



Issue 65 – December 2015

# Estuaries

## Kia ora Pollution Busters

Summer is here! We love this time of year, it's great catching up with all our friends and whānau that come to visit us in the beautiful Bay of Plenty.

In this issue we are going to explore our harbours and estuaries, and how we can stay safe this summer while we are out enjoying them.

Check out some of the cool photos and letters from our members on page 2. Enter the colouring competition on page 9 and go in the draw to win an art pack.

Enjoy your summer break pollution busters, and keep up the good work caring for our environment. See you in 2016!

Tiakina tona a Ranginui raua ko Papatūānuku  
– keep protecting our sky father and earth mother.

From BuzzBOP and the Pollution Busters Team.





# BuzzBOP's MAIL

Thanks for the mail Pollution Busters!

Keep sending us your photos, stories, and art!  
Remember to include your name, age and address on the back of your artwork!



Check out the awesome letter from **Kiera** - we think she is an artist too, what a great picture of BuzzBOP!



**Josh Johnson** from Ōpōtiki is enjoying doing the wordfind in our last newsletter.

**Eden Price**, aged 10 from Tauranga sent in this cool poster. Eden goes to Selwyn Ridge School - they are an Enviroschool and do lots of great work to help the environment!



**Win an art pack!** Check out the competition on page 9 and send your entries in before 10 February and go in the draw.



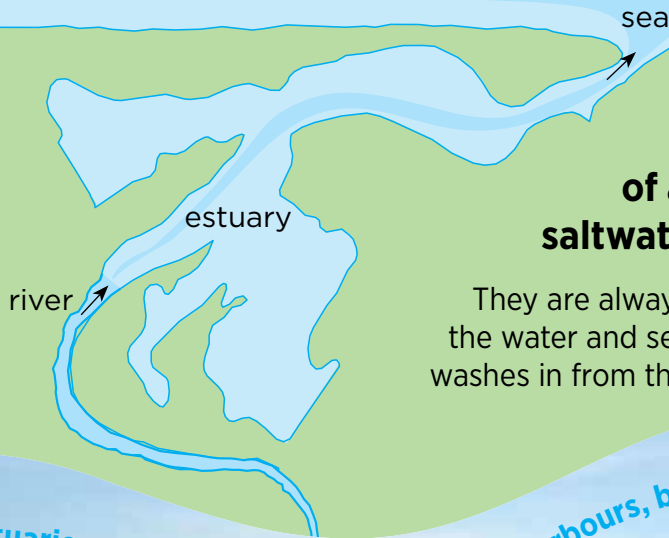
**Send your drawings, photos, letters and competition entries to:**

POST: Bay of Plenty Regional Council  
Pollution Busters Club  
Freeport 122076  
PO Box 364  
Whakatāne 3158

EMAIL: [buzzbop@boprc.govt.nz](mailto:buzzbop@boprc.govt.nz)



# Estuaries - What are they?

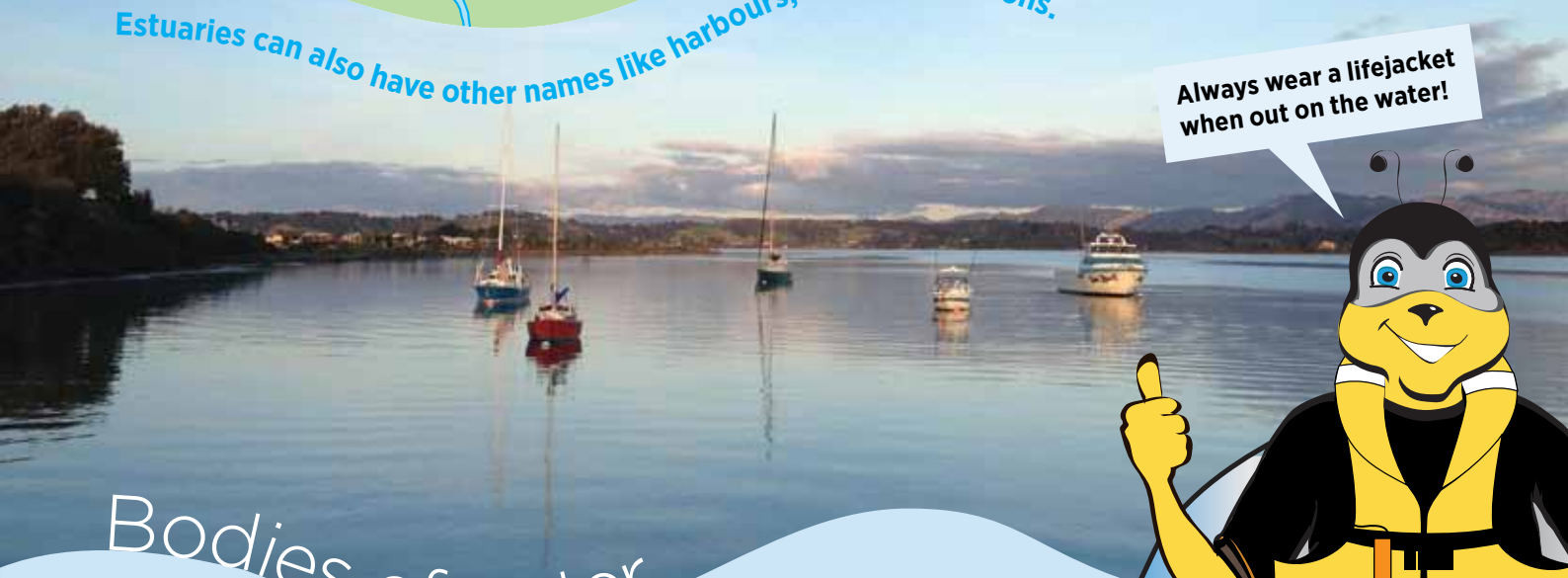


**Estuaries are places where the freshwater takes a rest at the end of a river and meets and mixes with the saltwater before flowing out to sea.**

They are always changing as the tide goes in and out, and with the water and sediment that runs off the land and sand that washes in from the ocean.

*Sediment - Particles (tiny bits) of sand, silt or clay*

*Estuaries can also have other names like harbours, bays and lagoons.*



**Always wear a lifejacket when out on the water!**



## Bodies of water

Unscramble these words and match them to their meanings

ruhaobr \_ \_ \_ \_ \_

tasurey \_ \_ \_ \_ \_

neaoc \_ \_ \_ \_ \_

The water that covers most of the earth.

Safe sheltered place for boats to stop.

Wide part of a river where it meets the sea; and salt and freshwater mix.

## Estuaries are an important ecosystem because they:

- are breeding grounds for fish and birds;
- buffer the coast from storms;
- keep the coastal water healthy;
- filter sediments;
- are a place for us to enjoy (boating, fishing, skiing, kayaking); and are
- a source of kai



**I am Tangaroa!**  
The son of Ranginui and Papatūānuku. I am the God of the sea, rivers, lakes and all that live within them.

*Colour in or draw a picture of Tangaroa and send it to BuzzBOP!*

## Māori and estuaries

- Estuaries are a taonga (treasure).
- They are great mahinga kai (food gathering sites) as in the safe sheltered waters there are lots of shellfish, fish and birds.
- Lots of plants found in estuaries are used for weaving, medicine and carving.
- Sheltered coastal sites were the first homes for early Māori.
- Middens (ancient refuse heaps) are common around coastal sites where there were large shellfish beds.
- Māori use the estuarine rivers to travel inland to its resources of flax and tuna (eel).

## We are kaitiaki (guardians)

Māori understand that all living things are important and connected. As **kaitiaki**, it is the responsibility of people to look after and improve the ecosystems of the atua (Gods - like Tangaroa).

It is important to use **Mātauranga Māori** (traditional knowledge passed down from the elders), to carry out **Kaitiakitanga** - the jobs that kaitiaki have to do to protect and improve the environment.

### **Kaitiaki**

a guardian (this can be a person or group that cares for an area like an estuary)

### **Kaitiakitanga**

concept of guardianship and protection

### **Mātauranga Māori**

the knowledge of the atua passed down through the elders

# Threats... Harbours and estuaries are most at risk from human activities!



**YOU CAN HELP** by telling people to wash their cars and paintbrushes on the lawn and by picking up rubbish off the street.

**YOU CAN HELP** by planting native trees and shrubs in your garden to help attract and feed native birds.

Everywhere you look people have changed the estuaries and harbours in the Bay of Plenty.

## Estuary threats:

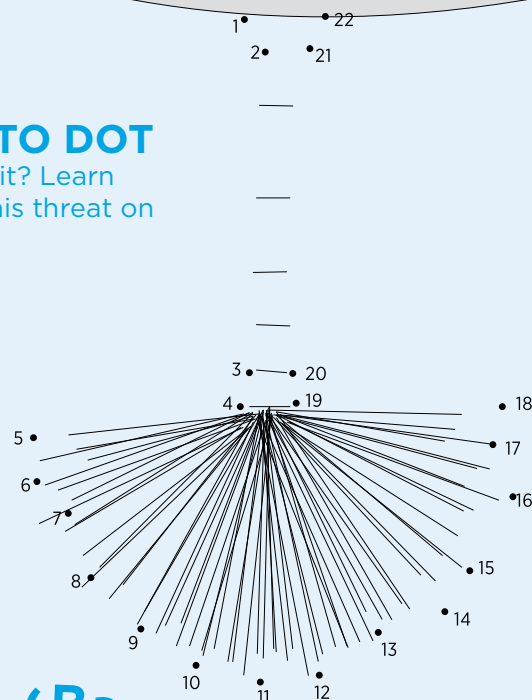
- **Land clearance** (dirt and silt running off the land)
- **Pollution**
- **Oil Spills**
- **People reclaiming land for other uses** (like marinas, jetties)
- **Pest plants and animals; marine pests**

These things all hurt the health of the estuary and the creatures that live there; and spoil these places for us to enjoy.

Can you think of any others?

## DOT-TO DOT

What is it? Learn about this threat on page 10



## Estuaries of Te Moana-a-Toi (Bay of Plenty)

Tauranga, Whakatāne and Ōhiwa harbours and five other major estuaries - the Maketū, Little Waihi, Whakatāne, Waiōtahe and Waioeka/Otara estuaries.

Total length of the Bay of Plenty coastline is 688kms - That's about the distance from Auckland to Wellington. **Just over half our coastline is harbours/estuaries!**

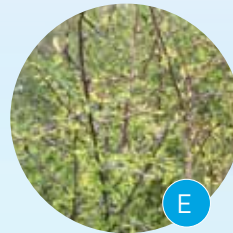
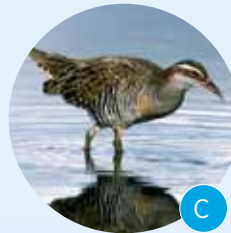
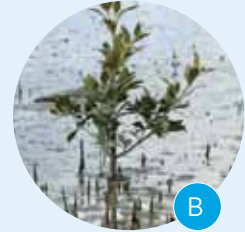
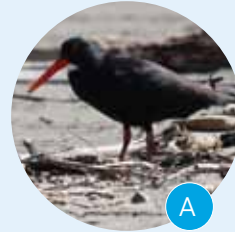


# Who lives there?

Lots of plants, shellfish, fish and birds live in estuaries.

Match these animals, fish and plants to their names

- 1  A variable oystercatcher / tōrea pango
- 2  royal spoonbill / kōtuku ngutupapa
- 3  white-fronted tern / tara
- 4  New Zealand dotterel / tūturiwhatu
- 5  Australasian bittern / matuku hūrepo
- 6  banded rail / moho pererū
- 7  mangrove / mānawa
- 8  snapper / tāmure
- 9  kahawai
- 10  mussel / kuku
- 11  pied stilt / poaka
- 12  white faced heron / matuku
- 13  gurnard / kumukumu
- 14  saltmarsh ribbonwood
- 15  tunnelling mud crab / kairau
- 16  flounder / pātiki
- 17  black backed gull / karoro
- 18  pied shag / kāruhiruhi



Coastal birds like to feed at mudflats and soft sands that they can get to at low tide.  
**Estuaries provide lots of kai!**

Answers: 1A, 2G, 3J, 4K, 5D, 6C, 7B, 8Q, 9N, 10P, 11H, 12I, 13R, 14E, 15M, 16F, 17L, 18O

# Mudsnails

Mudsnails can eat 2x their own weight in mud every hour. They are sensitive to pollution. You can tell how healthy an estuary is by how many that live there.

© NGA MANU IMAGES

## Make a mud crab finger puppet

### You will need:

- scissors
- colouring pencils/felt pens/crayons
- sticky tape
- piece of paper and pencil

### What to do:

1. Trace the crab puppet below. Remember to include the fold lines.
2. Colour in your crab.
3. Cut around your crab.
4. Fold along the dotted lines. Fold the lines closest to the crab's head forward and the lines further away backwards.
5. Use a piece of sticky tape to wrap the rectangle piece around your finger.



## Tunnelling mud crab

Tunnelling mud crabs are found in the high tide zone of sheltered, muddy estuaries. They dig themselves a burrow and only move out of the burrow to feed. The mud crab feeds on particles in the mud and rotting algae.

Adapted from Pollution Busters Issue 13 Marine December 2002. Original mud crab finger puppet ©Morton

# Estuary food chain

Kai (food) is very important, it gives us energy to grow, this is the same for other living creatures too.

## SUNLIGHT > MANGROVE > MUD CRAB > KINGFISHER

Makes its food from sunlight that gives it energy to grow

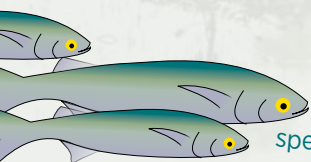
Eats the mangrove leaf litter

Eats the crab

They are all connected and depend on each other for food. What would happen if there were no mangroves for the mud crab? **Can you draw another example of a food chain?**

# Mangroves/mānawa

You have to be a pretty special plant to survive in saltwater, and mangroves sure are amazing! They usually live in shallow and calm waters that are dry at low tide in estuaries or harbours.



Mangroves are a nursery ground for some baby fish species like short finned eel and yellow eyed mullet.



They can grow into big waterlogged forests and have funny roots that stick up into the air.



They love salty muddy water so they grow really well where lots of dirt gets washed off the hills and into the harbour.



Mangroves are home to many native insects, birds, shellfish, snails, crabs and algae.



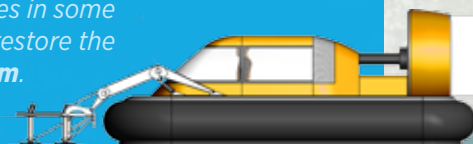
But... too many mangroves can create problems – especially for the access, use and enjoyment of people.

Because they trap the sediment it can reduce the water flow and changes the currents, and over time it can turn the estuary into dry land and the estuary can die...Oh no!



**YOU CAN HELP** by joining an Estuary care group and take part in riparian plantings (this helps to stop sediment getting into waterways).

Some groups with the help of Bay of Plenty Regional Council's 'mangrove muncher' hovercraft are removing mangroves in some areas to restore the ecosystem.



**Ecosystem:** community of living and non-living things that work together.



**Seagrass** is a native flowering marine plant which lives in sandy or muddy intertidal areas of a harbour or estuary.

It is important for preventing erosion and it provides food and shelter for fish and birds.

But it is on the decline, one of the reasons is because of more sediment in the water that blocks the light it needs to survive.





Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Age: \_\_\_\_\_

**Post entries to:**  
Bay of Plenty Regional Council  
Pollution Busters Club  
Freepost 122076  
PO Box 364  
Whakatāne 3158

**Or scan and email to:**  
buzzbop@boprc.govt.nz

**Entries close 10 February 2016**

# Kaimoana for all!



**YOU CAN HELP** by making sure you know the limits and only take what you need, and that this is not more than you are allowed.

Fishing is one of our most popular recreational activities; lots of us enjoy catching and eating kaimoana (food from the sea)!

So that there is enough for everyone, for years to come, we all need to act sustainably. Most fish and shellfish can only be taken from the sea in small numbers – this is called quota, it tells us the fish/shellfish limits we are allowed to take.

**Follow the NZ fishing rules** - check out [www.mpi.govt.nz](http://www.mpi.govt.nz) for the fishing limits and rules in your area.

Sometimes a **rāhui** (ban on collecting resources) is placed on an area so shellfish can regenerate (or if there has been a drowning in the area).



Kaimoana has always been an important part of the traditional Māori diet. Māori think of the coastal environment as 'baskets of food' providing kaimoana for the community.

## Get crafty with shells!

You could make shell birds or critters, wind chimes or decorations!



GLUE & BLACK PAINT

Shell critters are really fun to make, all you need is: shells, paint, any craft materials or things you can upcycle from around the house... and your imagination! BuzzBOP has made a shell tōrea pango. Send us a photo of what you make from shells.

Search > [Kids shell crafts](#) for more ideas and instructions on the internet.



### TIPS:

- If you are collecting shells and you're not sure if anyone still lives in them – put them in a bucket of salty water for a while – if someone is still at home put them back where you found them.
- Wash shells in warm soapy water.
- Some crafts may need holes drilled – have an adult help you with this.

# Marine pests

Marine pests are plants or animals that come from overseas that are a threat to our wonderful underwater environments.

Most boats coming into the Bay of Plenty have been to Auckland or Northland where they have marine pests (Mediterranean fanworm and sea squirts). These boats can bring the marine pests with them (boats coming from overseas can bring pests too). Luckily they haven't moved in here yet and we want to keep it that way!

They are spread through ballast water and hull fouling (sticking to the bottom of the boat). If the pests spawn (release or deposit eggs) here they could spread quickly and be too hard to control.

**Join the pest patrol – check your boat for these marine invaders!**



**YOU CAN HELP** by reminding adults to check their boat for marine pests



Mediterranean fanworm

PHOTO: C. Reed



Clipped tunicate sea squirt

PHOTO: Northland Regional Council

In the past two years there have been five boats found in Tauranga harbour with these pests on their hulls. They were taken out of the water and cleaned.

# Estuary fun

Can you find all these fun activities in the wordfind.

J W K M D O G V S T U I B L K  
 E G A J I N N P G N I I K S X  
 T N I P V C I K A Y A K I N G  
 S I G B I R D W A T C H I N G  
 K F A O N F R S A I L I N G D  
 I R T B G A A T B P I C N I C  
 I U H B S N O R K E L L I N G  
 N S E V G Z B G N I E O N A C  
 G D R E D N E B O A T I N G T  
 G N I T C E L L O C L L E H S  
 P I N A T Q D G N I M M I W S  
 I W G Z R P D G N I H S I F F  
 B G N I D R A O B E T I K P Z  
 F X Q E X K P R T G F Z X Q T  
 O X B N G X U K U D Y L G E S

- BIRD WATCHING
- BOATING
- CANOEING
- DIVING
- FISHING
- JETSKIING
- KAI GATHERING
- KAYAKING
- KITE BOARDING
- PADDLE BOARDING
- PICNIC
- SAILING
- SHELL COLLECTING
- SKIING
- SNORKELLING
- SWIMMING
- WIND SURFING



**YOU CAN HELP** by taking your rubbish home, or picking rubbish so it doesn't enter our streams and rivers and flow to our estuaries



## Stay safe in, on, under or around the Bay's waters!

While having all this fun on the water we need to stay safe - BuzzBOP has gotten all mixed up - can you match the messages to the pictures?



**It takes 3 to ski** - You must have 2 people on a boat if you are being towed.

**10+ to be an observer when towing** - You must be over 10 years old to be the person watching when towing a skier/biscuit.

**Always wear a lifejacket** - Boats must have life jackets for every person on board.

**Check before you dive** - Don't dive into water until you know what is there.

**Do not swim in ski lanes.**

**Get your skipper a copy of the Bay of Plenty Navigation and Safety Bylaws.** It has all the rules for boating in the Bay of Plenty (like having lifejackets and safe speeds) and has maps that show you access lanes and areas for activities (like water skiing/biscuiting).



Find out more about being safe on the water and do some fun activities, visit:  
[www.boprc.govt.nz](http://www.boprc.govt.nz) > residents > kids > activities > Water Safety Education and Activity Book



# BuzzBOP's Friend

## Amy Platt

### Job title:

Summer student for the Bay of Plenty Regional Council Science team

### What do you do?

I help the science team with their environmental monitoring programs over the summer months. I get to be part of various research projects such as monitoring sedimentation build up, testing the water for nutrients, and monitoring the levels of pollution in the Tauranga harbour waters.

### What is the best part of your job?

I love that I'm outdoors most days instead of being stuck in an office. It's great fun being out and about, exploring the harbour, and working in the mud!

### What do you like about estuaries?

That they are unique habitats which provide safe areas for large numbers of specially adapted animals and plants to live and that they protect the land from flooding and storms, and filter water which helps keep our coastal waters clean.

### What is your message to pollution busters?

Grab your friends and get involved with restoration projects and community activities in your area such as rubbish clean up days. You'll be making a difference to our environment and having fun at the same time!



## JOIN POLLUTION BUSTERS!

Do you have friends or family aged 3-15 years old and live in the Bay of Plenty?

Are they interested in learning about the environment and sustainability?

Get them to join the Pollution Busters Club by sending BuzzBOP the following:

Name, address, phone number, birthday and school.

Post to:

BuzzBOP and Team  
Bay of Plenty Regional Council  
Freepost 122076  
PO Box 364  
Whakatāne 3158

Email:

[buzzbop@boprc.govt.nz](mailto:buzzbop@boprc.govt.nz)



Nga mihi o te Kirihimete me te Tau Hou

Season's greetings for Christmas and the New Year.