionally coordinated biodiversity programme which seeks to ensure that the decline is halted and indigenous species, habitats and ecosystems are supported to thrive. Partnerships and collaboration between landowners, communities and public agencies are critical to its success.

Our priority is to focus first on protecting and maintaining what remains, and our guiding principles – how we work – follow four tenets: action for priority ecosystems; smart information and management; working with others; and leading by example/our land, our people. These principles are all considered in how we initiate, develop, implement, and monitor biodiversity projects in Canterbury.



Image: Predator traps for protection of long-tail bats in Geraldine. Credit: Tony Doy.

## Working with the community

This year, the Community Partnerships programme continued working hand in hand with our community to build on the capacity and capability development of community organisations that has occurred over the past few years. Our community organisations continue to deliver projects that improve their local environment through education, collaboration and on-the-ground action.

### Key achievements

- The Networking for the Environment programme delivered hui that focused on intergenerational leadership, how to access and apply for funding, why councils' long-term plans matter, and telling your environmental story. The programme includes key central and local government partners and community organisations.
- Five community predator trapping projects were funded to protect high value biodiversity areas.

The projects sought to protect long-tail bats in Geraldine, forest birds in the Mt Oxford Foothills, shorebirds in Kaikoura, wetland birds in Kaiapoi, and several species in the Rakaia River Gorge.

- Provided financial support for a Kororā (little blue penguin) population survey on Banks Peninsula, carried out using citizen science and new app technology.

# Key project data 2020/21

Over the 2020/21 financial year the Regional Biodiversity team and Zone Delivery biodiversity officers delivered projects that had specific biodiversity outcomes.

The development and delivery of these projects closely aligned with Environment Canterbury’s 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 lead climate change resilience.

## Braided rivers

● completed ○ ongoing

## Other water bodies

● completed ○ ongoing

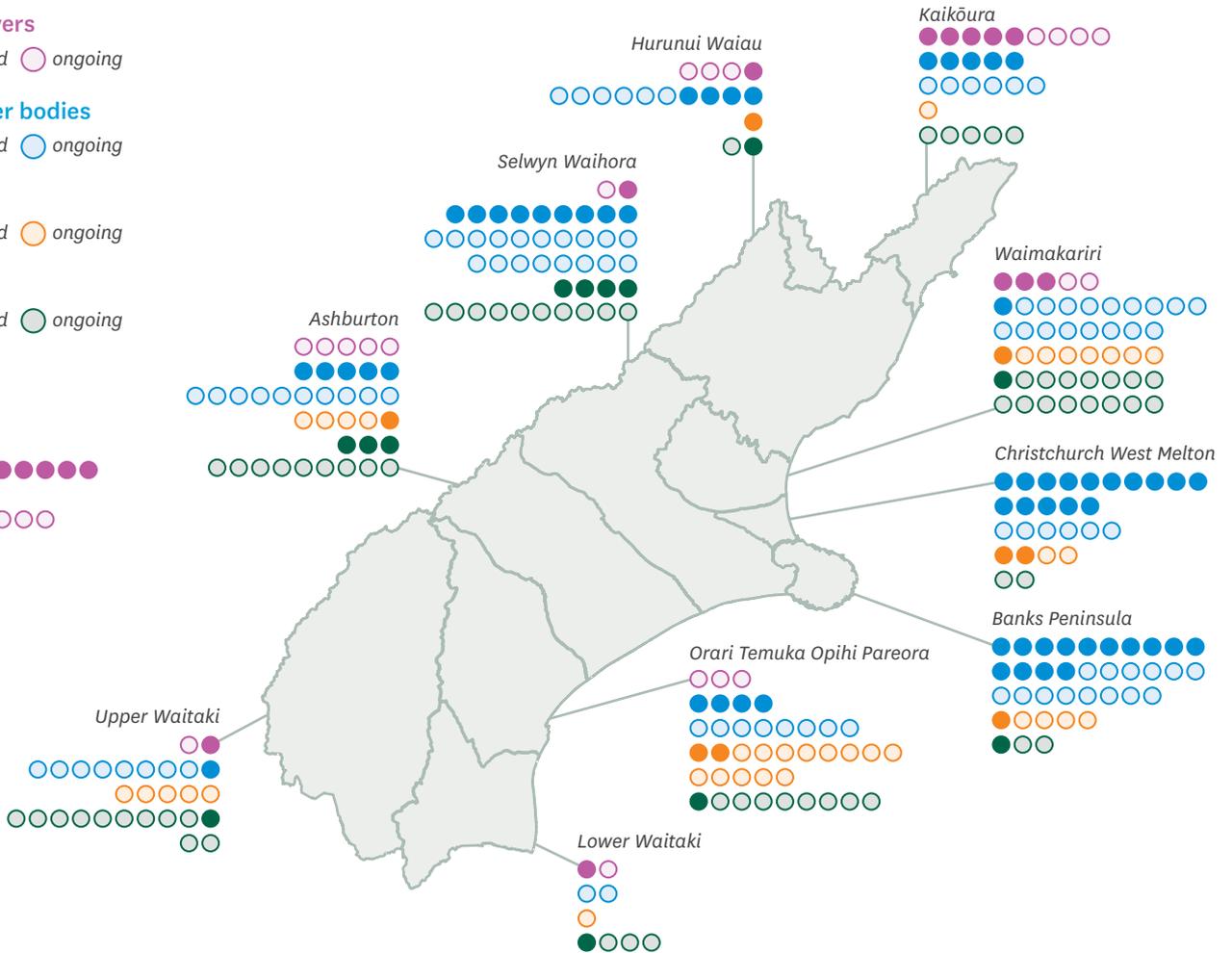
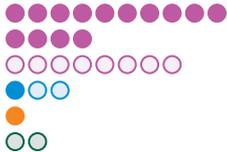
## Terrestrial

● completed ○ ongoing

## Wetlands

● completed ○ ongoing

## Regional



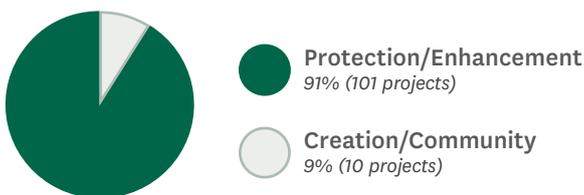
Total completed projects (111)



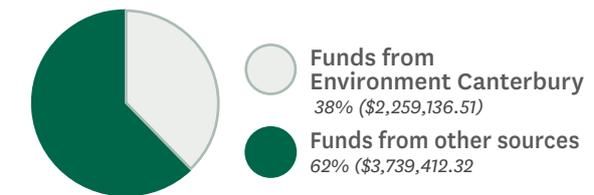
Total ongoing projects (231)



## Nature of projects 2020/21



## Funding source of projects 2020/21



Planting area  
**36 ha**



Number of plants  
**75,319**



Length of protective fencing  
**38,737 m**



Area fenced  
**162 ha**



Weed control  
**110,593 ha**



Fish habitat improved  
**6,203 m<sup>2</sup>**



Natural fish passages enabled  
**2**



Pest control area  
**179,275 ha**

# Biodiversity project effectiveness

A significant component of the biodiversity programme is the delivery of on-the-ground projects in partnership with willing landowners, agencies, NGO's and others on private and public land. While Environment Canterbury provides regular reporting of the 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 provides an opportunity to monitor and reassess previously completed biodiversity projects.

Each year completed biodiversity projects were randomly selected from three to four years prior, which allowed us to address the time lag factor between actions taken and the benefits being realised.

## What we did

Each project site was measured by experienced biodiversity staff for intermediate-term effectiveness by assessing standardised outcomes for different project actions (e.g., fencing, weed control, planting, animal pest control, mahinga kai) and for the likelihood of long-term effectiveness by assessment of a variety of factors (such as physical, ecological context and connectivity, and site management).

## What we found

Over a period of three years the results indicated that the effectiveness of biodiversity projects in the medium-term were generally high and mostly on-track to meeting the project outcomes, and that the longer-term effectiveness of the projects possessed a moderate to high likelihood of achieving a successful outcome. What was apparent is that the risk of not achieving the project outcomes is very closely linked to the lack of active management at the project location by the landowner or grant recipient. This information helps Environment Canterbury to ensure that there is ongoing maintenance of the project written into the contractual agreement between council and the landowner/grant recipient.

## 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

\* 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

## Project effectiveness case study – Deep Stream

This project was an extensive protection and restoration project of a large wetland and several spring-fed branches of Deep Stream, mid-Canterbury in the Orari Temuka Opihi Pareora Water Management Zone. The project area included public conservation land and private ownership. The project works involved willow removal and control along 18km of stream; willow control in 35ha wetland; fencing across 14.8km to exclude stock access and native riparian planting to support native regeneration. Works commenced in 2011/12 and finished in 2014/15. Environment Canterbury contributed \$80,000 to the \$285,000 project.

The project effectiveness assessment was carried out in July 2019 and scored highly for both intermediate-term effectiveness and likelihood of long-term effectiveness, and specifically meet the project outcomes developed by the landowner, Fish & Game, and Environment Canterbury. The assessment noted that the site undergoes regular maintenance of willow regrowth and new invasions, and identified several further recommendations regarding the ongoing challenges that the landowner faces, specifically regarding other invasive weeds such as grey willow.



Image credit: Hamish Stevens and Frances Schmechel

## Case studies

The below highlights just some of the amazing on-the-ground work that has occurred in our priority areas to improve habitat for our native species.



### Braided rivers

#### Ashburton River/Hakatere

The Ashburton River/Hakatere is a nationally important habitat for braided river birds and this year the focus was on implementing the river management strategy, including signage and improving the facilities and management at the river mouth. The community assists with predator trapping and are regularly updated on monitoring results and actions.

Predator control is also ongoing at two other locations on the river near the SH1 bridge and above the gorge. The work here is showing promising results as monitoring surveys indicate that the nationally vulnerable banded dotterel population has increased in the upper river.



Image: Ashburton River/Hakatere  
Credit: Andrew Crossland

The work across the Ashburton River/Hakatere is guided by a management strategy, along with engagement with the community, and is carried out in collaboration with agencies and community groups.

#### Upper Rangitata – Tōrea/South Island pied oystercatcher project

A pilot study launched by Manaaki Whenua/Landcare Research, and partially funded by Environment Canterbury, in the upper Rangitata to test tracking methods and determine the survival and migration patterns of Tōrea/South Island pied oystercatchers revealed new information on the fate of their nests and chicks, and where they migrate to post-breeding.



Image: Tōrea/South Island  
Pied Oystercatcher

Tracking has indicated some of their key flyways and the extent of a North and South Island habitat network that supports their wintering. This new knowledge is already linking the kaitiaki of South Island braided rivers, coastal harbours, and the flyways between them.

GPS tags have also provided valuable insights into migration timing, duration, stop overs and flyways, which has linked breeding and wintering sites. In the long-term, they will also provide data on survival, particularly fledglings.



### Wetlands

#### Immediate Steps wetland projects

During the 2020/21 year, there were 12 wetland projects completed through Environment Canterbury's Immediate Steps Biodiversity programme. In total, the on-the-ground actions for these projects resulted in planting over 17,000 native species across more than 15 hectares, and over 955 hectares of weed control.

#### Pigeon Bay Raupō wetland

Two of our farming leaders, Hugh and Jane Eaton of Pigeon Bay, completed a 1.0 ha fence around their 0.3 ha wetland and adjacent secondary forest, in addition to native restoration planting at the edge of the wetland. Since stepping forward as one of the wetlands demonstration site owners, the project has grown from physical protection and enhancement

to encompass formal legal protection via a Banks Peninsula Conservation Trust covenant to protect the wetland in perpetuity.

#### Managing Wetlands as Farm Assets project

The programme continued into its second year with support from Environment Canterbury, NZ Landcare Trust and other primary industry stakeholders. The programme confirmed the 14 sites with wetlands on actively managed farms and continued to work with those landowners to develop appropriate actions to protect and restore the wetlands. Led by the landowners, five field demonstration days were held. On-the-ground actions have been implemented at three of the sites, and design is progressing on a constructed wetland, chosen as a site to further demonstrate their function on working farms.

## Terrestrial

### Partnering with Christchurch City Council for Banks Peninsula weed control

Environment Canterbury provided ongoing funding towards the Christchurch City Council programme to contain and control the spread of spur valerian across the rock outcrops and coastal cliffs of Banks Peninsula. Through the programme, major populations of spur valerian have been identified and surveyed, control measures are occurring, and monitoring has shown a reduction in the numbers. The next steps for the programme is to continue the control of the identified spur valerian populations, and to continue educating landowners.

### Kakahu Bush predator control update

Predator control has been carried out at Kakahu bush for the last 16 years with the main purpose being to protect a colony of Long-tailed bats (*Chalinolobus tuberculatus*).

In 2020, predator trapping continued on a monthly basis with the addition of an annual poisoning programme, the first of which was completed in August 2020 and again in June 2021.



Image: Long-tailed bat  
Credit: Kirsty Myron, iNaturalist

Possum abundance monitoring was completed in November 2020 which showed a decrease in numbers from 2019. This monitoring will be completed again in 2021 to gauge if numbers are continuing to decrease.

## Fish habitat

### Finding barriers to fish passage

Between November 2020 and January 2021, our summer students assessed nearly all Environment Canterbury owned in-stream structures for barriers to fish passage, where fish habitat is available upstream. This initial assessment has informed the development of future fish passage work programmes and will assist in meeting the requirements of central government's Essential Freshwater package, specifically to ensure structures do not impede the movement of native fish in our waterways.

While the Department of Conservation (DOC) continue to monitor bats in the wider area (the results are not yet available) a 2020 report received from DOC has shown that a by-product of the predator trapping has meant indigenous bird numbers from twenty species have nearly doubled over a period of twenty years.



Image: Sentinel Traps used in Kakahu



#### Legend

- Trap waypoints (221)
- Rat (4)
- Rabbit (1)
- Possum (14)
- Hedghog (3)
- Port Blakely Traps (24)

Many of Canterbury's indigenous fish species are classified as threatened or at risk of extinction and need to be able to access feeding and spawning sites to maintain viable populations.



Image: Kōwaro/Canterbury mudfish (threatened, nationally critical)

# Biodiversity on our land

Environment Canterbury continues to lead by example and increase biodiversity protection on our land. Examples of operational project work on Environment Canterbury-owned land:

## Environmental weed control and predator trapping in native forest, Kaikoura River Protection Reserves.

Weed control was undertaken at the Kowhai Bush, Luke Creek and Waimangarara River reserves, where the focus was to control pest species that were changing the structure of the forest. Predator trapping continues to be undertaken at Kowhai Bush with the aim to protect populations of rifleman and South Island robin. However, recent monitoring indicated that while nesting was successful for rifleman, their overall numbers within Kowhai Bush are in decline.



A South Island robin tagged June 2021. Credit: Jean Jack.

## Fencing to protect sensitive native dryland shrubs and trees from stock and wild animal browse, West Melton Reserves.

Rabbit-proof fences were installed on both sides of the Waimakariri River to protect various dryland remnant populations of threatened, locally uncommon or iconic species.

## Native lizard habitat enhancement, West Melton Reserves.

Enhancement included the construction of predator proof fences, the installation of habitat in the form of rock piles, and predator control.

## Environmental weed control in dryland and wetland habitats, Kaitorete Spit

Control of established and novel weeds in wetland and dryland lakeshore habitats, including common gorse, broom and not so common sweet briar, iceplant, and African boxthorn. This work is to protect the now retired lakeshore habitats from establishing weeds.

## Retirement of grazing licenses

Several reserve grazing land licenses were retired in the Ashburton area as a first stage towards permanent forest establishment

## Control of shrub and tree weeds in native dry shrubland, Stour River reserve, South Ashburton River.

Grazing was removed from the 17ha site to protect the remaining native shrubland, tussockland and groundcovers, and associated native fauna. Weed control of various species, including gorse and Douglas fir, has been periodically undertaken to maintain these values.

## The Whakaora Te Waihora programme, Te Waihora/Lake Ellesmere

This programme continues to deliver projects that contribute to improving the biodiversity values in and around Te Waihora/Lake Ellesmere. These include the Whakaora Te Waikēkēwai project that is co-managed with Te Taumutu Rūnanga and has secured \$4.16 million to restore a whole waterway; a trial re-establishment of macrophytes/water plants in Te Waihora that previously provided important habitats for aquatic species; co-funding the Weed Strikeforce; the Whakaora Te Ahuriri project that has created a constructed wetland over four hectares and has already increased aquatic and terrestrial biodiversity; and the Whakakōhanga Kōrero forum that is bringing together key stakeholders in order to be more strategic and effective in restoring Te Waihora.

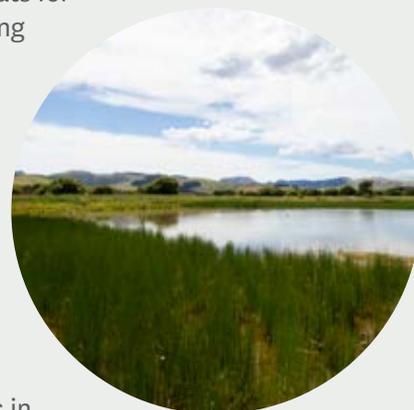


Image: Ahuriri Lagoon

## Weed control in the Ahuriri reserves, Halswell River.

There has been around five years of sustained grey willow control within the main raupō stands and willow forest in this series of extensive wetland on the left of the Halswell River.