

Enviroteach

An Environmental Education Resource for Teachers



From the Editor

Kia ora

This issue of *Enviroteach* focuses on wetlands in Southland. It provides information for teachers on these ecosystems and the fascinating creatures that live in them. It also features some of the spectacular wetlands you can visit as part of a school field trip.

There are many ways to meet the requirements of the curriculum while learning about wetlands. We've recently produced a resource to help primary school teachers in Southland to prepare for units on wetlands. Read more about it on page 8. The Education team at Environment Southland are available to help you with this resource and also ideas for lessons or any inquiries, so get in touch.

All the best for Term 4.

Pat Hoffmann
Environmental Education Officer



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WILD About Wetlands

Wetlands are magical places. Often their full beauty is not revealed until you explore along the boardwalks and paths or, in some cases, by boat or kayak into bays and inlets.

Did you know that wetlands support the greatest concentration of wildlife - more than any other habitat in New Zealand? Many of New Zealand's native fish and bird species live in wetland habitats and depend on them for survival. Some birds migrate from overseas to feed in our wetlands. However, they can only sustain healthy populations of wildlife if they are in good ecological condition. Here are some examples of wetland wildlife and what can be done to help them.

Longfin Eel (*Anguilla dieffenbachii*)

- Longfin eels live in a diversity of habitats, from lakes, large rivers, lowland streams, local creeks, wetlands and estuaries.
- Longfin eels are endemic to New Zealand. From a conservation perspective they are classified as "at risk and declining".

How can we help eels? By fencing off streams and wetlands and creating open water wetland habitats.



An enormous longfin eel caught in the Waiau River. Habitats such as the Rakatu Wetlands (see p 4-5) are very important for the longfin eel and there are some very large ones at Rakatu. The largest measured 1.05m and weighed 4kg! (Photo: Mark Sutton).



Aquatic Scientist Andy Hicks and Environment Southland Councillor and Waiau Trust Planner Jan Riddell show some of the eels caught during a fish survey in the Waiau River (Photo: Mark Sutton).

Inanga (*Galaxias maculatus*)

- This species is one of the five species of galaxiid fish which we refer to as whitebait.
- Inanga live in lowland streams, rivers and wetlands. They need good bank and in-stream/wetland vegetation and plant cover for hiding from predators. They also require undisturbed grasses and native vegetation at the high tide level for spawning, maturing and hatching of eggs during the autumn months. They need to have uninhibited fish passage into, through and out of the habitat throughout the year.

How can we help inanga? By fencing off streams and wetlands, creating interconnected open-water habitats in the lower parts of catchments, and by removing livestock and allowing grass and other vegetation to grow in the tidal zone where inanga lay their eggs.



Adult inanga caught in the Waiau River (Photo: Mark Sutton).

Wetlands

Pied Stilt (*Himantopus himantopus*)

- Stilts live in wetlands, swamps, lakes and estuaries. They feed on terrestrial insects and worms, and also aquatic insects and larvae in shallow water wetlands and along shorelines.
- Pied stilts are native to New Zealand and are classified as declining.

How can we help stilts? By creating open water wetland habitats with fluctuating water levels so they have access to both shallow water and muddy shorelines.



Pied stilt (Photo: Nga Manu Images)

Bar-tailed Godwits (*Limosa lapponica*)

- Godwits are international travellers. Each year they fly from New Zealand to China where they stopover to feed before continuing on to Alaska for breeding. The adults return to New Zealand in late September and early October. After their 11,000 km journey they are thin from fasting and from the non-stop flying. But if all goes well for them in New Zealand they fatten up and replace their feathers with red breeding plumage and by March and early April they are ready to leave again.
- Bar-tailed godwits are classified as declining and their decline appears to be driven by the loss of intertidal habitat in the Yellow Sea in China.

What can be done to help godwits? In addition to conserving their habitats within New Zealand, protection of bar-tailed godwits requires engagement with partners in Russia, USA, China and North Korea.



Bar-tailed godwits (Photo: Mark Sutton)

Great wetlands for school field trips

Waiau Wetlands

The fabulous wetlands in the Waiau catchment have a lot to offer. Thanks to the Waiau Fisheries and Wildlife Habitat Enhancement Trust, the public can visit these special places such as Rakatu, Home Creek and Ramparts wetlands.

For more detailed information about the Waiau Fisheries and Wildlife Habitat Enhancement Trust, the projects it has undertaken and places you are welcome to visit, go to www.waiiaustrust.org.nz.

Below – Home Creek is a naturally meandering stream that starts in the Kepler Mire and flows to the Waiau River. The stream is an important trout fishery and the water quality is very good. The Waiau Trust developed a 1.4km circular walking track to encourage visitors to explore this beautiful wetland (Photo: Mark Sutton).



Rakatu Wetlands

Where is it?

Rakatu Wetlands is the Trust's largest and most ambitious project to date. This property, purchased by the Trust in June 2000, is located along the Clifden-Blackmount Road, about 17km from Manapouri Township and have been open to the public since 2006.

Visitor facilities

Visitor facilities include an access road, car park, toilet, bridges, stiles, a lunch shelter and lookouts, plus nine kilometres of walking tracks that meander around and through the wetlands. Self-guided interpretive brochures and on-site panels tell the story of Rakatu's successful creation and management.

What can you see there?

The area contains four protected wetlands, 20 open water habitats and other small streams. Bird species are abundant and pest animal trapping networks have been installed to ensure their survival.

Interpretation panels at Rakatu help visitors to orientate themselves and provide information on the restoration work being done.

Forestry blocks also accumulate carbon units under the Emissions Trading Scheme and secure an income for the future.

What can you do there?

The 278ha property provides great opportunities for walking and learning about wetland life. You could easily spend a half day there with a group of students.



Above – Rakatu Wetlands

Below – Ramparts Wetlands has easy access but walking opportunities are limited. It's a beautiful spot for simply looking at and enjoying the wetland. (Photo – Mark Sutton)



The Waiau Fisheries and Wildlife Habitat Enhancement Trust was established in 1996 to mitigate and remedy the adverse effects of the Manapouri Hydro Power Scheme on the fisheries and wildlife values of the Waiau catchment. Their wetland projects are inspiring and offer tremendous opportunities for learning. They include constructing new wetlands and dams, connecting wetlands to each other and to the Waiau Lagoon, and constructing pipes and channels to supply the wetlands with water. They regularly monitor bird and fish life to see how the environment is responding to their interventions.

The Trust has had spectacular success in the lower parts of the Waiau River where they have created large, interconnected open water wetlands in the paddocks adjacent to the Waiau Lagoon. There is now a huge population of fish in the wetlands around the lagoon. In February this year, they undertook a fish survey in the McCulloch and Whitehead wetlands and, amazingly, caught more than 3,000 fish!

The Trust also values public access and education and they have gone to great lengths to enable the public to visit and enjoy special parts of the Waiau such as Rakatu, Home Creek and Ramparts wetlands.

For more information on sites in the Waiau catchment that are open to the public visit www.waiiaustrust.org.nz/access.



Activities for a Wetland field trip

Sensory activity

Experience the sights, sounds, textures and smells in the wetland.

- Get students to sit in the wetland area for 10 minutes and record everything they hear, smell, see and feel
- Do a scavenger hunt
- Draw what they see
- Create a sound map



Investigate water

- Where does the water in the wetland come from?
- Where does it go to?
- Why is this area wet? What are the reasons water stays in this area?
- How fast is it flowing?
- How clean is it?

Investigate wetland plants

- Identify trees, shrubs, flowers in the wetland
- Plant adaptations
- Do vegetation surveys / transects / quadrats
- Plant succession
- Weeds
- Wetland restoration projects

Investigate wetland animals

- Look for signs that animals are present in the wetland (e.g. droppings, footprints, nibbled leaves, tunnels, webs)
- Identify or survey birds, insects and other invertebrates
- Find out if there are pest animals living in the wetland
- Identify adaptations of animals living in wetlands

Investigate relationships between people and wetlands

- How do people use this area?
- Find out about traditional Māori uses of wetland plants
- How do people fit into the foodweb of this wetland?
- What's natural and what's manmade in this wetland?
- Investigate human impacts on the wetland

Virtual field trip

To take a virtual field trip around Waituna Lagoon and the Waituna catchment check out Environment Southland's website.



es.govt.nz







search 'LEARNZ'

Investigate wetland soil texture

Soil texture refers to the size of particles in the soil. Large particles are sand, medium-sized particles are called silt and smaller particles are called clay. The size of the particles in the soil influences the porosity of the soil, drainage of water, and how well it holds nutrients. Sandy soils drain freely but can dry out and nutrients are washed out of them quickly. Clay soils hold nutrients well, but may also hold too much water and get 'gluggy' and sticky. A soil with a good mixture of particles sizes is called a loam soil. These are often the best soils because they hold nutrients and some water, but also have good drainage. Here is one method you can use to investigate the texture of soil (adapted from *The Enviroschools Foundation's Learning Guide: Living Landscapes*).

1. Collect soil samples from different areas and place them in labelled plastic bags.
2. Moisten the soil so that it is damp, but not wet. Break up any lumps in the soil and work it like dough.
3. Feel the soil. If it is gritty, then the soil is sandy, or a sandy loam. If it is not gritty, it is likely to have less sand and more silt or clay. Sometimes a silty soil feels 'soapy'.
4. Now use your small sample to do the 'sausage' test. This should confirm whether the soil is clay, loam or sandy.
5. Repeat with soil samples collected from other areas such as your soil grounds or a farm. Compare the soils in terms of moisture, structure, porosity, colour, presence of mottles, smell, texture, amount of organic material, presence of earthworms.

The Sausage Test

WHAT SOIL LOOKS LIKE	WHAT SOIL FEELS LIKE	WHEN ROLLED INTO A SAUSAGE	SOIL SAMPLES	THE SOIL IS
VERY SANDY	VERY ROUGH	CANNOT BE ROLLED INTO A SAUSAGE		VERY SANDY
QUITE SANDY	ROUGH	CAN BE ROLLED INTO A SAUSAGE BUT IT CANNOT BEND		SANDY
HALF SANDY AND HALF SMOOTH	ROUGH	SAUSAGE CAN BEND A LITTLE		SANDY LOAM
MOSTLY SMOOTH	A LITTLE SANDY QUITE SMOOTH BUT NOT STICKY	SAUSAGE CAN BEND ABOUT HALF WAY ROUND		LOAM OR SILT LOAM
MOSTLY SMOOTH	A LITTLE SANDY QUITE SMOOTH AND STICKY	SAUSAGE CAN BE BENT MORE THAN HALF WAY ROUND		CLAY LOAM OR SANDY LOAM
SMOOTH	SMOOTH AND STICKY	SAUSAGE CAN BEND INTO A RING		CLAY

Resources for teachers

Waituna Lagoon video

Check out the Waituna Wetlands in Southland. Learn about what lives in a healthy wetland and how you can find eels!

www.doc.govt.nz/getting-involved/conservation-activities/meet-the-locals-videos/fourth-series/waituna-wetlands/

Godwits video

The godwit has broken all migration records for the world's longest non-stop flight: it flies from New Zealand to Alaska in just one week! Watch this video to find out more.

www.doc.govt.nz/getting-involved/conservation-activities/meet-the-locals-videos/fifth-series/godwits/

Wetlands Resource Pack

Environment Southland's Education team has recently produced a Wetlands Resource Pack to help primary school teachers in Southland prepare units on wetlands.

While the pack includes a few activities for learning and assessment, its main purpose is to point teachers towards helpful websites, agencies and other educational resources.

The wetlands pack contains:

- References to organisations and educational resources
- Factsheets on wetlands
- Suggested activities for a wetland field trip
- Environment Southland publication: *Waituna: What's all the fuss about?*
- LEARNZ virtual field trips
- *Wetlands of Southland: a guide for maintaining and enhancing the values of our wetland areas*
- Wetlands Working Party toolkit (set of factsheets)

Contact education@es.govt.nz to get your **FREE** pack.

