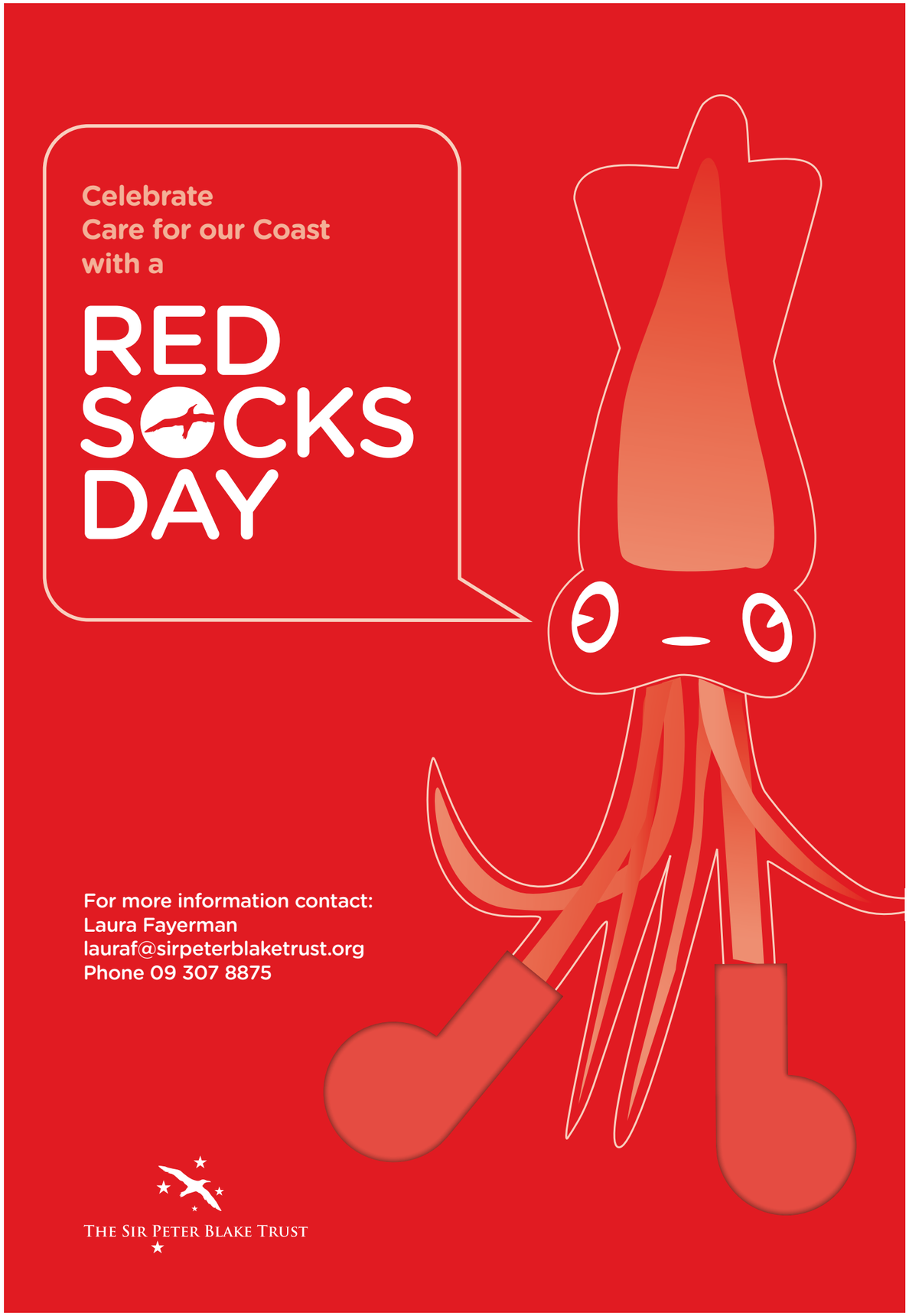
Sir Peter BLAKE ENVIRONMENT

CARE FOR OUR COAST

TEACHERS RESOURCE

www.sirpeterblaketrust.org



INTRODUCTION

The Sir Peter Blake Trust exists to inspire an awareness of the marine environment and to celebrate great leadership.

Thank you for considering these educational resources for your classroom and school. We hope you will enjoy teaching your students about how we can all contribute to caring for our coast.

OBJECTIVES OF THE CARE FOR OUR COAST PROGRAMME

- To promote changes in behaviour through education and action to ensure the sustainability of New Zealand's marine environment;
- To encourage schools and communities to show social responsibility for their local coastal areas and waterways; and
- To inspire young New Zealanders to keep the spirit of Sir Peter Blake alive.

This resource is an educational tool that provides a start in educating towards a more sustainable future, and ideas suggested as activities have huge potential for a greater depth of learning.

IT'S SIMPLE!

- **STEP 1:** Learn about caring for our coast in the classroom
- **STEP 2:** Experience the learning by cleaning up the coast
- **STEP 3:** So what, now what?
- **STEP 4:** Celebrate the unit with a Red Socks Day to remember Sir Peter Blake

ACKNOWLEDGEMENTS

Thank you to our leading partners (Westpac, Lion Foundation and Fuji Xerox) and supporters for enabling the Trust to implement its programmes. In particular, thank you to the New Zealand Community Trust for funding our Programme Manager for this project.

Thank you to Maria Gill who wrote the teaching resource, to the wonderful team of teachers and the Auckland Regional Council, who advised and reviewed it.

Please contact our Environmental Programme Manager at the Sir Peter Blake Trust for further information on the teaching resource, the clean-up activity, and organising a Red Socks Day.

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As Sir Peter Blake said:

"We want to restart people caring for the environment as it must be cared for, and we want to do this through adventure, through participation, through education and through enjoyment."

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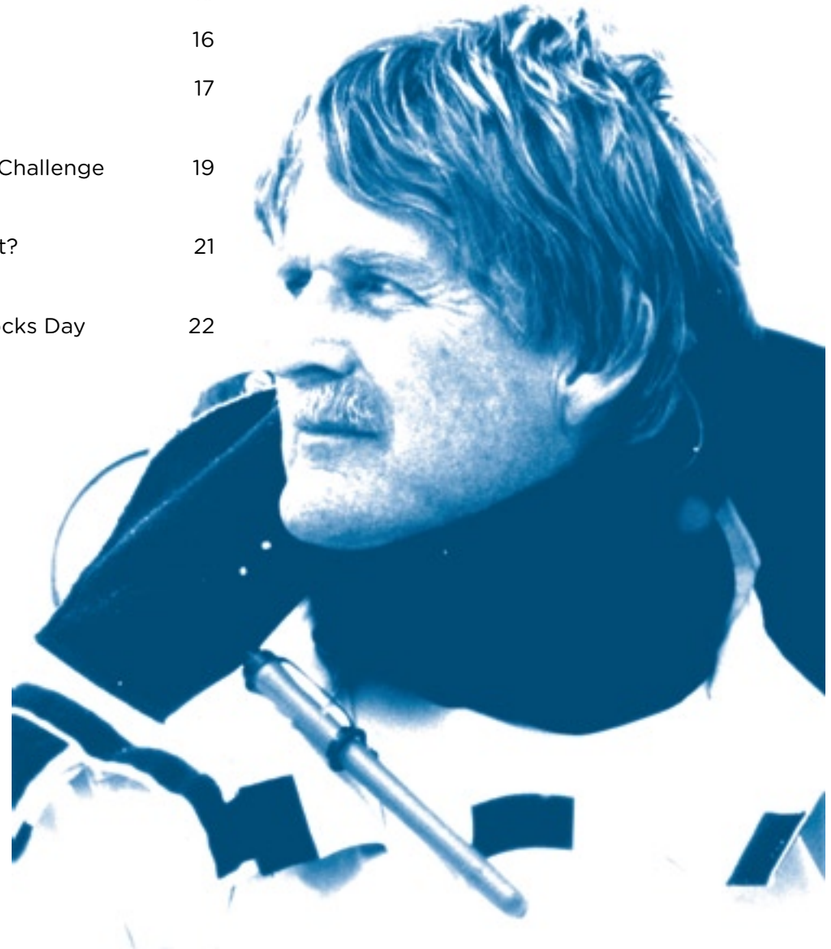
Teachers Resource



CARE FOR OUR COAST

YEARS: 4-8
LEVELS: 2-4
DURATION: 4-8 WEEKS

ACHIEVEMENT OBJECTIVES

SIR PETER BLAKE

SOCIAL SCIENCES: PLACE AND ENVIRONMENT

- Students learn about how individuals perceive, represent, interpret and interact with places and environments to understand the relationships between individuals and the environment. Levels 2-4

LEARNING OUTCOMES

- Describe the ways that Sir Peter Blake acquired and exercised leadership.
- Identify the skills and knowledge Sir Peter Blake needed to use and develop to be successful in achieving his environmental and sailing goals.

CARE FOR OUR COAST

SOCIAL SCIENCES: SOCIAL INQUIRY

- Students ask questions, gather information, examine issues and participate in social action.
- Students understand that events have causes and effects.

SCIENCE: LIVING WORLD ECOLOGY

- Explain how living things are suited to their particular habitat and how they respond to environmental changes. Levels 2-4

EDUCATION FOR SUSTAINABILITY

- Students practise environmental project-based learning involving students in local projects that are meaningful and make real contributions to their communities.
- Aims to improve the environment.
- Change students' behaviour, attitudes and values, towards the environment.

KEY COMPETENCIES

Students will utilise the key competency tools in a range of activities:

- Managing self
- Relating to others
- Participating and contributing
- Thinking skills
- Using language, symbols and texts

TEACHING AND LEARNING ACTIVITIES

	LEARNING ACTIVITIES	LEARNING OUTCOMES
	Sir Peter Blake Learning Centre	Social Responsibility
A	Bus Stop Activity	Sharing prior knowledge
B	Knowing Your Coastal Environment	Labelling and evaluating
C	Fun at the Beach – Recreational activities	Designing, reporting
D	Rural Run-offs	Experimenting, problem solving
E	Water Only Down the Drain	Compare and contrast, learning for a purpose
F	Fishermen Out of Control	Using focus questions, recording, reporting
G	Marine Debris and Litter	Learning with a purpose, ordering information
H	Cultural Values	Looking at then and now, reporting, charting
I	Pollution Busters	Ordering information, presenting
	Coastal Clean up Challenge	Social responsibility
	Celebrate with a Red Socks Day	Completing tasks, self-evaluation

STEP 1
LEARN: SIR PETER BLAKE LEARNING CENTRE

SIR PETER BLAKE LEARNING CENTRE FACT SHEET

Sir Peter Blake was an exceptional sailor, leader and team person. His achievements included winning two America Cup trophies and numerous line honours in world-famous sailing races including five Whitbread Round the World races.

One of Sir Peter Blake's sayings was: "If it isn't hard, it isn't worth doing". He liked a challenge. That attitude enabled him to take on a new adventure after his last America's Cup race. He sailed to the pulse points of the world in the Seamaster uncovering environmental issues, starting with Antarctica and South America. He wanted to show the rest of the world what was happening around us.

SIR PETER BLAKE ONCE SAID:

"...We are polluting and exploiting the waters of the world at a rate that is not only unsustainable but that will have frightening consequences in the very near future (entire species of fish are disappearing and there are projections that there will be no major fishing on a commercial scale within 25 years)... What are we doing about this? At best, very little. At worst, nothing. The warnings are there and the evidence is all around."

LET'S TAKE ACTION!

Tragically Sir Peter was killed at the mouth of the Amazon River on 5 December 2001.

To find out more about the life he lived, go to:
http://www.sirpeterblaketrust.org/sirpeterblake/

SIR PETER BLAKE LEARNING CENTRE CHALLENGE

Your challenge is to see what you can learn about Sir Peter Blake and the environment through the Learning Centre activities.

Complete as many activities as you can in the time allocated by your teacher. Like Sir Peter Blake, you must do your best, be determined to never give up and try your absolute hardest.

Whenever you finish an activity, answer the relevant questions and fill in a self-evaluation form before the next activity. Have fun!

TIMELINE ACTIVITY	ACROSTIC POEM
Draw up a timeline for one of Sir Peter's "Blakexpedition" trips. For information about his expeditions, visit: **www.sirpeterblaketrust.org/sirpeterblake/** • What was Sir Peter Blake trying to achieve on his expeditions?	Write an acrostic poem using Sir Peter Blake's name, about his environmental work. For help with acrostic poems go to: **http://www.readwritethink.org/materials/acrostic/** • How is his environmental work significant to you?
PUZZLE MAKER	**MAPPING**
Make a puzzle using information about Sir Peter Blake's life from this website: **www.sirpeterblaketrust.org/sirpeterblake/** Choose a puzzle from this site: **http://www.puzzlemaker.com/** • How does Sir Peter Blake's life inspire you?	Draw a map of the world and then plot Sir Peter Blake's trips on it. Hint: Use different pens for different trips. See this site for information about his journeys: **http://www.sirpeterblaketrust.org/sirpeterblake/** • Where would you like to visit to help encourage environmental awareness?
LOG ENTRIES	**BOARD GAME**
Read some of Sir Peter Blake's log entries and imagine you are right there with him on Blakexpeditions. Write an email letter or your own ship's log to tell your family about the wonderful adventure you are having. Let them know of an environmental concern and how you can all help make a difference. See **www.sirpeterblaketrust.org/sirpeterblake/** site for some of his log entries.	Make a board game, using information about Sir Peter Blake's life from this site: **www.sirpeterblaketrust.org/sirpeterblake/** as if you were going on an expedition. You can draw ideas from games you have played before, such as 'Snakes and Ladders', 'Sails and Masts', 'Monopoly'. • What positive changes can you make in your own life, as if you were playing to win your own game?
ATTRIBUTE WEB	**THINKING SKILLS (SELECT 2)**
Using an Attribute web, record the skills, qualities and values which Sir Peter Blake demonstrated. See this site about his leadership skills: **www.sirpeterblaketrust.org/sirpeterblake/** To see how an Attribute web is done go to: **http://socialstudies.nelson.com/arnold/skimm/main/items/attributeweb.html** What attributes do you have? • How can you use those skills to help continue Sir Peter's work?	**1.** The Ridiculous: Everyone should sail the world before they are 25. Justify this statement. **2.** The Prediction: Suggest more ways you could use what you have learnt about Sir Peter Blake in your own life. **3.** The Interpretation: Give some reasons why Sir Peter Blake is considered one of our greatest leaders. **4.** The What if? What if Sir Peter Blake hated getting wet?

PHOTOCOPY AND ENLARGE ONTO A3 PAPER

A BUS STOP ACTIVITY
FINDING OUT WHAT WE KNOW

LEARNING INTENTION

Students will be able to:

- **Share what they know about what it means to care for our coast**
- **Record their prior knowledge in a 'Bus Stop' activity**

LEARNING ACTIVITIES

- Introduce the unit: Care for our Coast.
- As a class, brainstorm what 'Caring for our Coast' means. Tell the class that original and way out ideas are useful. Read the list and ask if there is anything else they can add.
- In pairs, students brainstorm a question they would like answered about 'Care for our Coast' by the end of the unit. Record students' questions on a wall chart. Students urged to add information to anyone's question so that by the end of the unit all the questions have been answered. Teacher refers to them from time to time – asking 'what else could be added?' These questions could be put on to a shell shape and used to decorate the mural; which they will do later in the unit.
- Organise students into five numbered groups. Introduce the Bus Stop activity. Place around the classroom five large sheets of paper with the following questions:

  1. How do you think recreational activities (including fishing) impact on the coast?
  2. How do you think fishing industries impact on the coast?
  3. How do you think litter impacts on the coast?
  4. How do you think rural discharges (run-offs) impact on the coast?
  5. How do you think stormwater discharges (drains) impact on the coast?

Every five minutes, groups fold over their brainstorm answers then move to another sheet and answer that question. At the end of activity, each group will read aloud the sheet they have in front of them to the rest of the class. Ask the class if there is anything they would like to add.

- Discussion with class about which of these activities/pollutants possibly harm their local beach.

Why is this important?

How does that make the students feel?

CURRICULUM LINKS

- **READING** – For exploring the ocean through literature activities go to:
  http://www.fi.edu/fellows/fellow8/dec98/main.html

SUCCESS CRITERIA

- Students will investigate these focus questions in the Pollution Buster activity I.
- Students have contributed and shared ideas in the brainstorm activities.
- Students have formed their own questions about the unit and answered them by the end of the study.

TOOLS

- For instructions on 'Bus Stop' activity go to:
  http://www.english.unitecnology.ac.nz/resources/units/taha_moana/bus_stop.html

MATERIALS
- **Whiteboard**
- **Large sheets of paper**
- **Felt pens or marker pens**

NOTES

B KNOWING YOUR COASTAL ENVIRONMENT

LEARNING INTENTION

Students will be able to:

- **Understand what caring for our coast means.**
- **Label the different parts to their beach**
- **Name different types of ecosystems**

LEARNING ACTIVITIES

- Introduce lesson. Revise what caring for our coast means. Are we talking about protecting just the sand or does it include the dunes, embankment, estuary and the water? How do we know what to protect?
- Start a word bank of words about the beach, including: offshore, shore, foreshore, backshore, high water, low water, low water breakers, low tide shoreline, high water breakers, high tide shoreline, berm, cliff, dunes, embankment, rocky bed, estuary.
- Using these words, students draw their local beach, labelling its parts. See 'Life's a Beach', Education Resource, Section 1, for a diagram.
- In pairs, students discuss whether the beach they have drawn is a sandy beach, rocky beach or a bay with a freshwater river/creek/stream outlet (estuary). Students title their sketch accordingly. As a class, discuss the differences between the types of beaches.
- Investigate what an ecosystem is:
  www.sciencelearn.org.nz/contexts/icy_ecosystems/science_ideas_and_concepts/ecosystems
  Students brainstorm different types of coastal ecosystems.

CURRICULUM LINKS

- **SCIENCE** – The way we use the beach affects the different ecosystems around the beach. In groups, students discuss how their different ecosystems (e.g. in the water, rocky shore, dunes, estuary) could be affected by different impacts.
  Students investigate and draw what food web is present for the ecosystem they have focused on, including producers, herbivores, carnivores, decomposers and scavengers.
  What would be the outcome if the food web is negatively impacted on?

SUCCESS CRITERIA

- **ART** – Students transfer their knowledge from what they've learnt to do the following activity. As a class, draw a mural of their local coastal area including plants and animals. As the unit progresses, students can add pictures that show cultural uses and different human activities that impact on the coastal environment, **including consequences** of both positive and negative impacts.

TOOLS

- See Building Science Concepts, Understanding Tidal Communities, Book 22, for food webs of rocky shore, sandy shore and mudflats.
- For information about estuaries go to:
  http://www.niwa.co.nz/edu/students/estuaries
- For information/activities about sandy shores go to:
  http://www.ebop.govt.nz/education/lifes-a-beach.asp
- For a science experiment on estuaries see:
  http://www.niwascience.co.nz/edu/resources/estuaries
- For information on city issues see:
  http://www.arc.govt.nz/arc/education/education-resources/education-resources_home.cfm

MATERIALS
- **Large sheet of paper**
- **Marker pen**
- **Drawing paper**
- **Drawing pencil**
- **Long sheet of paper**
- **Paints/crayons/pencils**

NOTES

C FUN AT THE BEACH
RECREATIONAL ACTIVITIES

LEARNING INTENTION

Students will be able to:

- **Share what activities happen at their local beach**
- **Evaluate which activities have a positive/negative impact on the environment**

LEARNING ACTIVITIES

- Discuss with the class, which parts of the beach humans use for recreational use. It will vary for different areas. For example, at sandy beaches humans might use the dunes, sand and water. At rocky beaches, humans might use the rocks, grass embankment and water.
- Divide students into groups of four. Each group decides which coastal environment they are going to focus on. For example, some groups focus on sandy beach, some rocky beach and others estuary environment. In their groups, students brainstorm and record the uses of their coast on a 'double bubble' thinking map (template 1, page 18).
- Consider the examples: developers want to bulldoze dunes, families leave litter, teenagers drive jeeps over dunes, fishermen take too much fish or fish that are too small in size, people take shells home, farmers spray their farms.
- Teacher raises the question whether some of these activities might have a negative or environmental friendly impact on a beach. For example, a motorbike riding on the sand dunes, erodes the dunes, whereas running along the beach is environmentally friendly. In their small groups, students put a smiley face next to the environmentally friendly activities and a sad face next to the negative impact activities. Report to the class including why it is positive or negative and the importance.
- Students discuss what has been done to protect their beach i.e. signs, pathways, fences.

CURRICULUM LINKS

- **ENGLISH** – Students role-play humans' impact on the beach. Then bring in the animal role players such as fish, shellfish, insects and birds, and how those activities affect them. **Include the consequences of the impacts** in the role-playing.
- **ART** – Students design posters that will help protect the beach, with an environmental message on how to make a positive change. For example, fences protect the sand dunes, keep to the paths, clean up after your animal (horse and dog), plants protect dunes, vehicles destroy dunes, surf the waves not the dunes, litter in the bin not the beach.
- **VISUAL LANGUAGE/ICT** – Using the internet investigate signs used to protect the coastal environment. Are there any other signs that are important?

SUCCESS CRITERIA

- Students transfer their knowledge to write a PMI chart detailing ways the Council has tried to improve their beach.

TOOLS

Double bubble map: **http://www.nhcs.k12.nc.us/htree/Curriculum/ThinkingMaps.html#DBM**

MATERIALS
- **Thinking Map**
- **Pencils**
- **Role playcards**
- **Class set poster paper**
- **Colouring pencils**

PMI CHART ON MY BEACH

POSITIVE	MINUS	INTERESTING
Fences put up to protect dunes Dogs only allowed on beach at certain times	Children still play on dunes No place to walk dogs in summer	Need signs to protect dunes Some beaches have plastic bag stands so you can clean up after your dog

D STORY TIME
RURAL RUN-OFFS

LEARNING INTENTION

Students will be able to:

- **Understand where rural run-off comes from**
- **Record information in a flow chart**
- **Explore what rural run-off means to them**

LEARNING ACTIVITIES

- Read the story on pages 10 & 11 aloud to students.
- As a class, discuss what pollutants and activities were harmful to the river and sea and why these are harmful. Differentiate between the run-offs, stormwater and wastewater.
- In groups, students take turns reading the story again. Whenever they come to a pollutant or activity that is harmful to the river or sea they highlight it. Students put into a bowl in front of them a pollutant (or a dye that is coloured like it). For example, they would put in a leaf, then plant food, then weed killer, brown playdough for waste etc. as it arises in the story.
- As a class, students talk about how the pollutants have affected their bowl of water. Discuss whether plants, fish or sea creatures could still live in it. What would be the outcome for the animals living in polluted water?
- Students discuss, in pairs, what acid rain could be. Check in the dictionary.
- Teacher models filling in a flow chart about the water cycle (below).
- From what they learnt in the story, students fill in a flow chart about the human activities that harm the water.
- In a second chart students personally reflect, recording the alternatives for minimal environmental impacts. Highlight what can be achieved at home. How would Sir Peter tackle the issues?

CURRICULUM LINKS

- **PERFORMING ARTS** – Turn the story into a mime or dance.
- **ART** – Draw a picture of the journey.

SUCCESS CRITERIA

- Students can transfer their knowledge of what they have learnt to select three types of pollution and find a solution to prevent each type.

TOOLS

- Go to **www.arc.govt.nz/arc/library/i64642_2.pdf** or **www.ecowater.com** for more activities.

MATERIALS
- **Story photocopied**
- **Bowls of water x 6**
- **Pollutants such as leaves, plant food, weed killer, brown playdough, yellow dye**
- **Paper and pens**

POLLUTION	SOLUTION

PRECIPITATION RAINFALL → FLOWS INTO RIVERS → FLOWS INTO SEA → EVAPORATION VAPOUR → WATER DROPLETS FORM CLOUDS

Robbie Raindrop runs off to the sea

"Weeee..."

... Robbie Raindrop squealed, as he fell out of the cloud. He bounced and collided with the other raindrops as he surfed towards the land far below. They sparkled like jewels as a beam of sunlight escaped from behind the cloud. Far below, Robbie Raindrop could see a river tumbling out of the forest, sweeping down through the flat green farmland where it divided into small lakes and slow-running streams. Black and white animals moved over the farm, like clouds. He wondered if it would be fun to play down there.

Splash! Suddenly he was there, just another drop of water in a slow-moving stream. Robbie Raindrop opened his eyes wide in surprise. Koura the freshwater crayfish tried to catch him, but Robbie Raindrop was too fast. Twisting and turning in the stream, he managed to avoid the long-finned eels. Just in time, a raft of leaves swirled into sight; with a jump Robbie Raindrop climbed aboard. From his new vantage point, he could see the edge of the stream.

But what was that noisy machine doing making rain and spraying it all over the fields?

The white fluffy clouds that lived here had heads, eyes and feet. He could see them closely now as they trampled the edge of the stream and lowered their faces into the water. Splat! Something brown and smelly came out the other end of one of the fluffy animals, just missing Robbie Raindrop as he floated past.

A golden-banded fish called out. "Quick! Jump on my back. I'll get you out of the sludge." The banded kokopu slid under the murky water with Robbie Raindrop holding on tight. Around the next bend in the stream, the water looked the same but it tasted sour. "The water always tastes this bad when the spraying starts," said the kokopu fish, as he took him up for a look. There wasn't much to see, as a mist shrouded the valley of fruit trees.

"If it tastes so bad, it can't be good," said Robbie Raindrop.

"You'd think so," said Kokopu, "but they do it several times a year."

Kokopu dived deeper to avoid the spray. On the bottom of the stream, slimy algae matted together, choking the oxygen out of the water. Robbie Raindrop thought he'd burst. "I can't breathe here," said Kokopu, as he swam to the surface.

An eel floated by with its eyes wide open but not seeing anything. "What's with him?" asked Robbie Raindrop.

"Not everyone can hack it."
"You mean the spray killed him?"
"That and all the other sprays. They spray the weeds, grass, trees, crops. Nothing's safe."

"Yikes, can we go somewhere cleaner?" Kokopu didn't answer. "Hold on, we're joining the river."

Suddenly the stream merged with a large river. "You'll have to hop off here, I'm going upstream," said Kokopu. Robbie Raindrop jumped on to a leaf, and waved goodbye to his friend.

Robbie Raindrop continued down river but saw no fish or eels anymore. Instead, crumpled bits of paper and rusty tins took their place. "Where do you come from?" Robbie Raindrop asked. Though they danced with life, they did not answer.

Gone were the fields and black and white animals. Now large buildings loomed over the river. At the next corner, out of a large pipe gushed yellow steaming water. It shrivelled everything it touched. Robbie Raindrop steered his leaf out of its frothy path. But when he looked up he saw puffs of black smoke coming out of a factory chimney. The fumes dropped ash on the leaves of plants and trees nearby. Robbie Raindrop could hear them shriek at the burning touch.

Just when Robbie Raindrop felt he could bare it no more, the river spread into an estuary. A pipe pumped out brown sludge, filled with toilet paper, nasty-tasting chemicals and cream froth. They all merged and swept out to sea. The further the tide took them, the cleaner the water became.

Phew! I thought I was going to be stuck in the sludge forever, thought Robbie Raindrop, as he tumbled off his leaf into the water. But he had spoken too soon. A boat floated past, and out of its side dribbled oil. The oil spread its sheen far and wide. A snapper swam by, and coughed, its gills clogged. "Oh no, it's happening here too," gasped Robbie Raindrop.

A pied shag dived into the water and grabbed the poisoned snapper. Oops, it won't like that, he thought. A plastic bag shaped like a jellyfish floated by. An arrow squid grabbed it, tried to eat it and spat it out. Then the squid stretched a tentacle out for Robbie Raindrop.

"Yikes, get me out of here!" Robbie Raindrop floated to the top. The sun warmed him and he became as light as a feather. He had become water vapour again. He floated up to the sky and merged with other droplets in the cloud.

"I think I might stay here, where it's nice and clean." Then an angry-looking cloud filled with acid rain bumped into his cloud. The acid began to leak into his cloud and it broke the surface tension in Robbie Raindrop's own drop. An acid droplet imprisoned him. Then, just like a parachute, he felt himself fall out of the sky again.

"I hope it's better down there," gasped Robbie Raindrop. How quickly he had forgotten...

E WATER ONLY DOWN THE DRAIN

LEARNING INTENTION

Students will be able to:

- **Understand the differences between stormwater and wastewater**
- **Locate and record the position of stormwater drains in their school**
- **Identify pollutants draining into their school drain and develop a solution**

LEARNING ACTIVITIES

* Introduce the lesson. Ask the class what 'water only down the drain' could mean.
* Brainstorm what the difference is between wastewater and stormwater.
* Students draw a venn diagram to show the difference – for a master copy go to: **http://www.readingquest.org/pdf/venn2.pdf**
* Put the article 'It's money down the drain' on the Overhead Projector: **http://www.nzherald.co.nz/author/story.cfm?a_id=88&objectid=10444425**
  Teacher reads it to the class, defining any words that students do not understand. Teacher models skimming and scanning, using focus questions like the 'w' questions. For example, who is trying to fix the problem? Teacher runs his/her finger down the article until he/she finds the answer. Students come up with a list of questions and use them to focus their scanning. Students share answers with a partner.
* Students become detectives and investigate the stormwater drains in their school. Talk about where these drains might run. Record any dirt, rubbish, oil or oily sheen they find washing into the stormwater drains. Write up a report and send to the caretaker about the pollutants going down the drain. Gain permission to paint 'Only Water down the Drain' signs near drains in and around the school.
* Discuss the contribution the class can make towards only water going down the school drains.
* Take Sir Peter's Blake's leadership approach and role-model positive changes.

CURRICULUM LINKS

- **SCIENCE** – Students test the water of the local creek, stream or river. If polluted, students gain permission to paint signs on drains around the local area.
- **ENGLISH** – Write a letter to the local council about the pollutants affecting our coastline and ask what they are doing to minimise the effects of these pollutants. Invite the Council member to speak to the class about the subject.
- **ART** – Design and cut out a template for painting the signs for the drains.

SUCCESS CRITERIA

- Students transfer the knowledge they have learnt to write a Double Bubble Thinking Map (template 1, page 18). See how to do a Double Bubble Thinking Map and an example of what they are comparing below. **http://www.nhcs.k12.nc.us/htree/Curriculum/ThinkingMaps.html#DBM**

TOOLS

- Article OHP: **http://www.nzherald.co.nz/author/story.cfm?a_id=88&objectid=10444425**
- For more 'Water only down the Drain' activities go to: **www.arc.govt.nz/arc/library/i64642_2.pdf** (includes Homework activities)
- Students answer the 'Warrior or Wally' quiz; see: **www.cwmb.sa.gov.au/kwc/section1/1-32.htm**
- Try the Great Drain Game; see: **http://www.arc.govt.nz/arc/index.cfm?AD92422D-BCD4-1A24-9DA5-EEA22E31E431**

MATERIALS
- **'It's money down the drain' article**
- **Paper and pens**
- **OHP**
- **Article on OHP paper**
- **Water test kit**
- **Paint**

COMPARE AND CONTRAST CHART

STORMWATER	WASTEWATER
Collects wastewater from outside the house. Collects rainwater from roofs, yards and driveways. Goes down roadside drains or stormwater grates on roads, yards and car parks. Flows into stormwater pipes which carries run-off to the nearest stream, harbour and beach. Pollutants include rubbish, paint, animal faeces, soil, lawn clippings, garden rubbish, pesticides, fertilisers, grease and oil, air pollution, chemicals, heavy metals such as zinc and copper from cars, detergent and bits of rubber.	Collects wastewater from inside houses, offices, factories, schools etc. Goes down the pipes into sewage pipes. Flows into sewerage treatment plant before being dispersed into the environment. Pollutants include food scraps, detergents, chemicals, paint, human faeces, grease and oil.

NOTES

F FISHERMEN OUT OF CONTROL!

LEARNING INTENTION

Students will be able to:

- **Investigate fishing practices that harm marine environments**
- **Pose a question and locate answers on types of fishing methods**
- **Design a new and improved method of fishing that is not harmful to the marine environment**

LEARNING ACTIVITIES

- Introduce the lesson. Students share what types of marine species they consume and where they get them from.
- In groups, brainstorm different fishing and harvesting methods.
- In pairs, use a focus question to research how one particular way of fishing or harvesting is harmful to the marine environment i.e. trapping and potting, trawling, purse seines, gill-netting, trolling, jigging, hook and line, long-lining, beach seining, diving. Use the KWL map to record information. See **http://www.starfish.govt.nz/science/facts/fact-methods.html**

CURRICULUM LINKS

- **SOCIAL STUDIES** – Ask class: what other damage does commercial and recreational fishing cause? Possible answers include oil spills, over-fishing, pollution, leaving broken fishing equipment out at sea. Discuss what solutions governments have come up with to solve this. In pairs, write a Problem Solution chart (similar to Pollution Solution chart). See: **http://www.starfish.govt.nz/science/facts/fact-conserve-fisheries.html**

SUCCESS CRITERIA

- Students report findings to the class.
- Using the knowledge they have learnt, students design an improved method for locating and catching fish.

TOOLS

- To see what marine environments look like when left untouched go to marine reserve videos on: **http://www.doc.govt.nz/templates/MultiPageDocumentTOC.aspx?id=44567**
- To visit a marine reserve near you go to: **http://www.doc.govt.nz/templates/summary.aspx?id=33776**
- To continue studying marine reserves go to: **http://www.kcc.org.nz/educators/marinereserves.asp**
- To continue studying fishing etc go to: **http://www.starfish.govt.nz/fish-for-tomorrow/fish_for_tomorrow.htm** and **http://www.starfish.govt.nz/science/teachers/teach.html**
- LEARNZ website: **www.learnz.co.nz**

MATERIALS
- **Whiteboard**
- **Paper and pens**

WHAT DO WE KNOW?	WHAT DO WE WANT TO FIND OUT?	WHAT HAVE WE LEARNT?	WHAT IS THE OUTCOME IF THIS CONTINUES?
Shrimps come from the sea	What fishing method do they use to catch shrimps and is this method harmful to the marine environment?	They capture shrimps by trawling the sea. This method destroys habitats on bottom of seabed. They throw 90% of their catch back into the sea – this is called the by-catch.	If habitats continue to get destroyed it disrupts the biodiversity in our oceans.

G MARINE DEBRIS AND LITTER

LEARNING INTENTION

Students will be able to:

- **Identify practices in their own life that can help minimise impacts on the marine environment**
- **Create and package an environmentally friendly lunch**
- **Learn about being proactive towards environmental issues**

LEARNING ACTIVITIES

- Introduce the lesson. Have a class discussion on litter/pollution, and how it effects marine environments.
- Students think about how they could have a picnic lunch at a beach/stream/river, without creating waste – put into action for the 'Clean up our Coast' trip.
- Encourage parents to continue with minimal litter lunchboxes.
- Students participate in a clean-up at their local beach. Go to page 19.

CURRICULUM LINKS

- **TECHNOLOGY/ART** – Collect waste materials from the beach clean-up trip and create the best marine environment project i.e. create an octopus, whale, dolphin, beach diorama etc for a fashion or art exhibition, to be displayed when you celebrate with a Red Socks Day.

SUCCESS CRITERIA

- Using the knowledge they have learnt, students (in pairs) pick a type of rubbish, such as plastic, and research the source, how long it takes to decompose, types, how it can be harmful to the marine environment and the solution. Other topics include fishing gear, glass, metal, Styrofoam, rubber, aluminium and tin. Check out information from the Clean up our Coast kit (information on page 19).

TOOLS

- For information about marine debris and their harmful effects see:
- **http://news.bbc.co.uk/2/hi/science/nature/6218698.stm**
  http://marinedebris.noaa.gov/whatis/welcome.html
- **http://www.greenpeace.org/international/campaigns/oceans/pollution/trash-vortex**
- **http://www.environment.gov.au/biodiversity/threatened/publications/pubs/marine-debris.pdf**
- **http://www.marlborough.govt.nz/content/docs/environmental/Waste_Reduction_Resource_Kit.pdf**

MATERIALS
- **Clean up our Coast kit**
- **Waste materials from home**
- **Glue**

POLLUTION BUSTER

TYPE OF RUBBISH	SOURCE?	HOW LONG TO DECOMPOSE?	TYPES?	HOW HARMFUL IS IT TO MARINE ENVIRONMENT?	HOW HAVE THE EFFECTS OCCURRED?
Plastic	Supermarket/ dairy Blown off ships and boats	Bags 20-50 years Bottles 450 years	Bags, bottles, marine equipment, balloons	90% of all floating debris is plastic More than one million sea birds die every year	Birds die from swallowing bags at sea, thinking they're a food source
Solution: Use cloth bags when you go shopping. Encourage supermarkets and dairies to use paper bags and promote use of cloth bags. Use glass bottles. Reuse plastic drink bottles. Buy Good Water bottles. Pick up litter at local beach.					**PROACTIVE: WHAT ACTION CAN BE TAKEN TO PREVENT THIS?**

H CULTURAL VALUES

LEARNING INTENTION

Students will be able to:

- **Investigate the way items of technology have developed**
- **Understand Maori uses and knowledge about fishing**

LEARNING ACTIVITIES

- Introduce the lesson. Read the article from 'The Living Sea: Maori Fishing' to the class – **http://www.seafood.co.nz/f464,24997/24997_Living_sea.pdf (page 39/40).**
- As a class, discuss the technology that Maori traditionally used to catch fish. Talk about whether some of these practices are still in use today.
- In groups, children write a fishbone web about the types of ways seafood is caught now. For example, you could have subtitles of fin fish, shellfish, squid/octopus, shrimps/lobster. Share with class. See: **http://www.enchantedlearning.com/graphicorganizers/fishbone/**
- As a class, talk about the ways Maori placed rahui (a ban) on collection of seafood so there would be plenty for everyone in the future. Is this practice still in place today? See differences in rahui and marine reserves: **http://www.seaweek.org.nz/marinereserves.html**
- Invite a Maori elder to talk to the class about customs associated with the sea. Students prepare questions to ask him at the end. Ask about the best time to catch fish and seafood in their area. Students make a fish calendar showing the best time to catch fish and seafood.
- Students build up a glossary of Maori words and terms relating to the coast.

MATERIALS
- **'The Living Sea' article**
- **Paper and pens**
- **Guest speaker**
- **Maori legends**
- **Flax, shells, stone, bone, wood**

CURRICULUM LINKS

- **READING** – Read Maori legends: 'How eels came down to earth', 'Kuku and the Pipi', 'Pelorus Jack' and 'Kahukura and the Fairy Fishermen'. Students construct their own Maori legend about placing a rahui on the West Coast to save the Maui dolphins. For more information go to: **http://www.kcc.org.nz/animals/hectorsdolphin.asp**
- **TECHNOLOGY** – Students make nets out of flax and hooks out of shells, stone, bone or wood.

SUCCESS CRITERIA

- Using the knowledge they have learnt and by using the internet, students write a chart detailing advantages and disadvantages in rahui, marine reserves, and mataitai seafood reserves.

TOOLS

- To study Maui dolphins go to: **http://www.wwf.org.nz/dolphin/teachers.htm**
- For more information on traditional Maori fisheries go to: **www.starfish.govt.nz/science/facts/fact-traditional-maori.htm**
- To study Maori proverbs associated with the sea: See 'Karunui's Tentacles' Education Resource.

FOR EXAMPLE

TYPE	ADVANTAGES	DISADVANTAGES
Rahui		
Mataitai Reserve		
Marine Reserve		

I POLLUTION BUSTERS

LEARNING INTENTION

Students will be able to:

- **Investigate pollution and its effect on coastal environments**
- **Understand how people's activities affect places and the environment**
- **Summarise learning and further research**

LEARNING ACTIVITIES

- Review previous activities: about the different ways human activities harm the coast and brainstorm the results apparent from each activity.
- In pairs, students select one of the focus questions from the Bus Stop activity. For example, how do recreational activities harm the coast?
- Students then use that focus question to investigate on the internet or in the library, using a graphic organiser to organise their information (template 2, page 18). For websites see below. Year 4 students could pick 2-3 focus questions, Years 5-6 pick 4-5 questions, Years 7-8 all six questions.
- Students present their information visually, as in a diorama, PowerPoint presentation, or poster; orally as in a speech, video, or in a series of skits (with other class members); or written, as in a factual report or story. Present to the class.

CURRICULUM LINKS

- **SCIENCE** – Students experiment with six types of pollutants on marine plants; see instructions: **www.coast-nopp.org/resource_guide/elem_mid_school/ma_pollution_acts/growth.html**

SUCCESS CRITERIA

- Ability to skim through information, scan relevant information, and then record on the graphic organiser. For graphic organisers go to: **http://www.enchantedlearning.com/graphicorganizers/**
- Able to present information from graphic organiser into a visual/oral/written project.
- Ability to summarise relevant material.

TOOLS

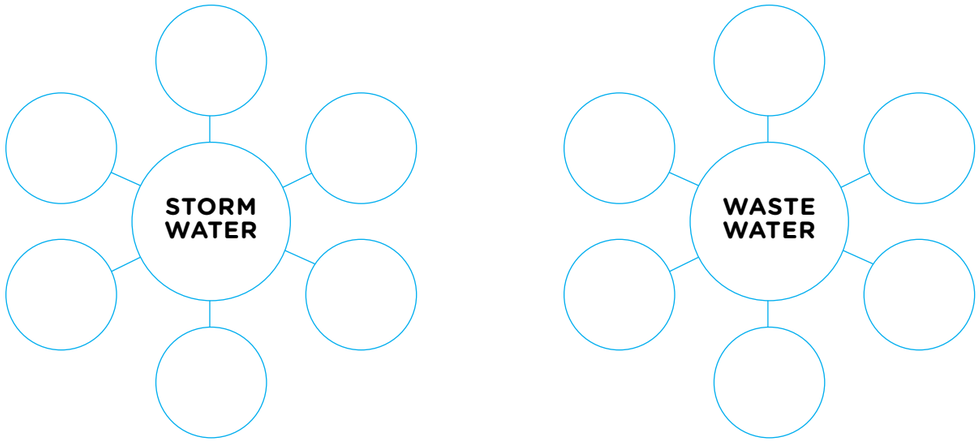
- **http://www.nrc.govt.nz/For-Schools/School-information-packs/Pollution/**
- **http://www.cwmb.sa.gov.au/kwc/ section1/1-23.html**
- **http://www.cwmb.sa.gov.au/kwc/about_catchments/Pollutant%20table.pdf**
- **http://www.teara.govt.nz/EarthSeaAndSky/OceanStudyAndConservation/MarineConservation/6/en**
- **http://www.arc.govt.nz/arc/library/i64642_2.pdf**
- Further action students could take could be to write a 'Pollution Buster Problemsolver' chart, then pick one of the problems to problemsolve and take action.
- Students make a collective decision about a certain area they wish to target both at home and at school.

MATERIALS
- **Focus Questions from Bus Stop activity on whiteboard**
- **Graphic Organiser template**
- **Presentation materials**
- **Access to results of previous activities**

NOTES

TEMPLATE 1

DOUBLE BUBBLE THINKING MAP



TEMPLATE 2

POLLUTION BUSTER PROBLEM-SOLVER CHART

POLLUTION BUSTER PROBLEM-SOLVER

QUESTION	PROBLEM	POSSIBLE SOLUTIONS
How do recreational activities such as fishing, swimming etc. harm the coast?		
How does commercial fishing harm the coast?		
How does marine debris and litter harm the coast?		
How do rural discharges (run-offs) harm the coast?		
How do stormwater discharges (drains) harm the coast?		
Personal reflection: how can I make a contribution?		

Enlarge and photocopy on A3 paper or display on OHP/whiteboard and students draw their own charts

STEP 2

EXPERIENCE: CLEAN UP OUR COAST CHALLENGE

When you look at a map of New Zealand you see two skinny islands surrounded by water. New Zealand's coastline is one of the longest in the world and it has the fourth largest maritime area after the United States, Indonesia and French Polynesia.

Not surprising then that every New Zealander lives no more than 120 kilometers – that's just over an hour's drive – from the sea. Just think, if every New Zealander did their part in caring for their coastline, we could have pristine coastlines and waterways.

New Zealanders spend most of their summer months at the beach or in the water, whether it is swimming, sailing, snorkelling or fishing. We value the sea for recreation, for its beauty and for its importance in healthy living. The quality of our waterways affects the quality of our life.

SIR PETER BLAKE ONCE SAID:

"Good water, good life. Poor water, poor life. No water, no life"

In keeping with Sir Peter Blake's desire to encourage people to care for our waters, the Sir Peter Blake Trust has created a 'Clean up our Coast' kit. This programme contributes to the conservation of one of our country's greatest natural assets – our seas, coasts and waterways.

Now that your school has participated in the 'Care for our Coast' unit, you'll want to take it one step further and participate in the 'Clean up our Coast' programme. Many schools are already cleaning beaches in their area and with other volunteer groups around the country; they have picked up over 31,000 pieces of marine debris! Mount Hobson Middle School in Auckland has conducted 20 clean-ups so far. The challenge is out for other schools to beat their impressive record.

Download the clean-up kit from the Sir Peter Blake Trust website: www.sirpeterblaketrust.org

THE 'CLEAN UP OUR COAST' KIT CONTAINS:

- Information on what is aquatic debris and why we should be concerned about it
- Information on what we can do to reduce aquatic debris
- Suggestions on how to prepare for a clean-up operation
- Information on different clean-up methods
- Suggestions for sorting collected material
- Survey sheets and information about what will happen to those records

After the clean-up, schools are encouraged to enter the data on the Trust website to receive their own pie graphs and bar graphs summarising their clean-up. You then send the data to the Sir Peter Blake Trust who will validate the results to be included as part of the nationwide clean-ups, and send out a certificate.

The combined information about the types, amounts and locations of rubbish is a powerful tool to encourage companies, organisations and individuals to reduce the amount of litter and debris entering our waterways.

To enter data, gain results, and check out other clean-up results go to: www.sirpeterblaketrust.org

RESOURCES

SCHOOL JOURNALS

- After the Storm, 1992, 2:2
- 'Blue Fish on the Footpath' by Pat Quinn, 1992 2:2
- Laying the Drains, 1981, 3.3
- 'New Zealand's Colourful Sea life' by Kim Westerskov, 1988 2:3
- 'Oil Spill – are we prepared?' by Norman Bilbrough, 1995 4:1
- 'Pollution – what happens?' by Janet Humphris, 1988 pgs 16-18
- 'Tau Koura', 2007, Connected: 1
- The Ecology of Harbours and Estuaries, 2006, Connected: 3
- 'The Shapes of Water' by Gillian Shannon, 1995 1:4
- The Water Cycle, 2002, Connected: 2
- Turid Reid: field studies scientist by Frances Parkin, 1979 4:1
- Using Water, 1979, 4:1
- Water Supply, 1978 4:3

BOOKS

- 'The Last Great Adventure of Sir Peter Blake' edited by Alan Sefton
- 'Life-size guide to New Zealand Fish' by Gillian & Darryl Torckler
- 'Crimpy's fishing for Kids' by Daryl Crimp
- 'The Sea Surrounds Us' by Maria Gill due out 2008 (contact Sir Peter Blake Trust for details)
- 'Sir Peter Blake: a sailor extraordinaire' by Allan Kirk, NZ 920 BLA

EDUCATIONAL KITS

- Bay of Plenty 'Life's a Beach' kit including DVD, PowerPoint, photographs
- ARC Teaching Resource, see: **www.arc.govt.nz/arc/library/i64642_2.pdf for stormwater activities**
- 'Karunui's Tentacles: Activities for Budding Marine Explorers' for activities and information on squid. Email: marine-studies@otago.ac.nz for a resource kit
- 'Reduce, Recycle, Reuse' by Environment Southland **www.es.govt.nz**

VIDEOS/DVDS

- 'Hard Hat Harry and the Pearls of Wisdom' – **www.hardhatharry.co.nz**
- 'Blake Expeditions' documentary **http://www.doc.govt.nz/templates/MultiPageDocumentTOC.aspx?id=44567**

LINKS

http://www.coast-nopp.org/resource_guide/elem_mid_school/ma_pollution_acts/index.html

http://www.ew.govt.nz/forschools/teachers/classroomunits/documents/introduction.pdf
for more coastal activities and information

www.ecowater.co.nz for a resource about the water cycle, rain, water use, stormwater, wastewater

http://nwp.rsnz.org/content/Pollution_Detectives/NWPD_English.pdf

http://www.marine-reserves.org.nz/
for location and information about marine reserves

http://www.watercare.co.nz/default,education.sm
adopt a stream educational resource

http://www.emr.org.nz/
Experiencing marine reserves

http://www.otago.ac.nz/marinestudies/education/resources/educ_writ_res.html
for books, posters

http://www.treasuresofthesea.org.nz/
for information about marine animals/fish/plants etc.

http://www.arc.govt.nz/arc/index.cfm?AD92422D-BCD4-1A24-9DA5-EEA22E31E431
for the Great Drain Game

FIELD TRIPS

Marine Reserves around NZ – **http://www.doc.govt.nz/templates/summary.aspx?id=33776**

Kelly Tarlton's – **www.kellytarltons.co.nz**

The Marine Studies Centre & Aquarium at Portobello, South Island – **www.marine.ac.nz**

Leigh Marine Reserve – Contact a.cozens@auckland.ac.nz to arrange school education tour

Island Bay Marine Education Centre – **www.octopus.org.nz**

STEP 3
TAKE ACTION: SO WHAT, NOW WHAT?

You've cleaned up your coast, filled in the survey sheets, analysed the data on the Sir Peter Blake Trust website, and sent in your survey sheet – so what, now what?

STUDENTS COULD CHOOSE TO SOLVE A PROBLEM AT SOURCE

- Brainstorm a 'pollution buster' issue and the proactive suggestion(s) to take preventative action.
- Brainstorm what the class/school/environment group could do next.
- Investigate further what are other sources of the problem. For example, you might have collected mostly plastic bags on your 'Clean up our Coast' day. Investigate where those plastic bags are coming from (include your results from Pollution Busters).
- Decide on a plan of action that works towards long-term solutions. For example, you might decide to make leaflets/posters to educate community about what happens to their plastic bags when they blow out of rubbish bins at the beach. Or you might write a letter to the Council asking them to put in more rubbish bins and empty them more regularly during the summer months. Or perhaps write a leaflet and hand it out to local businesses to encourage them to sell their products in cloth or paper bags. Remember – reduce, reuse, recycle!
- Once students make a decision, complete an action planner to identify the steps they need to take to achieve their visions.
- Students discuss their ideas with community members about what they want to do, and get a commitment from the community to plan and work collaboratively to solve the problem.
- Reflect on their actions:
  Will it solve the problem or is more action required?
  Are there other ways to contribute to the problem?

SUCCESS CRITERIA

- Students keep a journal during the 'So What, Now What?' process. They continue self-evaluating their input and reflect on the successes of the project, and what they are learning while being part of it.

What responsibility do I have, now I have this knowledge?

How can I continue the momentum to teach others?

'SO WHAT, NOW WHAT?' ACTION PLANNER

DECISION	ACTION	REFLECTION

STEP 4
CELEBRATE: WITH YOUR OWN RED SOCKS DAY

QUICK STEPS

- Book your date in the school calendar (last day of term?)
- Complete the registration form (page 23)
- Envelopes received and distributed to students
- Order sent to Sir Peter Blake Trust for your official Red Socks at least two weeks before your day
- Poster (page 24) copied to promote Red Socks Days to students and parents

CELEBRATE WITH YOUR OWN RED SOCKS DAY

Sir Peter Blake liked to wear his red socks for good luck. During the America's Cup Challenge in 1995, New Zealanders supported the boat by putting on their lucky red socks.

The Sir Peter Blake Trust is encouraging schools to celebrate the end of their Care for our Coast unit with a Red Socks Day to remember Sir Peter Blake!

Complete the Reds Socks Day Registration Form on page 23 and your red socks order form in support of the Sir Peter Blake Trust's environmental programmes.

Or wear your red socks and fundraise with a gold coin donation for the Sir Peter Blake Trust.

FOR MORE INFORMATION ON ORGANISING A RED SOCKS DAY, CONTACT:

Laura Fayerman
lauraf@sirpeterblaketrust.org
Phone 09 307 8875

Please allow at least two weeks to order your official socks.

Sir Peter Blake and Philip Jameson hanging red socks on a clothes line

Thank you

to the New Zealand Community Trust and the Ministry of Education for their assistance and support for this resource, and our Care for our Coast programme

Photograph taken by Ross Giblin (EP/1995/4820/30).
Photo credit: Alexander Turnbull Library, Wellington.

REGISTER: YOUR OWN RED SOCKS DAY

RED SOCKS DAY REGISTRATION FORM – FAX TO 09 309 3350	
School	
Physical Address	
Postal Address	
Contact Name	
Email	
Phone	
Our school is holding a Red Socks Day on:	
Please send us envelopes to collect red socks orders or donations from our students. Write in the box to the right how many envelopes you need.	

NOTE: Orders for red socks need to be faxed to the Sir Peter Blake Trust at least two weeks before your Red Socks Day.

Fax to: 09 309 3350

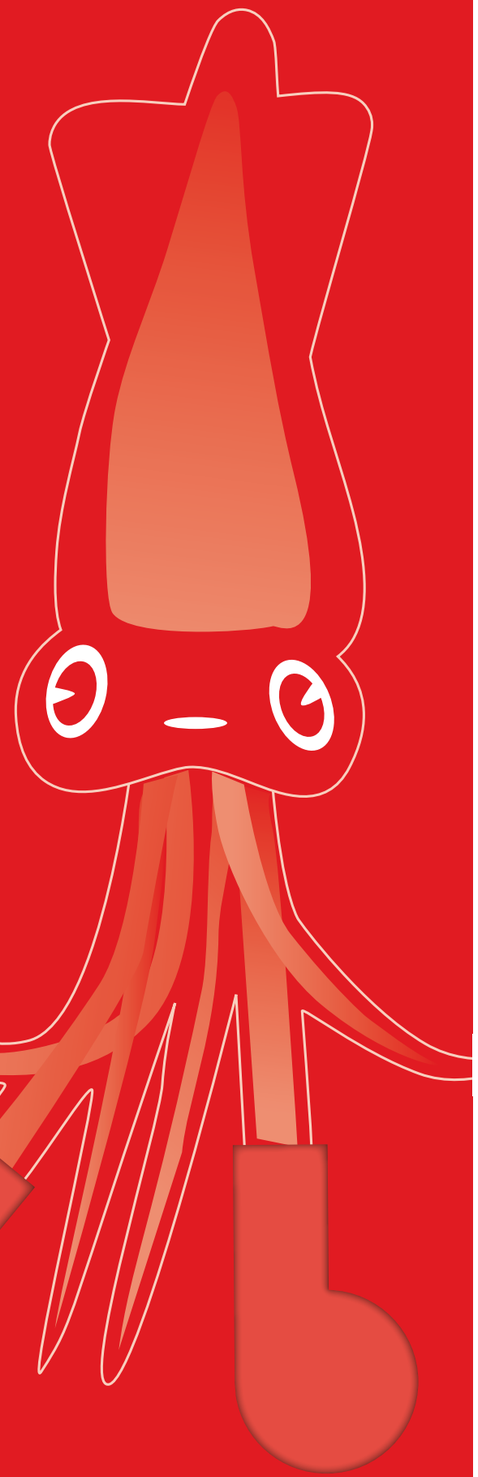
FOR MORE INFORMATION ON ORGANISING A RED SOCKS DAY, CONTACT:

Laura Fayerman
lauraf@sirpeterblaketrust.org
Phone 09 307 8875

We are celebrating
'Care for our Coast'
with a

RED SOCKS DAY

Our Red Socks Day is on



THE SIR PETER BLAKE TRUST

Sir Peter's determination and achievements left all who met him in awe and, by supporting the Sir Peter Blake Trust, we can play a small part in helping achieve Sir Peter Blake's goal of educating our community to the wonders of our marine world and protecting this environment.

LION FOUNDATION

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