





# Wonderful Wetlands

## ***The Lake Life – find us in the cartoon!***

Pukeko have wonderful blue and green feathers, and flash their white tails when they are frightened. They don't like to fly unless they have to, but can fly very well – they came to New Zealand thousands of years ago by flying all the way from Australia!

Kotuku, the white heron, returns every year to its nesting site in a forest swamp near Whataroa in Westland. Its pointed bill is perfect for spearing small fish.

Raupo (bulrush) swamps are great hiding places for birds.

Kahikatea is New Zealand's tallest native tree, growing to 60 metres high. Some are over 600 years old.

Dragonflies are the helicopters of the insect world, able to hover and turn with ease. Young dragonflies live for up to 3 years in their lakeside burrows.

Koura (freshwater crayfish) have gills that let them breathe underwater. They are distant cousins of the rock lobsters that live in the sea.

Giant Kokopu are one of New Zealand's largest stream fish, growing up to 40cm long. They hide among flax and rushes in streams and swamps not far from the sea.

## ***What's wrecking the Wetlands?***

Most of New Zealand's wetlands have been drained for farmland, towns and roads. Only one tenth of our national wetlands are left.

More than 200 wetland plants have been brought into New Zealand from other countries. Weeds like crack willow, grey willow and pond weed are taking over the edges on some of our most important lakes and swamps.

## ***The Fish Out of Water***

Few people know that one kind of fish in New Zealand can live out of water for weeks and weeks.

The mudfish, known to Maori as waikaka or hau hau, is specially adapted to living in wetlands that dry up during the hot, dry summer days. They can live in damp ground in forests or in clogged farm ditches, well away from any stream or river. When water levels fall, mudfish hollow out a small hide in a clay bank. There they lie quietly until the next storm brings water flowing into the drain or pool once more.

Early settlers sometimes even dug mudfish out of their damp potato gardens. Maybe these were New Zealand's first fish and chips!!



Mudfish are found in the Auckland, Wellington, Canterbury and Westland regions of New Zealand. They are not as common as they once were because most of the swamps where they like to live have been totally drained to make dry areas for farms and towns.

## ***What Can I Do?***

### **Indoor Activities**

Write a story or poem about a mudfish.

Make up a 'Wetland Conservation Code' that lists ways to look after swamps and lakes.

### **Activities by the Wetland**

Survey people at a lake to find out why they came and what they do there.

Go boating with an adult. Don't forget your lifejackets!

Collect seeds or cuttings from lakeside plants (try cabbage trees or flax) and try to grow them back at home. Plant some of them back out by the lake once they're big enough. (Seek landowner/managers permission before collecting plant material)

Clean your boat every trip so you don't carry weeds to other lakes.

Atawhai Parewai  
Life by the Water

# SPECTACULAR STREAMS

We need to look after our rivers & streams, and the plants & animals that live there. YOU CAN HELP by planting trees to protect the river banks from erosion.

We drink water from Kowhai flowers

Keenaka is a popular bird because he spreads seeds

We sort birds' nests on the edges of streams

We take care of the water we use

We give help to the fish

S. J. ASPLIN '95



Goor yuk! What's that stinky gunk pouring out of that pipe - I feel sick!

Hey, this bush was just being planted when I swam up this river as a young eel.

Maybe all these planted riverbanks will help make the stream less silty.

Yeah, so long as fences are built to stop the cows trampling & eating the young seedlings.



# Special Streams

## ***The Stream Team – find us in the cartoon!***

Grey ducks (parera) are native to New Zealand. They love to hide among riverbank scrub, and dabble for food in shallow streams.

The bell-like song of the tui includes notes that are so high (like a dog whistle) that we can't hear them!

Kowhai and other trees help to shade streams from the hot sun, and are homes to many birds and insects.

Harakeke (flax) grows by the water. It's a great home for insects, spiders, birds and fish. And it's good for weaving all sorts of things.

Sandflies (namu) love to suck your blood, but are themselves eaten by fish and birds of the streams.

Ti kouka (cabbage tree) has been in New Zealand for 15 million years! Maori discovered that the young leaf buds and shoots are very tasty.

The young larvae of some insects such as mayflies and stoneflies live in streams. They shelter under stones or lie flat against the rocks, so they aren't swept away by the water. Fish love to chase and eat them, which is why anglers tie feathers that look like insect larvae onto their fish hooks.

## ***What's Spoiling the Streams?***

Farm animals love to drink stream water, but sometimes they can trample stream banks, eat native plants and pollute the water.

Trees by streams are the homes for a lot of plants and animals, but they have been cleared from the banks of many streams. The roots of streamside plants help to hold the soil together and stop it getting washed away.

Sewage and other pollution is pumped into some waterways.

Streams are often built up with stop banks or rocks to stop them flooding the land, but this can destroy the natural edges of the streams.

Rainwater flowing from hills and towns can carry pollution down to the streams and rivers. A lot of town drains flow straight into nearby streams.

River dams that are used to store water can stop fish from moving up and down streams as most of them need to do.

## ***Some Words to Know***

Add labels to the cartoon pictures to show:

Wai - water	Ngahere - tree
Puke - hill	Maunga - mountain
Roto - lake	Awa - river
Moana - sea	Rangi - sky
One - beach	Takutai - coast
Wahapu - estuary	

*What other words describe Life by the Water?*

## ***What Can I Do?***

### **Indoor Activities**

Build a fish out of paper, cardboard, sticks, wool . . . whatever you can find!

Make something from harakeke: a bracelet, a kete (kit) or a bird feeder to hang outside.

Find out where the water that runs out of your bath, sink, toilet and roof guttering ends up. Your parents or the local council office might be able to tell you.

Look on a map of New Zealand to find the names of some rivers that start with "Wai".

### **Activities by the Stream**

Look for the young larvae of insects, under stones in the stream.

Talk about why trees are good for streams.

Taste the nectar from a harakeke flower. Mmm, no wonder the tui likes it!

Listen for different sounds - how many can you hear?

What would the stream be like in a flood? Where do fish, birds and insects go in a flood?

Plant a tree! Or better still, organise a working bee to plant up the whole riverbank, in a place where they'll be safe from cows and other animals.

Atawhai Parawai  
Life by the Water

# Estuaries



When I was an eiver, I swam through here with a shoal of ianga and we had to dodge a few nets!

This water tastes kinda salty - I wonder if we're near the sea...

The last time I came through here I was just a wee eiver heading upstream. It's changed since then!

Yeah, there's more rubbish, more pollution and it's a heap smaller than I remember it... I'm sure there was water where those farms & factories are.

Yeah, it's like that! I clear, I keep clean and get!

Yeah! Yeah!

Yeah, it's like that! I clear, I keep clean and get!

Yeah, it's like that! I clear, I keep clean and get!

Treat Catchment Whitebait Game by their eggs in 1975

S.J. ASPLIN '98



# Excellent Estuaries

## ***The Mudflat Mob – find us in the cartoon!***

Cockles are shellfish that grow in their millions, out of sight in the estuary's mudflats.

Torea, the oyster catcher, eats up to 350 cockles a day!

Red billed gulls love to steal the opened cockles left by torea.

The tunnelling mud crab makes a hole near the edge of the estuary where it lives all its life, coming out at each low tide to find scraps of food.

Pied stilts (poaka) make their nests near coasts, estuaries, rivers and lakes, but their favourite foods are the crabs and shrimps of the estuaries.

Glasswort lives in New Zealand's northern estuaries, and tastes salty (but sheep love to eat it too!)

Bachelor's buttons is a plant named for its round yellow flowers that colour the estuary margins in the spring.

Sand scarab beetles often fly into coastal towns on warm summer nights. When they were young grubs, they burrowed into the sand to eat the roots of estuary plants.

Whitebait are the young fish of the inanga and a few other native fish. Inanga lay their eggs in the bankside grasses at very high tides in the autumn.

Mud snails eat twice their own weight in mud every hour! The mud has lots of yummy food in it.

## ***Godwit, the Round-the-World Wader***

Kuaka, the godwit, is one of the most common birds of New Zealand's estuaries. It is one of the many kinds of birds called "waders", because its long legs let it wade in the shallow water of the estuary looking for food.

But instead of staying in the estuaries all their lives, godwits fly half way around the world and back again every year!

During the summer, kuaka spends its time catching worms and crabs on New Zealand's estuary mudflats, pulling them out of the mud with its long, curved beak.

In the winter, thousands of kuaka make the long, long journey to Siberia (in Russia), where they lay their eggs and raise their young. At that time it's summer in Siberia, and there's plenty of food for them there. But after a few months, they fly all the way back to New Zealand again.

## ***What's Eating the Estuaries?***

Some people think that estuaries smell bad and are no use to anyone. But other people think estuaries have the great smell of the sea, and know that they are important feeding grounds for fish, birds and shellfish.

Many of New Zealand's estuary edges have been filled in or drained for farms and factories.

Boats and jet skis can scare away birds, as well as people looking for a quiet spot to enjoy themselves.

Weeds such as cord grass are smothering native plants and animals in some estuaries.

## ***What Can I Do?***

### **Indoor Activities**

Draw a food web for an estuary, or make one with drawings joined by bits of string.

Find the godwit's winter home, Siberia, on a map of the world. How far does it have to fly each year?

The names of other New Zealand estuary birds give clues to their winter homes. Try to find on a world map the homes of the Siberian tattler, Asiatic whimbrel, Mongolian dotterel, and Hudsonian (or American) godwit.

### **Activities by the Estuary**

Go bird watching! How many different kinds can you see? What parts of the estuary are they in and what can they do there?

Walk out onto a mudflat and wait quietly for the crabs and other animals to come out of hiding. Watch what they do as soon as you move again.

Discuss what you like about estuaries.

Take in the smells of the estuary. Do you like them? And what does the water taste like?

If you go fishing or shellfish gathering in an estuary, remember to take no more than you're allowed, and only as much as you need for a feed.

Imagine what mudflats are like at high tide when they're covered in water. What animals would be there?