



# FISH & INVERTEBRATE AT PEKAPEKA

## Introduction

The suggested aims of this section is for students to learn about Pekapeka's fish and invertebrate that contribute to the wetlands biodiversity. Students will have the opportunity to study and identify aquatic species in and around Pekapeka.

This resource provides information about fish and invertebrate at Pekapeka and includes a list of books and websites suitable for students to further their knowledge of these, and other species.

Activity sheets can be manipulated and adjusted to suit the intended learning outcomes and photographs can be used as teacher aids or included in classroom activities, powerpoints and for other curricular activities.

The following activities are based on 'pre-visit', 'on site' and 'post visit' categories and can be chosen according to ages, levels, interests or needs.



### LONG FINNED EEL - tuna *Anguilla dieffenbachii*

**500**

The long fin eel is endemic to New Zealand. Juvenile eels are neither male or female. As the eel grows and adapts to its habitat, its cells specialize and the eel becomes male or female. This is generally related to the size of the animal, not its age.

**Description**  
They have long dorsal fins, side fins and yellow bellies. Their mouths are large, with small, sandpaper-like teeth.

**Food**  
They are carnivorous, eating crustaceans, fish, snails, insects, worms, crayfish, frogs and even small birds!

**Breeding**  
Research suggests that the breeding location is somewhere near Tonga. Once the eggs hatch into leaf like larvae, they drift on the ocean currents where they change into tiny, semi-transparent eels. They take on a gray-brown colouration, and are then known as elvers. Eventually they settle in a lake, swamp, dam or river.

**Adult female eels release around 1-20 million eggs**

*Tēnā te puna kei Hawaiki, the source is at Hawaiki.  
A Māori karakia suggests that the breeding location is somewhere in the Pacific.*

**502**

**Pekapeka WETLAND** **HAWKE'S BAY**

## STUDENT INFORMATION SHEETS

A set of Student Information Sheets have been prepared covering basic information on the main vegetation species present at Pekapeka wetland. This list is by no means exhaustive and we encourage additional research through the provided links and information sources listed on the following pages.

- INFO500 Long finned eel (tuna)
- INFO501 Short finned eel
- INFO502 Galaxias
- INFO503 Red Damselfly
- INFO504 Mud Snail
- INFO505 Waterboatman

### RED DAMSELFLY *Xanthocnemis zealandica*

**503**

The red damselfly is the most common damselfly found in New Zealand and is commonly seen at Pekapeka. It is a native found throughout New Zealand and is associated with slow flowing water. They can be found in wetlands in along the edges of streams.

**Description**  
Adult damselflies are similar to dragonflies, you can tell a damselfly from a dragonfly thanks to the way they hold their wings. Damselflies hold them up over their body when they are at rest while dragonflies hold them flat. Damselflies are also usually smaller than dragonflies and weaker fliers in comparison, and their eyes are separated.

**Food**  
They are expert hunters - adults take small insects on the wing. Damselfly nymphs are pretty aggressive aquatic, carnivorous and consume aquatic insects as their main food.

**Breeding**  
The eggs are laid in small pools of water. The larvae hatch into nymphs which spend their lives in the water. The larvae will eat algae and other vegetation where the larvae hatch into nymphs.

**505**

**Waterboatman  
*Sigara***

Waterboatmen swim in ponds, lakes and slow flowing streams. They are related to more general insects such as the dragonfly and damselfly. Waterboatmen generally have broad bodies that have been modified, but are also common in streams that are highly polluted where more sensitive invertebrate species are rare.

**Description**  
Waterboatmen have long, hairy back legs adapted for swimming. They are only 10-15mm long. They have three pairs of legs but the front pair are very long and thin. The front pair are only used to hold food while it is being eaten.

**Food**  
They feed at the bottom of water bodies on algae and decaying plants and animal material. Their main food source however is rotting leaves.

**Breeding**  
Females lay eggs inside the tissue of aquatic plants near the water. The eggs hatch in about three weeks. The larvae do not look like the adults and are known as 'water tiger'.

**Pekapeka WETLAND** **HAWKE'S BAY**

### BANDED KOKOPI Galaxiids

**502**

Galaxiids are New Zealand's largest group of freshwater fish with 29 species which include bronze whakaiti. They get their name because the pattern on their side look like a galaxy of stars. They can be found in swamps, drains, rivers, streams and lakes.

**Description**  
Galaxiids have gold flecked skin but are able to scale waterfalls because they can grip their bodies on their sides and over their heads.

**Food**  
Galaxiids are omnivorous and eat algae, insects and detritus.

**Breeding**  
Banded kokopu lay their eggs in gravel and rub them into the gravel. The eggs are laid in a hole in the gravel. The hole is about 4-5cm deep and the male and female stay to guard the eggs.

**504**

**Mud Snail**

Mud snails are found in slow flowing water. They are able to survive in low oxygen water. They are also able to survive in polluted water.

**Description**  
Mud snails have a thick, shell that is made of calcium carbonate. They are able to survive in low oxygen water because they can breathe through their gills. They are also able to survive in polluted water because they can filter out the pollution.

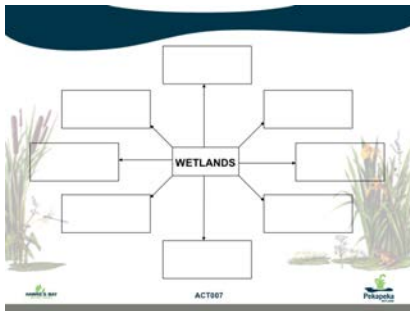
**Food**  
Mud snails are omnivorous and eat algae, detritus and small insects.

**Breeding**  
Mud snails lay their eggs in a hole in the mud. The eggs are laid in a hole that is about 2-3cm deep. The male and female stay to guard the eggs.

**Pekapeka WETLAND** **HAWKE'S BAY**



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### PRE-VISIT ACTIVITIES

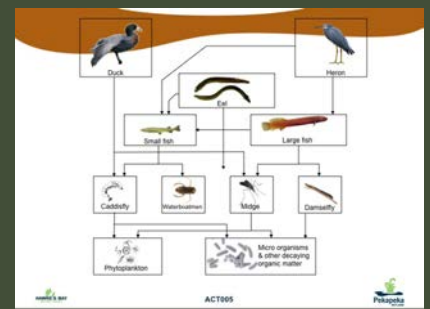
- Make a tuna board game. Base it on snakes and ladders except the tuna (eel) takes you up and a hazard brings you down.
- Draw a picture of a particular species and correctly label features.
- Interview an older person in your community about tuna. Ask them about how tuna numbers have changed, how big they were, how they used to catch them. Compare the interviews and make a plan for future action.
- Brainstorm about the survival and adaptation attributes that a particular species has. For example, their behavioural characteristics (hiding under a bank), or their physical features (different fin or body shapes).
- Learn about the different cultural value of the different species.
- Learn about fish culverts and fish pathways. Discuss why we need them.
- Use Activity Sheet ACT007.

### FIELD DAY ACTIVITIES

- Sketch Pekapeka wetland inlets and outlets or drains running into the wetland. Discuss whether there are suitable fish culverts and other fish habitats in the wetland.
- Feed the fish/eels and count how many, and what species you can see.
- Take a sample of water and identify and count the different invertebrate.
- Use Activity Sheet ACT012

### POST-VISIT ACTIVITIES

- Invite a person from Fish & Game to talk about fish species in Hawke's Bay.
- Learn about native and exotic fish present at Pekapeka. What are some bad features of exotic fish (eg: eat young native fish and compete for food).
- Design your own fish passages using the ones you saw at Pekapeka to help.
- Make a food web using the species you saw at Pekapeka. Draw the different species and connect them with wool or string.
- Discuss the role of humans in the food web. In the past and now (pollution, developing roads, restoration).
- Write a story from a fish or invertebrate point of view.
- Use the water sample data collected on your field visit to work out the water quality depending on the types of species you find. Create pie charts or graphs to show the quantities and different species.
- Use Activity Sheets ACT005, ACT 006, ACT011, ACT012



PEKAPEKA WETLAND PLANTS

NATIVE PLANTS	EXOTIC PLANTS
e.g. Raupe	e.g. Wisedi



## Additional Resources

### BOOKS

#### New Zealand's Freshwater Eels (NZ Wild series)

By Jenny Jones  
Reed 2005  
ISBN: 1869485009 (pbk)

#### Hinaki

By Jan Trafford  
Pub Learning Media 2000  
ISBN: 0478127901

Text and photographs describe a family fishing for eels, using traditional methods to catch and prepare them.

#### Eel Dreaming (fiction)

By Ben Brown  
Ill Helen Taylor  
Pub Reed 2005  
ISBN: 1869485092 (pbk)

An eel who dreams of living in a better place than his swamp, goes in search of a fast flowing river with his friend Pukeko.

#### The Reed Handbook of Common New Zealand Insects

By Annette Walker  
Illustrations by Geoffrey Cox and Eric Heath  
Pub Reed 2000  
ISBN: 0-7900-0718-5



### WEBSITES

- [www.hbrc.govt.nz](http://www.hbrc.govt.nz)
- [www.teara.govt.nz](http://www.teara.govt.nz)
- [www.doc.govt.nz](http://www.doc.govt.nz)
- [www.landcareresearch.co.nz](http://www.landcareresearch.co.nz)
- [www.nzconservationtrust.org.nz](http://www.nzconservationtrust.org.nz)
- [www.wikipedia.org](http://www.wikipedia.org)
- [www.forestandbird.org.nz](http://www.forestandbird.org.nz)



### OTHER INFORMATION SOURCES

[www.youtube.com/watch?v=XiFuWB74RA4](http://www.youtube.com/watch?v=XiFuWB74RA4)

#### School Journals:

Part 3 No. 2, 1990. Uncle Trev and the Pukeko Dog, story by Jack Lasenby. The fourth in a series of "Uncle Trev" stories, set in Waharoa in the 1930s.

Part 1 No.4, 2003. The Tame Eels of Anatoki, article by Angie Belcher. This article provides information about New Zealand long-finned eels.

Level SI No.4, 2000. Hinaki, story by Jan Trafford. Huhu grubs and smoked eel for breakfast? Yum - but first catch your eels!

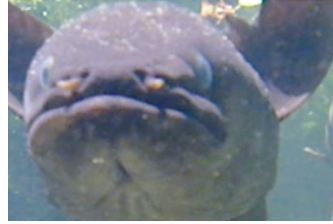
Part 3 No. 1, 1979. Waiata Tuna: Eel Song, poem by Hirini Melbourne.

## Images

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