Otago Regional Council

Biodiversity

- Freshwater biodiversity
  - Pete Ravenscroft and Ciaran Campbell
- Coastal and marine ecosystems
  - Dr Sam Thomas
- Wetland biodiversity and ecosystems
  - Dr Sami Khan
- Terrestrial biodiversity and ecosystems
  - Dr Scott Jarvie



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Purpose

Highlight community involvement and associated non-regulatory work of ORC's biodiversity scientists

Delivering Biodiversity Outcomes Through Science, Partnerships and Non-Regulatory Actions

REGULATORY APPROACH

Paint by numbers



Necessary structure.
Sets the boundaries.
But on its own, it can be limited.

+

NON-REGULATORY APPROACH

Adds depth, detail and colour



Builds understanding.
Creates support.
Adds the finer details.

=

TOGETHER

A masterpiece for a healthier environment



Regulatory and non-regulatory approaches work best together — creating lasting environmental outcomes.

More than the sum of the parts

Healthy Environments Brighter Tomorrows

Indigenous Biodiversity Strategy on a page

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Long-term vision

Ki uta ki tai, our awa connect our mountains and great lakes to our beautiful coastline and ocean depths, reflecting the mauri of te taiao. Mana whenua as kaitiaki and our communities as stewards work together to achieve healthy, thriving and resilient indigenous biodiversity across our region's catchments, coast and ocean, so that both nature and people can thrive.

The problem

We are not on track to maintain Otago's indigenous biodiversity due to pressures including invasive species, habitat loss, pollution, and climate change. These pressures are made worse by division of roles and responsibilities, limited resources and knowledge, and a growing disconnection from nature. However, groups, individuals and businesses are already making a difference across Otago. We can build on this momentum so that both nature and people can thrive.

Why this is important

People are part of the natural world, and indigenous biodiversity underpins life, culture, and livelihoods in Otago. Our wellbeing is tied to the health of native species and ecosystems. For Kāi Tahu, this connection is grounded in whakapapa and the exercise of kaitiakitaka. Indigenous biodiversity holds its own intrinsic value and is deeply connected to our identity and sense of place. A future where indigenous biodiversity thrives will support the wellbeing of people and communities across Otago.

Outcomes

What we're aiming to achieve by 2040 or earlier

1. Indigenous biodiversity is maintained and resilient	2. Indigenous biodiversity is enhanced strategically	3. Mana whenua are supported to exercise kaitiakitaka	4. Communities are empowered as stewards	5. ORC is leading proactive responses to emerging issues	6. The decline of indigenous species and ecosystems is reversed

Principles

How we'll work

Mauri — Prioritising the mauri, intrinsic value and wellbeing of indigenous biodiversity.

Ki uta ki tai — Managing the environment as an interconnected system. Adopting catchment-scale approaches, and align efforts across land, freshwater, coast and marine environments. Creating connections with and among our communities.

He awa whiria — Applying mātauraka Māori, science, and community knowledge as distinct and complementary sources of knowledge.

Kotahitaka — Valuing relationships and being purposeful about how we work together.

Strategic Pou

What we'll do across our biodiversity and biosecurity work

1. Focus action to maintain and enhance — *Tiaki me te Whakahaumanu*	2. Empower action — *Whakahau*	3. Get the system right — *Tūāpapa*
1. Identify indigenous biodiversity focus areas. 2. Partner with mana whenua to ensure the sustainability of taoka species and their habitats, and mahika kai (gathering of food and other natural resources). 3. Work with communities to create landscape-scale visions for maintenance and enhancement of indigenous biodiversity. 4. Promote and fund actions to achieve the above, monitor the outcomes, and continuously improve. 5. Monitor for emerging pests and other threats to indigenous biodiversity and respond effectively.	1. Partner with mana whenua on action. 2. Connect people to local indigenous biodiversity to inspire action. 3. Share knowledge and build capability to enable action. 4. Collaborate with those leading action in the community. 5. Build on mana whenua, landowner, and community best practice. 6. Share information about where action is and isn't happening. 7. Co-design solutions with our communities and coordinate action.	1. Strengthen leadership and collaboration on shared interests with central government and councils in partnership with mana whenua. 2. Explore incentives and co-investment models and encourage investment and innovation to support maintenance and enhancement. 3. Monitor the status and trends of indigenous biodiversity. 4. Make sure that plans and decisions contribute to the maintenance and enhancement of indigenous biodiversity.

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Freshwater biodiversity

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Freshwater programme

Non-migratory galaxiid restoration programmes

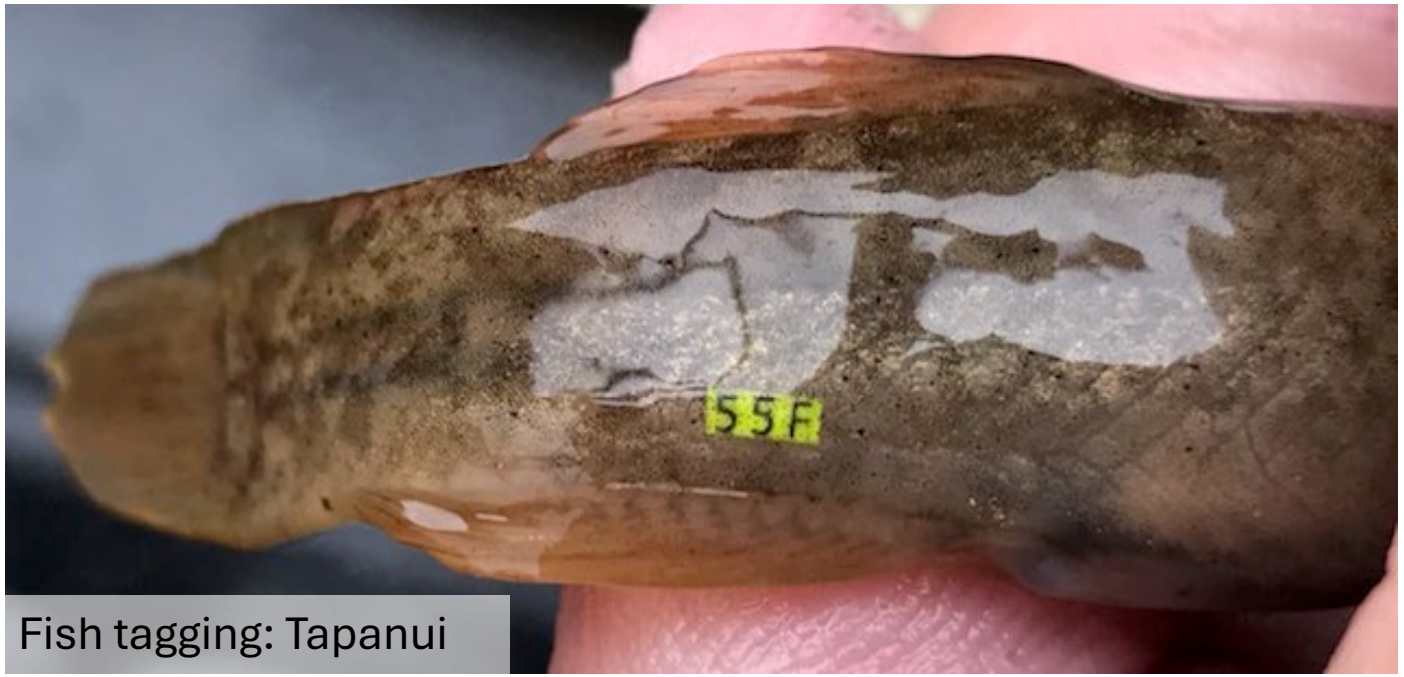




Pleasant River: before



Pleasant River: after



Fish tagging: Tapanui

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Supporting community initiatives

- Fish passage:
  - Pleasant River culvert
- Galaxiid monitoring:
  - Tapanui galaxiids
  - Low Burn galaxiids
- Fish surveys:
  - Cluden Station
  - Matakanui Station
  - Low Burn Station
  - Thomsons Creek catchment
  - Beaumont Station





Boundary Creek	Trout removed	Size ranges
2021-2022*	476*	30-240 mm
2022-2023	2093	75-190 mm
2023-2024	681	80-190 mm
2024-2025	27	95-200 mm
2025-2026	13	150-180 mm
Total:	**3290**	

*feasibility study

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Supporting community initiatives

- Thomsons Creek:
  - Mainstem barrier
  - Perched culvert
- Trout removal:
  - Kye Burn Catchment Group:
    - Boundary Creek
    - Pisgah Creek
  - East Otago Catchment Group:
    - Pigroot Creek
    - Siberia Creek





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Taieri Scroll Plains - willows

- Working with Tiaki Maniototo to address willow encroachment throughout the catchment.

- Progress to date:
  - Funding secured
  - Willow infestation mapped
  - Management plant developed, including detailed cost estimates for implementation
  - Commitments from local landowners to support the project

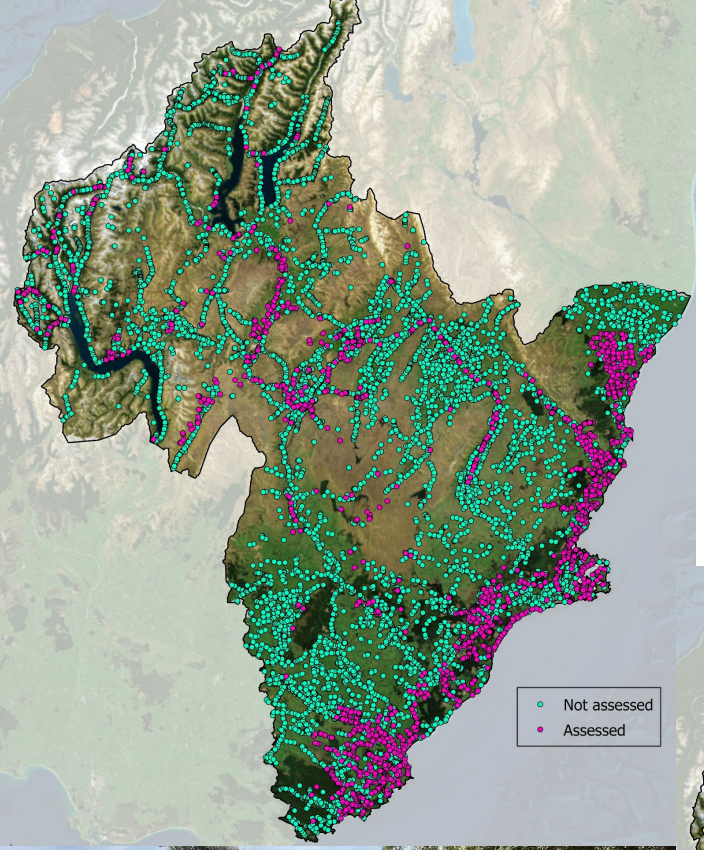


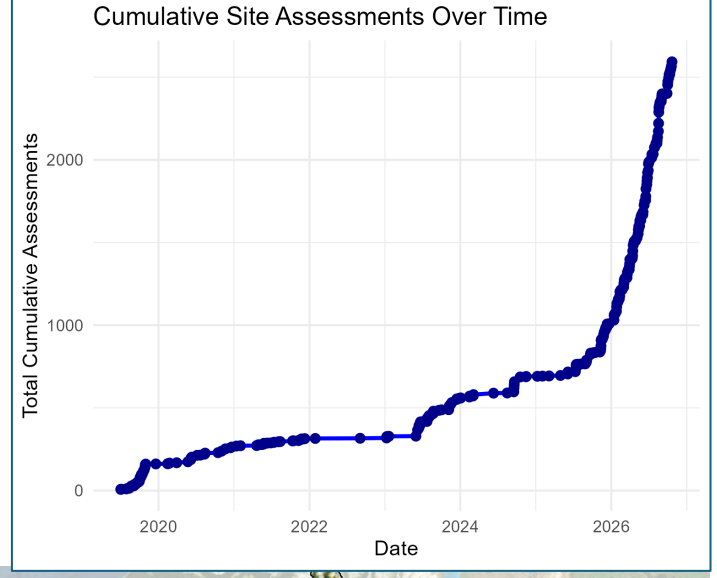


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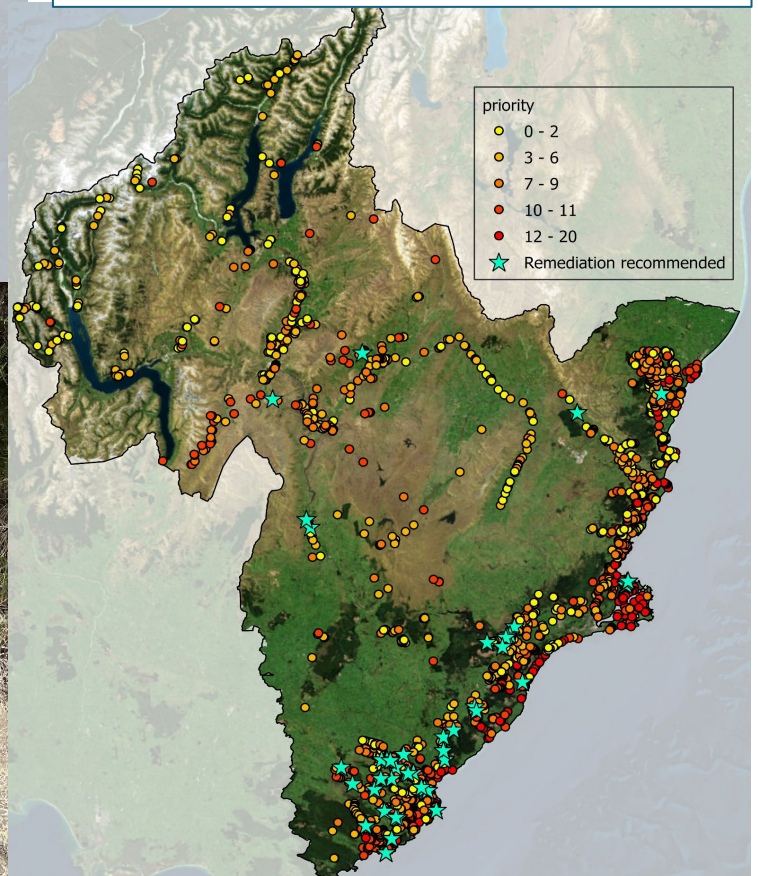
Kakanui River whitebait spawning habitat

- Documented since 1996.
- Spawning occurs within riparian vegetation margins
- Working with NoSlam to maintain the spawning habitat by controlling woody weeds






Coutts Gully wetland



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Fish passage

- National fish passage database holds records for ~150,000 structures, ~15,000 (or 10%) are in Otago.
- Ground-truthing involves visiting structure and assessing fish passage risk. This updates the national database.
- In Otago, 2593 structures have been visited.
- Remediation recommended = 52 structures.
- FPAT priority scores help to focus discussions.



Provide passage: Watkins Creek



Protect threatened species: Swin Burn

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Fish passage continued

- Work with structure owners
- Strategically, using prioritisation scores
- Opportunistically, working within routine maintenance/replacements
- Working with catchment groups, community groups, stakeholders, and landowners to continue inspections and discuss opportunities for providing passage
- Opportunities to protect/recover threatened species by preventing passage

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Coastal and marine ecosystems



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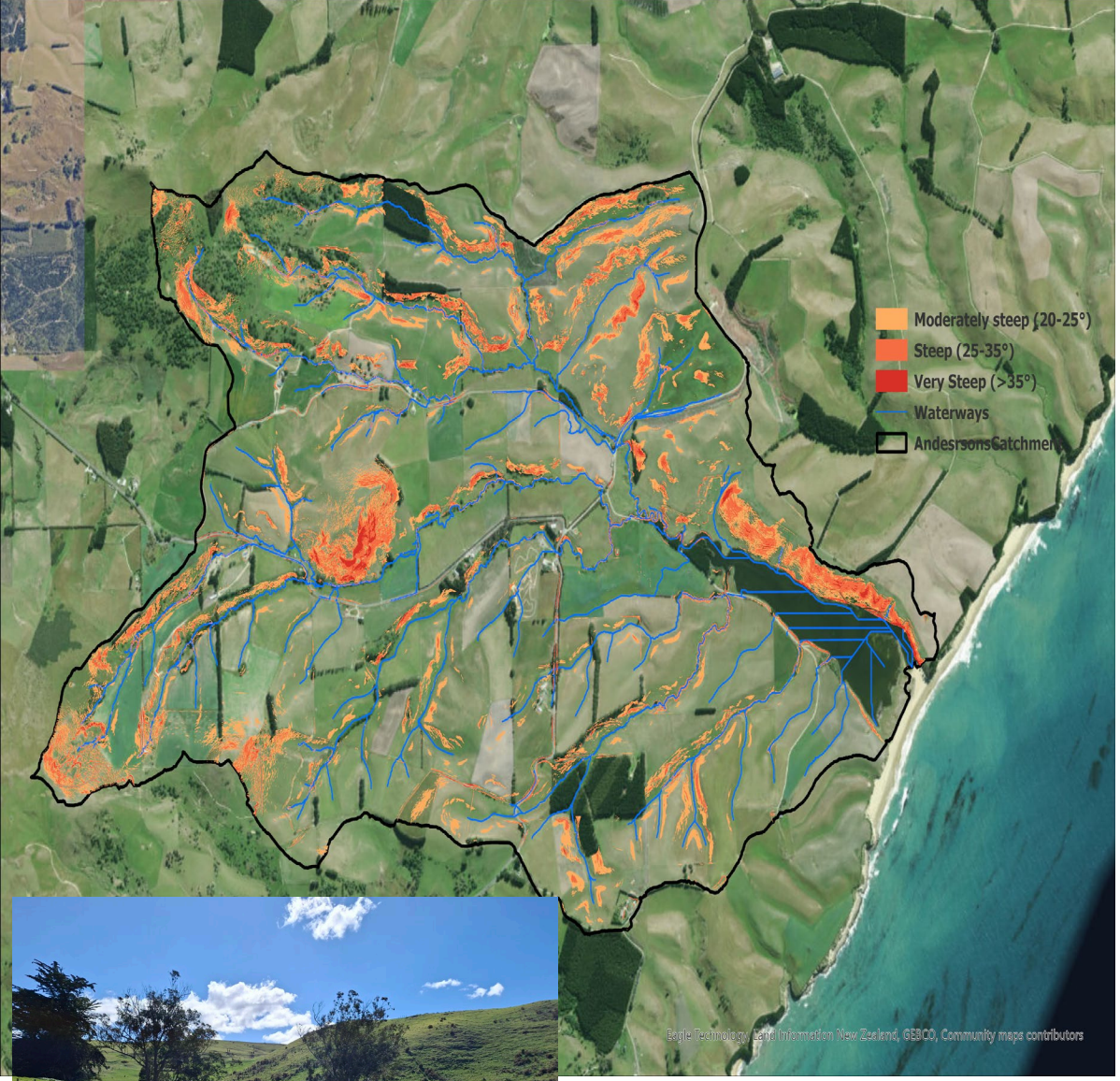
Coastal catchment/community group projects and plans

- Meeting landowners and catchment groups
- Projects:
  - Salt marsh fencing, e.g., Pleasant River are underway, while others are proposed
  - Anderson lagoon proposal
  - Support of oioi (jointed wire rush) restoration in Pleasant River
- Advice to landowners and catchment groups



Coastal catchment/community group projects: building relationships

- Relationship building for non-regulatory (and regulatory) work is key to success
- Meeting with catchment groups to provide project ideas and advice (let the group/landowner decide), ORC supports
- Collaboration with industry and stakeholders
- Field day with Beef and Lamb





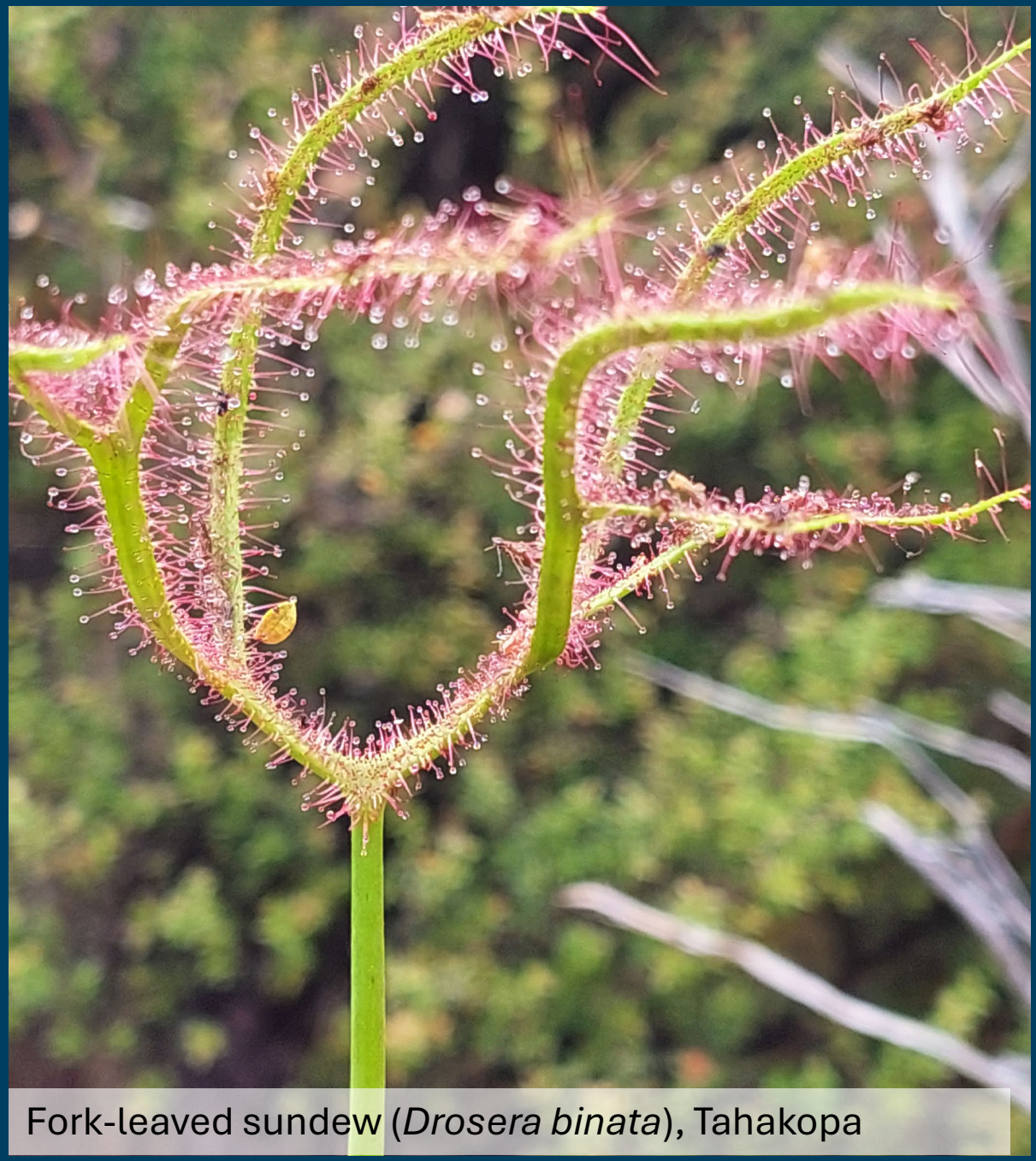
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Anderson's Lagoon

- Working with East Otago Catchment Group to talk with farmers about management/restoration options
- Building a case for funding application to undertake mountains to sea scale work
- Another example is Long Beach, which is a large-scale coastal wetland restoration project

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Wetland biodiversity and ecosystems



Fork-leaved sundew (*Drosera binata*), Tahakopa



Wetland Management: Navigating a **complex** socio-ecological **problem**

- **Competing objectives:** conservation, water quality, flood protection, development.
- **Multiple stakeholders**: diverse values and priorities.
- **Ecological complexity**: interacting processes across scales.
- **High uncertainty**: outcomes are difficult to predict.
- **Trade-offs are unavoidable**: no single "best" solution.
- **Requires adaptive management**: learn, adjust, repeat.



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Discovering Otago's Hidden Wetlands

"You can't manage what you don't know exists."

	RSWs	All wetlands
Number	171	38,323
Area (ha)	~12,000	33,265*

*Taieri FMU data is yet to be added >6,000 ha



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Wetland Monitoring for Action

- Region specific protocols
- Monitor representative wetlands
- Identifies **pressures and emerging threats**
- Generates **condition, pressure and management indices**.
- **SOE report**
- Site specific information shared with **landowners** alongside **list of practical management and restoration options/measures.**



Turning science technical advice into Restoration (1– 2)

MCG Waiora Project

- 13 wetlands restored across 11 private properties.
- Fencing and stock exclusion.
- Weed control and native planting.
- Collaboration with landowners to support long-term wetland stewardship.



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Turning science technical advice into Restoration (2 of 2)

Other examples

- Hazeldale fen wetlands (10 ha)
- Peat Moss Hills Fen Complex (Middlemarch) wetlands fencing
- Upper Taieri Scroll Plains management planning
- Wetland sites in Wānaka for restoration with Wai Wānaka
- Wetlands in Glenorchy - restoration initiatives with communities
- Taieri Lakes Restoration Plan
- Coutts Gully Lagoon and Marshes



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Long beach Wetland - an opportunity

Approximately 50 ha (+40 ha) of coastal wetland restoration.

- Biodiversity recovery
- Flood attenuation and climate resilience
- Community engagement
- Mahinga kai values
- Education, research and recreation

Partnership Network

Halo Project, Landscape Connections Trust, Kāti Huirapa ki Puketeraki, University of Otago and Long Beach community

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Learning What Works

Grazing Management Research Sites

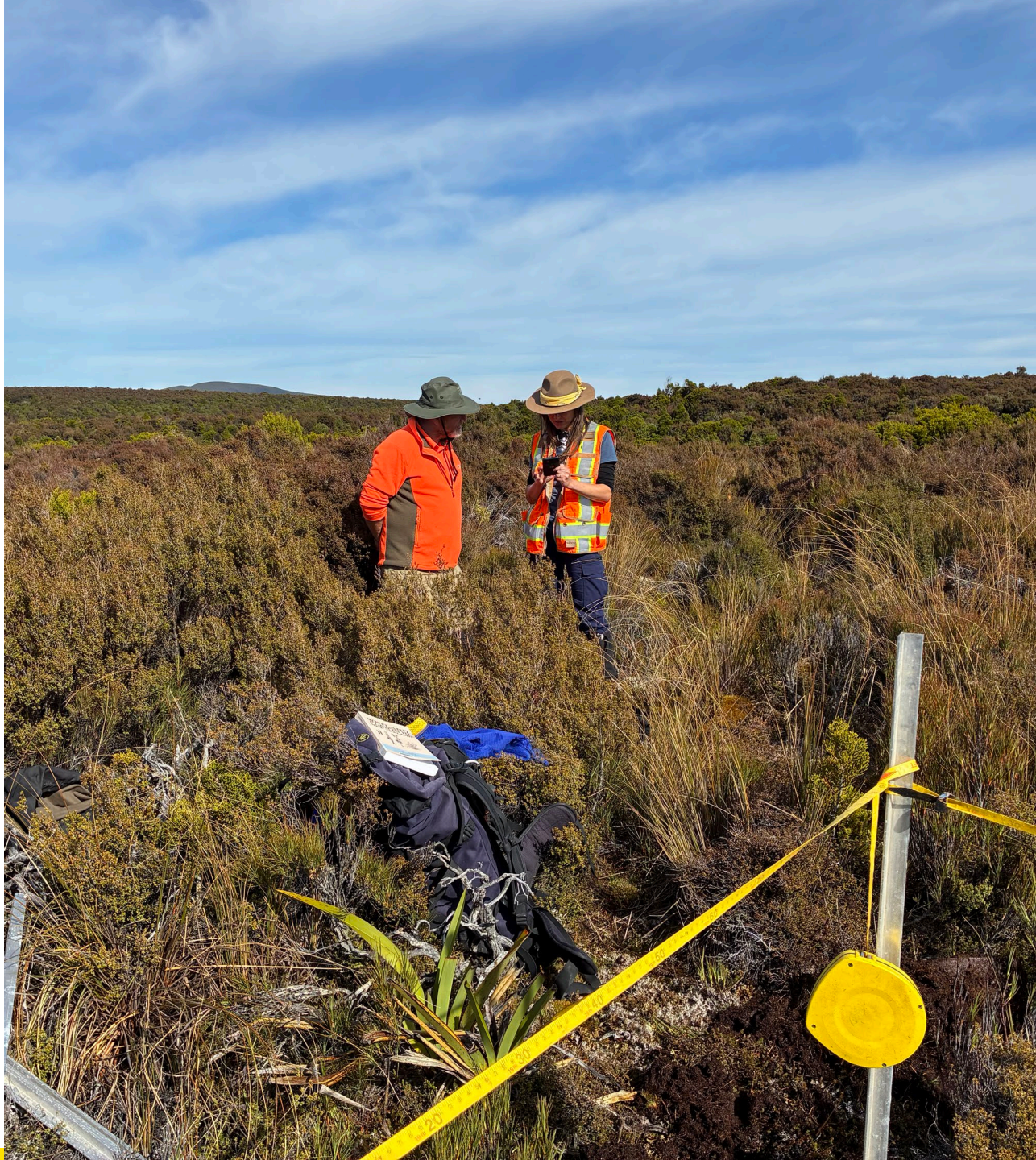
- Wetland in Ida Valley Station
- Pleasant River Estuary wetlands

Why?

Stock exclusion requirements can be expensive, ineffective and contentious.

This research helps identify:

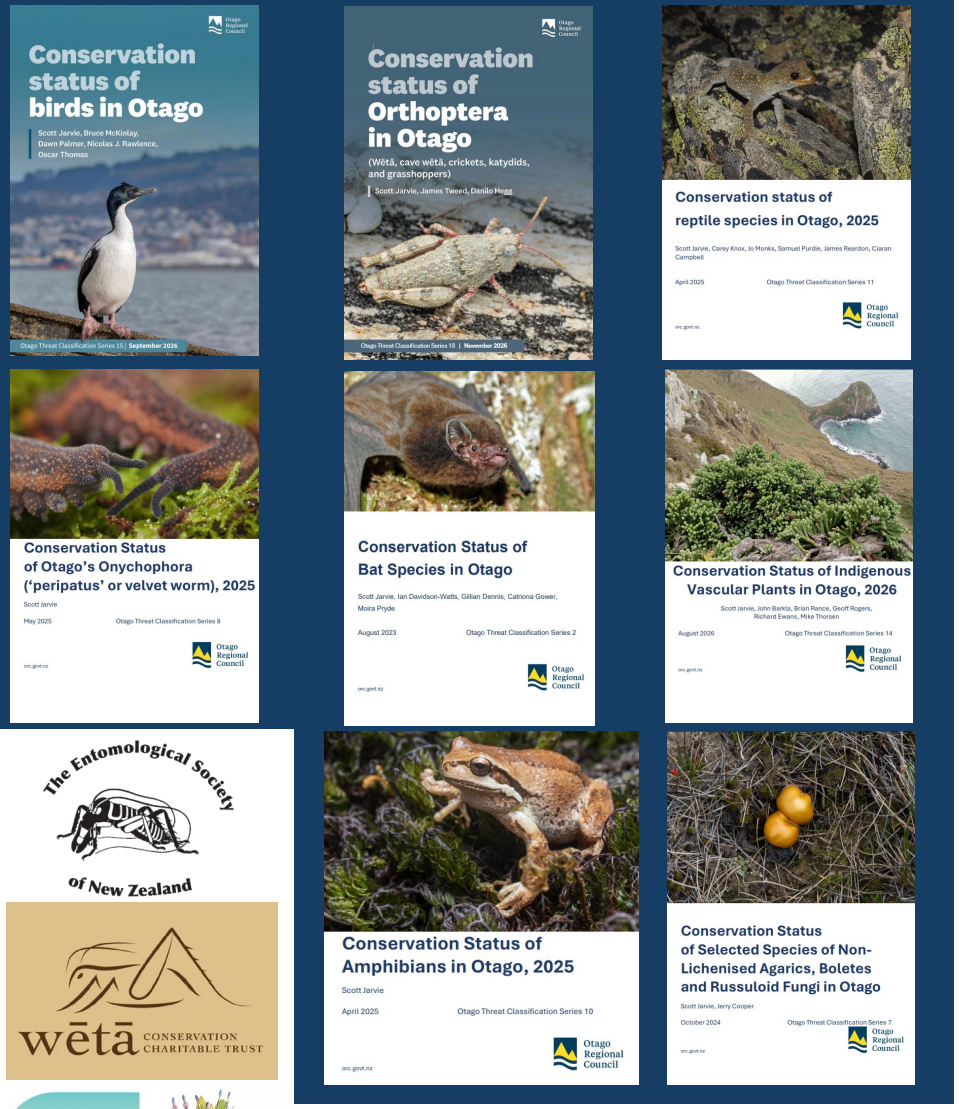
- when and what type of grazing is compatible
- when exclusion is necessary
- best-practice management approaches
- practical solutions for Otago conditions



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Terrestrial biodiversity and ecosystems





The Entomological Society of New Zealand

wētā CONSERVATION CHARITABLE TRUST

BIRDS NEW ZEALAND Te Kāhui Mātai Manu o Aotearoa

NZPCN

SOUTHERN LAKES SANCTUARY

Bioeconomy Science Institute™ Maiangi Taiao

Department of Conservation Te Papa Atawhai

Ōtākou Whakaihu Waka UNIVERSITY OF OTAGO

SRARNZ

Forest & Bird GIVING NATURE A VOICE

BOTANICAL SOCIETY OF OTAGO

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Understanding Otago's indigenous terrestrial biodiversity and ecosystems

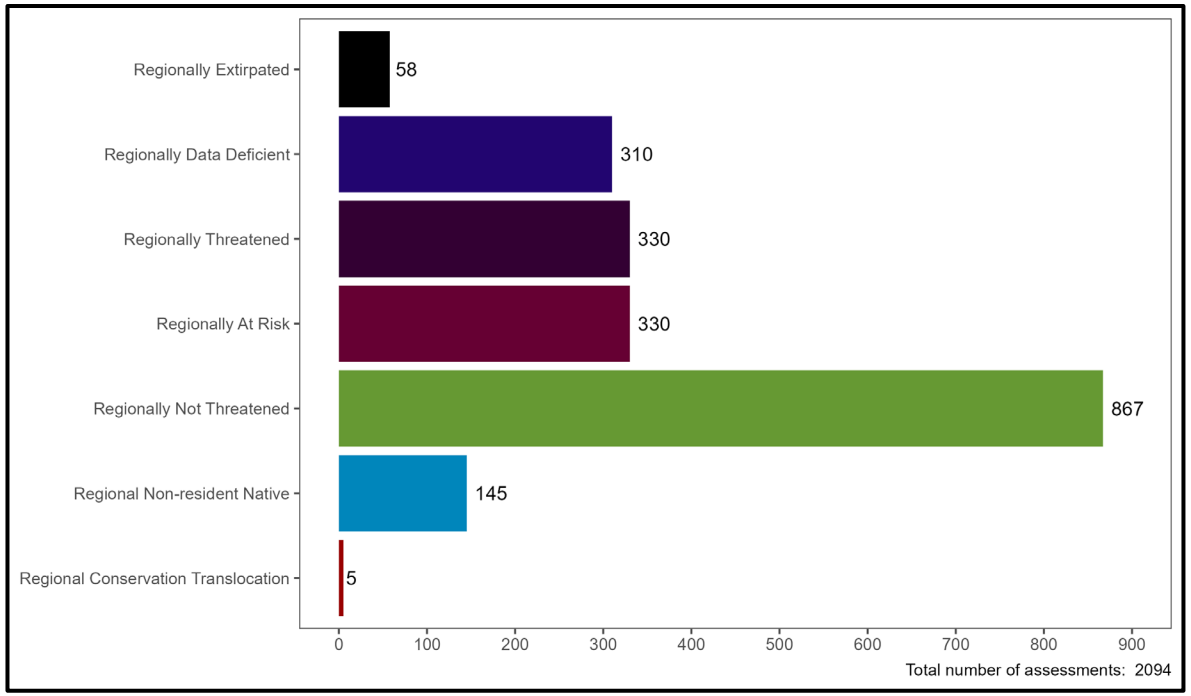
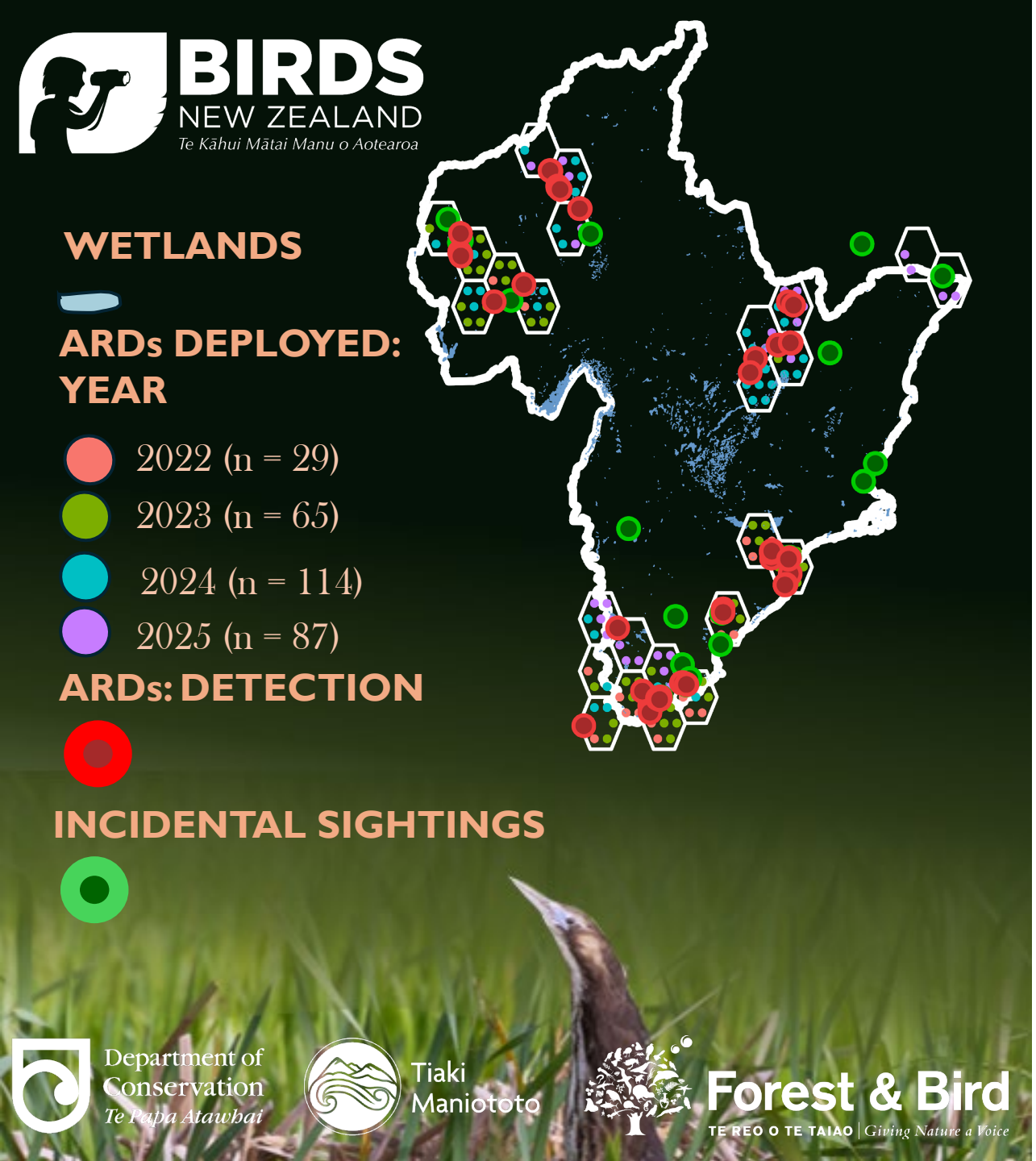


*figure is not showing the introduced species, which have also been assessed



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Rare wetland bird monitoring

- Focused on matuku-hūrepo/Australasian bittern, kotoreke/marsh crake and pūweto/spotless crake
- Initiated by the ORC and led by Birds New Zealand's Otago Branch, in collaboration with Forest & Bird, Tiaki Maniototo, Te Nohoaka o Matamata, Department of Conservation – Te Papa Atawhai, and private landowners.
- *Highlights include:*
  - Over the fours years of the project, greater than 60 detections of matuku-hūrepo have been recorded using Acoustic Recording Devices (ARDs) and ~30 incidental sighting have been reported
  - Identified pūweto in The Catlins, a location where they have not been recorded previously
  - Confirmed kotoreke presence in multiple locations across the Region.



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Mokomoko (lizard) inventory and monitoring

- Collaborations and partnerships with Department of Conservation – Te Papa Atawhai, Kātī Huirapa Rūnaka ki Puketeraki, Society for Research of Amphibians and Reptiles (SRARNZ), Orokonui Ecosanctuary – Te Korowai o Mihiwaka, Southern Lakes Sanctuary, Predator Free Dunedin, and the University of Otago – Ōtākou Whakaihi Waka.
- *Highlights include:*
  - Establishment of monitoring programme for a population of at-risk species of mokomoko
  - Support for inventory and monitoring of mokomoko, including for assessing when they are most active.



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Pekapeka (bat) surveys and monitoring

- Support for surveys and monitoring, in collaboration with the Southern Lakes Sanctuary and Forest & Bird.
- *Highlights include:*
  - Establishment of surveys for pekapeka-tou-roa (long-tailed bats) in Queenstown Lakes District
  - Confirmation that pekapeka-tou-roa are using new roosts and areas of The Catlins where introduced mammalian predator control has now been established or extended, respectively.



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Threatened plants

- Support ex-situ conservation of threatened plants, in conjunction with mana whenua, territorial authorities and the Department of Conservation – Te Papa Atawhai
- Support for surveys, monitoring and translocation, in collaboration with both the QEII National Trust and the New Zealand Plant Conservation Network (NZPCN).
- *Highlights include:*
  - The collection and propagation of a National Critical plant (the highest threat status possible, indicating an extremely high risk of extinction), followed by translocation into another site on private land. Both sites are QEII-protected land
  - Informing ex-situ threatened vascular plants management, including a pilot to propagate a Nationally Critical species
  - Monitoring of a Nationally Endangered plant to assess factors impacting recruitment success.



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Naturally Uncommon Ecosystems | Inland saline (salt pan)

- Inform the restoration of the inland saline ecosystem, which are only found in Otago.
- This ecosystem supports specialised plant and animal communities adapted to saline conditions but is threatened by land-use change, altered hydrology, and invasive plants
- The work has involved the University of Otago – Ōtākou Whakaihi Waka, the QEII National Trust, the Department of Conservation – Te Papa Atawhai, and private landowners.
- *Progress so far:*
  - Establishing scalping trials to remove proto-soils and exotic vegetation, alongside complementary treatments such as salt additions and buffer zones
  - Recreating conditions that favour the establishment and growth of indigenous salt-tolerant plants. Encouragingly, threatened and at-risk plant species have already been recorded in some of the scalped plots.





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Terrestrial programme | Next steps

- Examples include:
  - Continued support of current community, iwi groups and biodiversity partners
  - Refinement of approaches to better inform protection and restoration on indigenous biodiversity and ecosystems, including the use of mechanical approaches that can be scaled up more easily
  - Targeted approaches to restore populations of threatened and at-risk species, including mokomoko (lizards) and vascular plants.

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Thank you



Otago Regional Council
15 September ·

Meet a farmer with a big heart for one of Otago's smallest animals! 💙

When you meet Phil Smith, it's clear his connection to the land runs deep. A multi-generation farmer in Kye Burn with family ties reaching back to the early gold mining days, Phil has spent decades caring for the local land he calls home.

He's also become one of Otago's strongest champions for our native galaxiids. 🐟

Otago is a national hotspot for galaxiids, with more species here than any other part of New Zealand. Many of these species are under threat from trout and changes to their habitat.

Over many years, Phil has worked alongside our team to help protect these unique fish, advocating for their conservation and helping build understanding within the farming community. His willingness to share his experiences and support practical solutions has helped bridge the gap between conservation goals and farming realities.

Phil played an important role during our work in the Shag River catchment — this is part of our wider fish passage work programme identifying natural and man-made structures that affect fish movement. In the Shag River catchment, the focus was on understanding protective barriers that safeguard threatened galaxiid populations from trout invasions. By identifying and maintaining these barriers, we can help protect vulnerable galaxiid habitats. 🌍

At a meeting held in a woolshed full of farmers, Phil spoke about the value of galaxiid conservation and the practical realities of working collaboratively with the regional council. Following that meeting, our team secured access to all the areas we needed to do our work in.

Last year, Phil partnered with fellow landowner Hamish MacKenzie and Tiaki Maniototo to create Aotearoa New Zealand's first galaxiid sanctuary — Spec Creek Reserve. They fenced off the creek to protect the rare Central Otago roundhead galaxias, which live only in the Upper Taieri and Manuherekia catchments. They even built a car park, walking track and info signs so you can visit and check it out yourself.

It's a great example of what can be achieved when we all work together towards a shared goal. 🤝

Cheers, Phil, for your ongoing dedication to the local community and environment and for being such a strong advocate for our native wildlife. 👏

And you can learn more about Phil — check out a recent Country Calendar episode on TVNZ On Demand featuring his Kye Burn farm, blade shearing and galaxiid sanctuary work:
👉 http://www.tvnz.co.nz/.../country-calendar-s2026-e27...



