

# TOGETHER FOR OUR MOANA - WE'RE SHAPING OUR FUTURE

## ESTUARIES

### NZ CURRICULUM LINKS:

Learning areas:	Achievement objectives:
<b>English</b>	Listening, Reading, Viewing
<b>Science</b>	<p>Living things and how they interact with the environment.</p> <p>Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced.</p>
<b>Aotearoa NZ Histories</b>	<p>Turangawaewae me te kaitiakitanga</p> <p>Adapting to new environments</p> <p>Look at how mana whenua, early resource seekers, and settlers impacted the natural environment.</p>

## Overview

Find out about the places where fresh water meets salt water - estuaries, and how important they are for ocean ecosystems.

## Learning intention

Tamariki are learning to understand the importance of estuary areas.

## Success criteria

Children can name one reason that estuaries are important.

# LEARNING SEQUENCE

Based on the Inquiry model



### Inspire

Provoke curiosity  
and wonder



### Explore/Educate

Gather information  
Use / apply  
learning



### Activate

Reflect and act

## Background information for teachers:

### Source - Te Ara.

An estuary is an area of water on the coast, where fresh water (wai māori) and seawater (wai tai) mix. It often forms at the mouth of a river, with large mud flats where the tides wash in and out. It is a unique home for many creatures and a few plants.

### **New Zealand's estuaries**

There are about 300 estuaries around New Zealand's coastline, including the South Island fiords. The biggest is Kaipara Harbour. The estuaries formed about 6,500 years ago, when the sea began flooding river valleys and bays.

### **How estuaries die**

Estuaries are always changing. Rivers bring sediment (soil and other matter) into them, and the ocean brings in sand. This is taken out again on the tides, but sometimes the sediment builds up. Over time, this can turn the estuary into dry land, and the estuary dies.

### **Plants of the estuary**

These special plants have to survive saltwater, storm waves, and other tough conditions. Two common New Zealand estuary plants are seagrass and mangroves.

### **Animals of the estuary**

The creatures of the estuary range from tiny organisms to eels and godwits. Burrowing mudworms are eaten by birds and fish. Crabs make tunnels or hide under rocks. Cockles help filter the water and are food for birds and humans. Many native fish, including flounder and kahawai, use the estuary. Flocks of wading birds such as herons feed on the mudflats, and thousands of godwits and other migrating birds arrive each spring. Swamp birds such as pūkeko and bitterns breed among the mangroves and rushes.

### **Why are estuaries important?**

- Birds and fish breed and eat there.
- They help keep coastal waters healthy.
- People use them for sports, fishing, and other recreation.

For Māori, estuaries were valuable places for food gathering. But as European settlement grew, farms, towns and cities began to pollute the estuaries. The land was also filled in for projects such as sewerage works and rubbish dumps. Māori protested, and there are now rules about protecting estuaries. Today, people are aware of how important it is to keep estuaries healthy.

# LESSON PLAN

## Estuaries

Teachers are encouraged to choose and adjust activities to suit the learning needs and interests of their tamariki.



### Inspire

 Allow approximately 5-10 mins

- **Look on a map.** Zoom in to find your area. Are there any estuaries near you? Look for places where fresh water (rivers / awa) meet the sea / moana. [Here is a map of some important big estuaries in Aotearoa](#), but there are many more than this.



- **Kupu / words** - Pūwaha (estuary / river mouth), Wahapū (estuary / harbour)



### Educate

 Allow approximately 30 mins

- **Watch** this Young Ocean Explorers video - [Riley finds where baby fish live](#)  
*Video is 4:07 minutes*



- Find out more about animals and plants of the estuary - what lives in estuaries? Choose one of these to read...
  - [small animals of the estuary,](#)
  - [larger animals of the estuary,](#)
  - [plants of the estuary.](#)
  - [School journal level 2 2022 - estuaries.\(Pg2\)](#)
- **Draw** one of the animals or plants and make a class mural showing what lives in an estuary.
- **Look** at the [estuary food web](#). What makes estuaries important places?



## Activate

 *Timing will vary*

# DAILY ACTION



**MAKE A DIFFERENCE** for our moana – pick up at least 1 piece of kirihou / plastic each day. [Log how many pieces your class picks up on the Young Ocean Explorers website.](#)

- **Read** [School journal level 2 2022 – kaitiaki of the estuary \(Pg12\)](#) or watch [Young Ocean Explorers video 'Riley helps save a harbour'](#) to see what some people are doing to make a difference to their local estuary. Think about what YOU could do in your area.

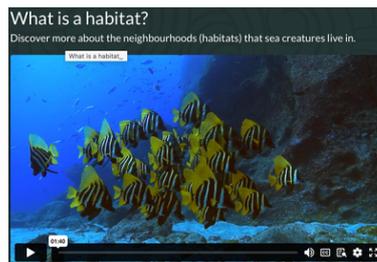


## EXTRA LEARNING IDEAS AND RESOURCES

- Estuaries - [information from](#) the Science Learning Hub



- Find out more about [habitats in the ocean](#) with this Young Ocean Explorers video. *Video is 1:40 minutes*



- [Find out more about tuangi / cockles.](#) These are a food source for many people (and a traditional food source for Māori) and for sea creatures. And they also help keep the water clean in estuaries and harbours where they live. Optional extra: gather some tuangi and dissect them, or find a recipe to cook them so you can taste them. First, measure them and find out the average size. [Here is a video showing how to gather and cook cockles.](#)
- Look at this poster that shows [changes in the Hauraki Gulf.](#) What has changed over time?