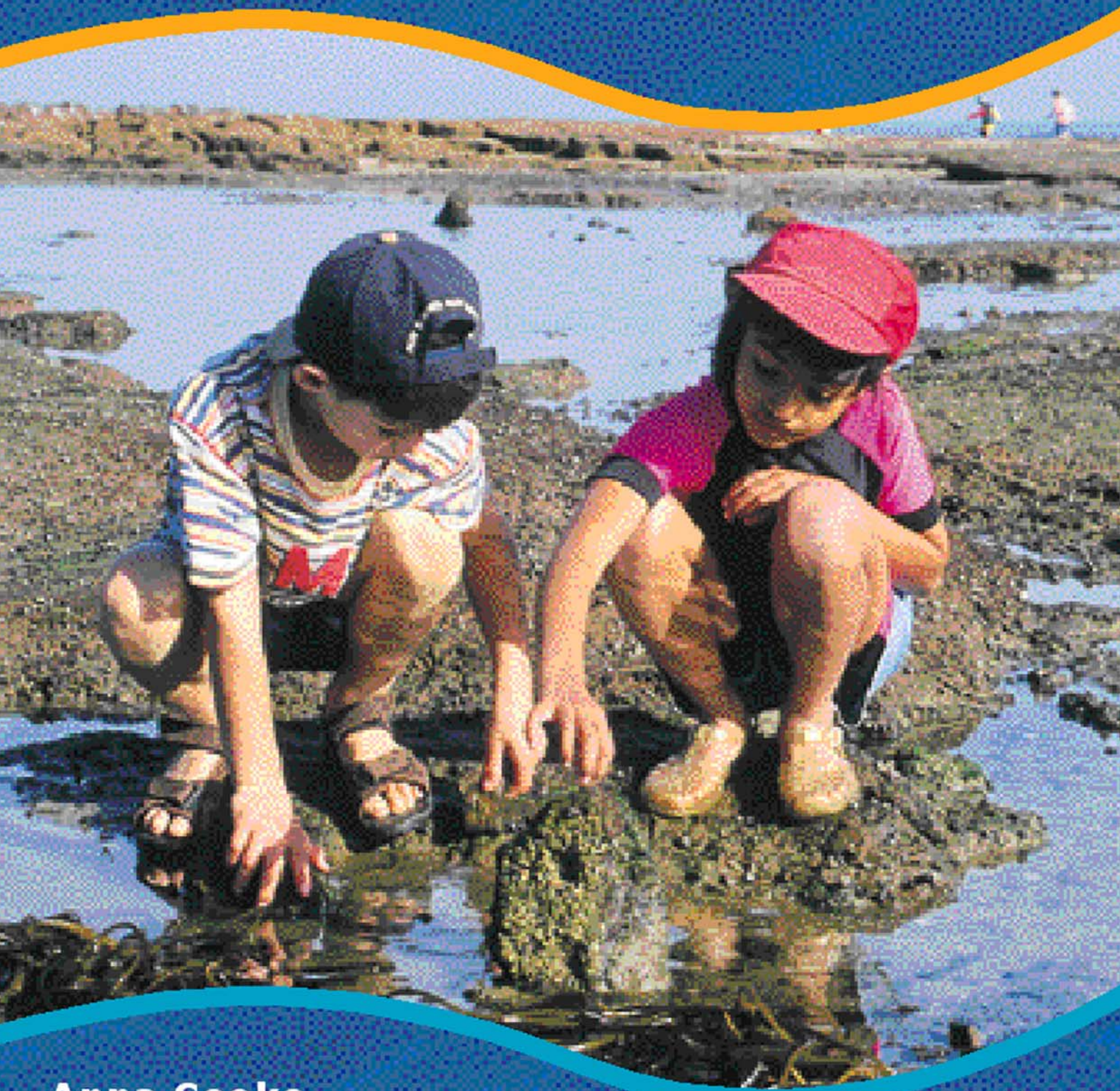




Level 3

Teacher Resource Book



Anna Cooke

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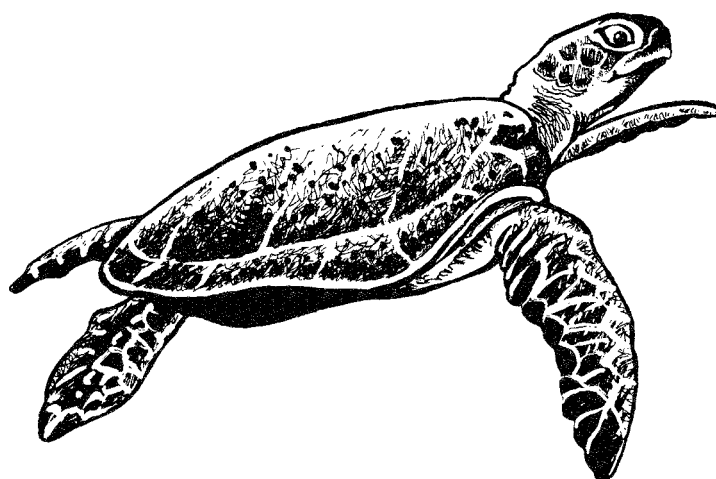
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The readers

Book 7: Tourists and the Sea

Have you ever been a tourist? We are all tourists when we go on holidays. Find out what a tourist is and visit some fun places that tourists go and what they like to do.

Book 8: All Kinds of Boats

Have you ever seen a huge ship out to sea and wondered what it might be carrying or where it is going? Get close to some of the fascinating different types of boats and ships we can see on our seas, bays and oceans.

Book 9: Rock Pool Life

Rock pools are places where we can get close to sea creatures without getting wet! Have you ever wondered what that round ball of spikes was under the rocks, or what those flowers in the sea are? Discover some of the amazing rock pool creatures and see what they look like.

Book 10: Creatures of the Deep

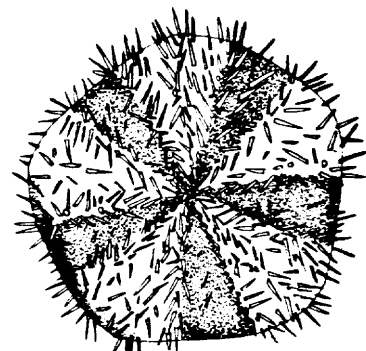
The temperature is just above freezing, the water pressure is intense, there is no light and food is scarce! This book shows some of the bizarre and fascinating creeps from the deep!

Book 11: Shipwrecks

What happens to a ship when it sinks to the bottom of the ocean floor? How does a ship become a shipwreck? Find out about some famous shipwrecks and the treasures that were on board at the time.

Book 12: Our Day on a Research Boat

Join a school excursion for an exciting day on a research boat! Learn about some equipment the research boat has and the tiny sea creatures they find in the sampling nets.



Pincushion sea star

About this resource book

The following suggested activities, blackline masters and worksheets are for use with the Kids and Water marine reader series books:

- Book 7 *Tourists and the Sea*
- Book 8 *All Kinds of Boats*
- Book 9 *Rock Pool Life*
- Book 10 *Creatures of the Deep*
- Book 11 *Shipwrecks*
- Book 12 *Our Day on a Research Boat*

This workbook has activities for each book with key learning areas and learning outcomes identified for each activity.

Focus questions and ideas for introducing the topic of the book before, during and after the reading have also been suggested at the start of each section.



Why marine education is important

If you could travel into space and look back at our earth you would understand why it might be called the blue planet! The oceans of the world are rich and valuable environments. They are filled with some of the most amazing, fascinating and bizarre creatures, plants and geological features. The oceans cover 71% of our earth's surface, contain most of the life on earth and produce most of the world's oxygen!

The oceans are in danger. Oil spills, rubbish dumping, overfishing, erosion, habitat disturbance and a host of human activities are all severely affecting our blue planet.

Many young people are interested in preserving the oceans. The sea is more than just a nice place to visit; it is a major part of our life support system.

What we do each day and how we use and care for the land will affect the health of the oceans.

Through education we can create student awareness, influence attitudes and encourage action, to support our marine and coastal environments.



Book 7

Tourists and the Sea

Before reading the book

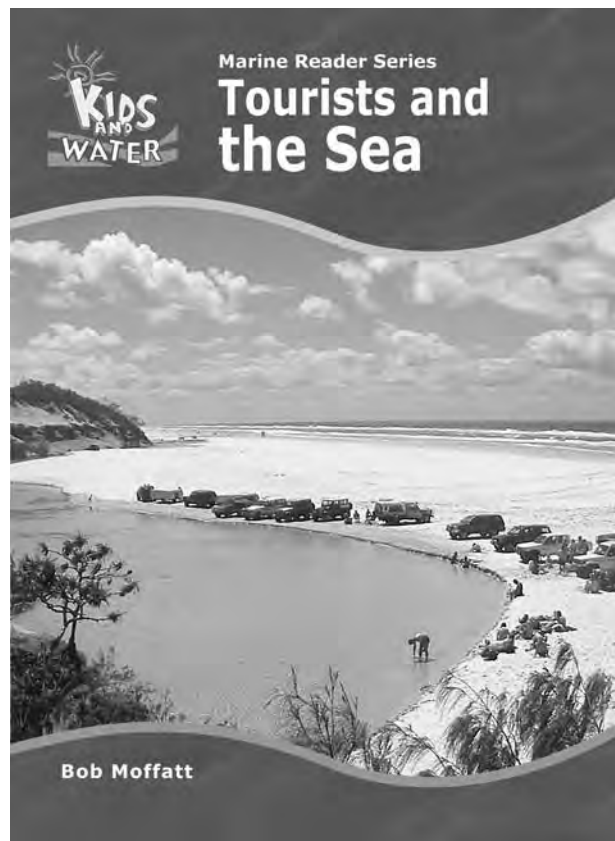
- Students can collect information from travel agents about places they would like to go.
Bring these to the classroom to discuss why they chose that place and what they would do there.
- Students can bring photos of a recent holiday by the sea.
- Discuss what the students did on this holiday or what they would like to do if they went to their favourite holiday place.
- Discuss what a tourist is.

After reading the book

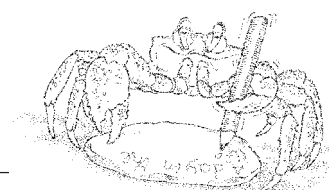
- Use the glossary for further explanation of unfamiliar terms.
- Have the students use an atlas to find some of the places mentioned in the book.
- Draw on the experiences of the students
 - Have they been camping? Or to a resort?
 - What did they do there?
 - Has anyone been on a boat trip?
- Use the pictures to create discussion and do further research.
- Use the 'Turtles' questions in the pictures to create further discussion.

Other suggested activities

- Do some research on ecotourism. Make a poster of some of the ecotourist resorts in Australia. Use the internet.
- Design a tourist resort that has little or no pollution.
- Find a definition for ecotourism.
- Write a story about your holiday as a tourist.



Learning outcomes



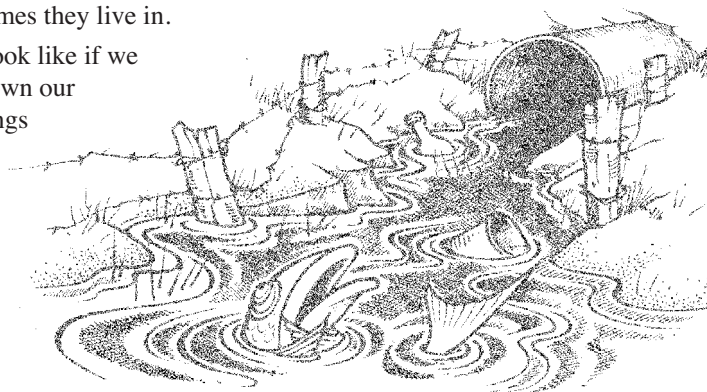
Activity	KLA	Outcome
1 What's that in the sea? -p3	Science	LIFE AND LIVING – 3.9 Explains why some living things have become extinct and identifies current endangered species. WORKING SCIENTIFICALLY – 3.14 Organises and uses equipment to gather and present information.
2 Summer time! -p4	English SOSE	WRITING – 3.9 Experiments with inter-relating ideas and information when writing about familiar topics within a small range of text types. PLACE AND SPACE – 3.6 Identifies issues about care of places arising from the different ways in which they are.
3 What would you do? -p5	English SOSE	WRITING – 3.10 Recognises that certain text types and features are associated with particular purposes and audiences. PLACE AND SPACE – 3.6 Identifies issues about care of places arising from the different ways in which they are.
4 My postcard home -p6	English SOSE	WRITING – 3.10 Recognises that certain text types and features are associated with particular purposes and audiences. PLACE AND SPACE – 3.4 Describes places according to their location and natural and built features.
5 What future? -p7	SOSE	PLACE AND SPACE – 3.6 Identifies issues about care of places arising from the different ways in which they are. Investigation, communication and participation – 3.17 Presents information to explore a key idea.
6 Beach or bush? -p8	SOSE	PLACE AND SPACE – 3.4 Describes places according to their location and natural and built features. Investigation, communication and participation – 3.17 Presents information to explore a key idea.
7 Cultural tourism day -p9	SOSE Health & PE	CULTURE– 3.8 Identifies different groups within the community and how they function. PEOPLE AND FOOD – 3.7 Discusses influences on personal food intake.
8 I'd like to go there! -p10	English Science Technology	WRITING – 3.10 Recognises that certain text types and features are associated with particular purposes and audiences. LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat. DESIGNING, MAKING AND APPRAISING – 3.6 Selects and uses techniques to manipulate, transmit and transform information when creating information products.

Name: _____

What's that in the sea?

When we are at home or when we are on a holiday what we do with our rubbish is very important! When materials are not disposed of properly they can end up in the sea and harm the animals that live there and the homes they live in.

Do this simple experiment to see what the sea would look like if we disposed of our rubbish by putting the wrong things down our sinks, dumping them near our waterways or letting things pour down a roadside drain!



Materials needed

- Two clear glass containers (empty aquariums) or clear buckets or large glass jars.
- Polluting materials:
 - Food scraps
 - Old paint
 - Oil
 - Dirt, leaves
 - Plastic
 - Aluminium can
 - Small rocks/rubble
 - Food colouring to represent chemical pollution
 - Chocolate sprinkles to represent dog poo
- Optional but effective: Two plastic toy marine creatures e.g. fish, sea jelly.
- Gloves

Pollutant	What happened

Activity

1. Have students draw up a chart of all the polluting materials to be used before starting.
2. Fill each clear container with water. Add some salt to represent seawater.
3. Add a plastic sea creature into each water environment for effect. Explain to the students that the two containers represent the oceans.
4. Make up a story to tell about each pollutant as it is added to the sea presenting a possible scenario as to where it came from and how it got in the ocean.

One by one add each pollutant into one of the water containers and have the students record what happens to it when it is added to the water (leave the other container unpolluted).

5. After all pollutants have been added have the students describe what "the polluted ocean" looks like.
6. Discuss how hard or easy it would be to get the water clean again. Discuss if and how the pollutant could be removed.
7. What effect would this have on the sea creatures in the water? What effect does it have on us?
8. How does this affect their ability to see, move about, find food and breathe? Which sea creature is likely to survive for longer?



Name: _____

Summer time!

During summer many people head to the beach for a holiday.

Turn to page 3 of your reader *Tourists and the Sea* and answer the following questions.



1. Describe what is going on in this picture

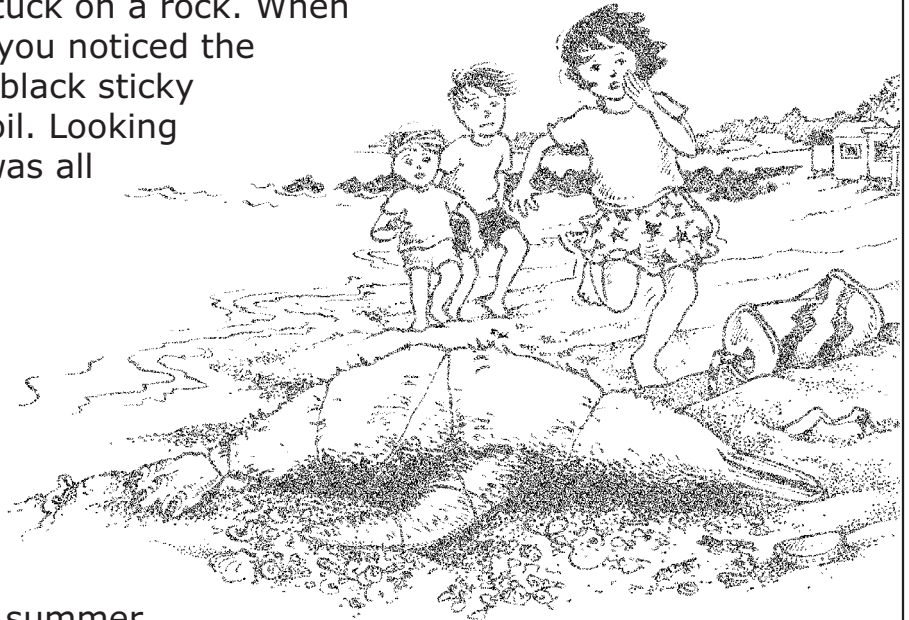
2. Who benefits by all these people coming to the beach

3. Explain some disadvantages of these people coming to the beach

4. Does this activity have any affect on the marine life? If so how?

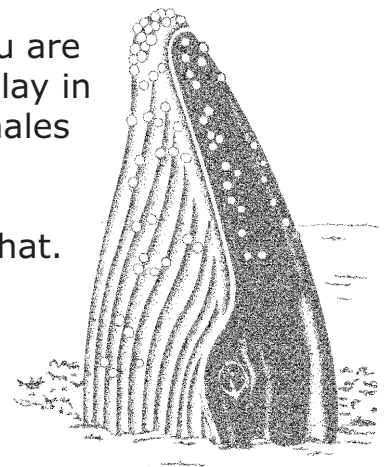
What would you do?

1. Imagine you are on holidays and were walking along the beach. You noticed a small seabird that appeared to be stuck on a rock. When you got a little closer you noticed the bird was covered in a black sticky stuff that looked like oil. Looking closer you noticed it was all over the rocks and covering the surface of the water! This morning you noticed a huge ship out to sea. What would you do?



2. You have been visiting your favourite beach every summer for a few years now. Whilst you were going for a bike ride this morning you saw a truck emptying a large amount of rubbish and some sort of liquid into the sea right on your favourite beach! What would you do?

3. At the beginning of every whale watching season you are there! You love watching these huge sea creatures play in the water. Whilst standing on a pier watching the whales you noticed that two people in a jet ski were driving very fast and very close to the baby whales. You felt angry but were not sure if they were allowed to do that. How would you find out what the regulations for whale watching are and for other sea life?



Using the three different scenarios listed above or other problems relevant to your local marine environment:

1. Find out who you could contact if these problems occurred.
2. Make up a pamphlet of people and organisations to contact in your area.
3. Distribute these to local people in your community and in local shops so everyone will then know what to do!



Name: _____

My postcard home

It is school holidays! You are away on a holiday and want to write a postcard home about what you have been doing and where you have been.

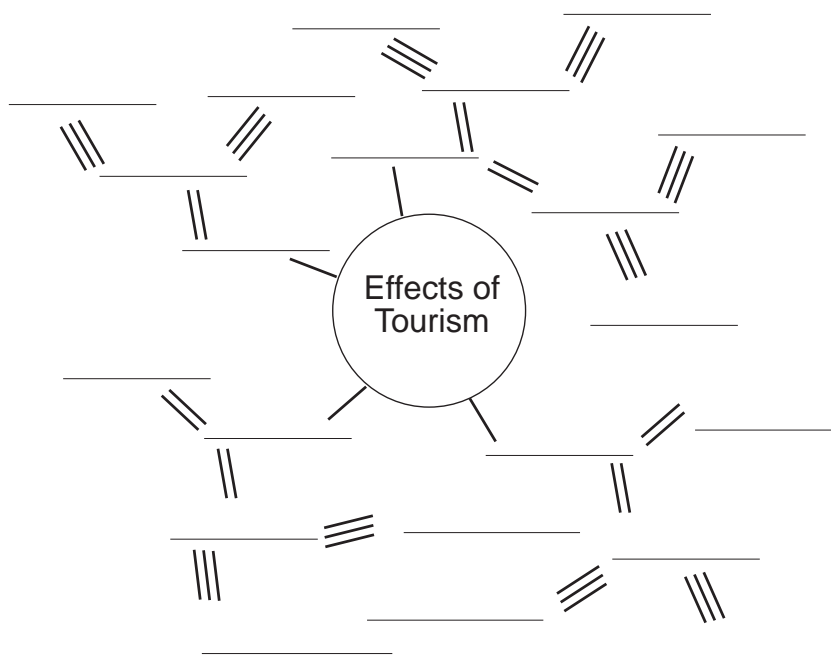


Four vertical lines for writing the message on the postcard.



What future?

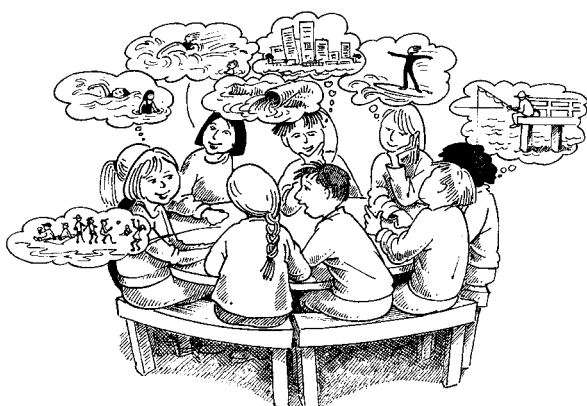
1. As a class, discuss some local issues where tourism plays some role. For example local development encroaching on an environmentally sensitive area, the impact of tourists to an area, tourists and transport, tourists and rubbish.
2. Write this issue in the centre of a large sheet of paper. Draw or paint some lines around it as shown in the diagram below.
3. Ask the question "What are the **immediate** effects or consequences?" Discuss what you think these might be and write them on the first line out from the centre. This shows that they are the first consequences to arise from this action or issue.
4. From these, have the students continue in small groups to discuss what consequences may follow on from the first ones. These second order consequences are then written on the next line and joined with a double line.
5. Third and fourth order consequences can be explored and written down in a similar way.
6. The result is a wheel of the future showing a range of possible consequences which might flow from one particular decision.
7. Students in their small groups can then present the different consequences to others in the class.



- First consequence
- == Second consequence
- === Third consequence

Reference

See Page 109, *Mangroves in Focus*, Wet Paper Publications for an example of how the building of a marina has affected the local environment.



Name: _____

Beach or bush?

Most of us have all been tourists at some time. Not everyone chooses the beach as their first holiday choice. Others prefer the snow, the bush, the desert or holiday farms.

Find out where people like to go on their holidays and why.

What is their main activity when they are on holidays and who do they go with?

You could survey people in your local shopping area, family and friends.

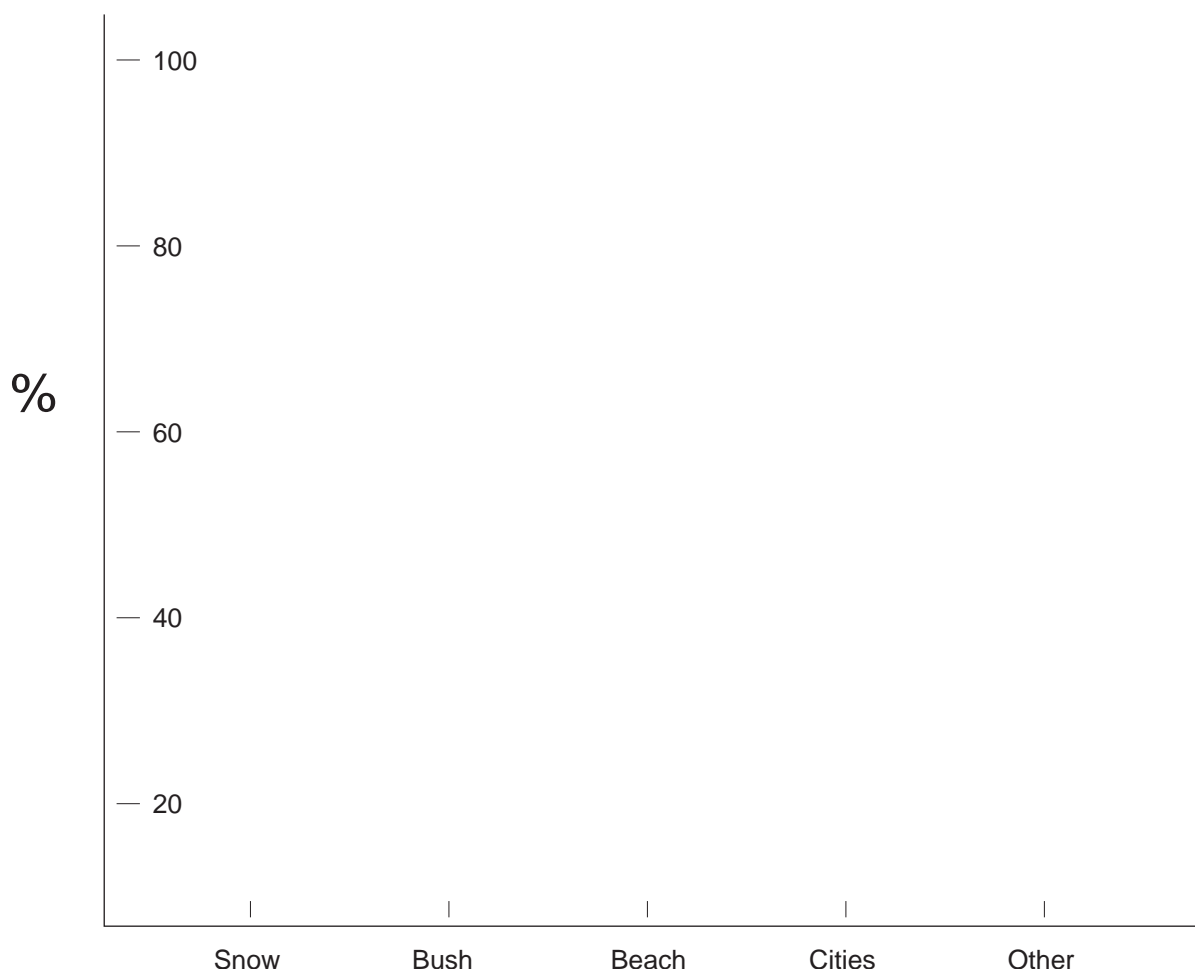


Step 1. Design a survey form to find out the answers to the questions above.

Step 2. Summarise your results in the form of a graph.

Step 3. What did you find out? What was the most popular? What was the least popular?

Example



Name: _____

Cultural tourism day

What are some different cultures we can learn about when we are tourists?

What are some of the traditions of these cultures?

Work with a friend and find out what you can learn about a particular culture.

Make a colourful poster displaying what you found out.



Organise a multicultural food day where students bring food from different cultures. Ask grandparents whose ethnic background is from overseas to come and wear traditional costume.



I'd like to go there!

Design a tourist brochure to sell a habitat as a holiday destination to a marine animal! Your brochure should be based on an understanding of the animal's survival needs.



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- ◆ All flights as described
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- ◆ Half-day city tour of Istanbul
- ◆ 2-night first-class or deluxe hotel stay in Singapore
- ◆ 1-day city tour of Singapore
- ◆ Safari to Tsavo

- Step 1. Make a list of the things needed to make a holiday enjoyable.
- Step 2. Choose a sea creature and add to this list the sea creature's survival requirements, such as type of shelter, type of food and its dependency on other animals for protection and company.
- Now you have a list of requirements and a list of all the fun things to do and see.
- Step 3. Design a tourist brochure advertising a habitat such as a rock pool, sandy seabed, open ocean, coral reef, estuary as a holiday location for your animal. Make sure the location meets all of their needs.
- Step 4. Use a catchy title, list some attractions, services, activities, scenic sites and characters to visit!

Brochure ideas



Book 8

All Kinds of Boats

Before reading the book

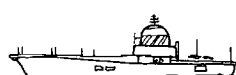
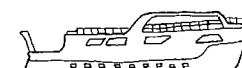
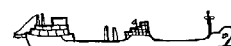
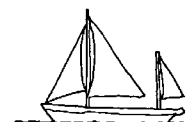
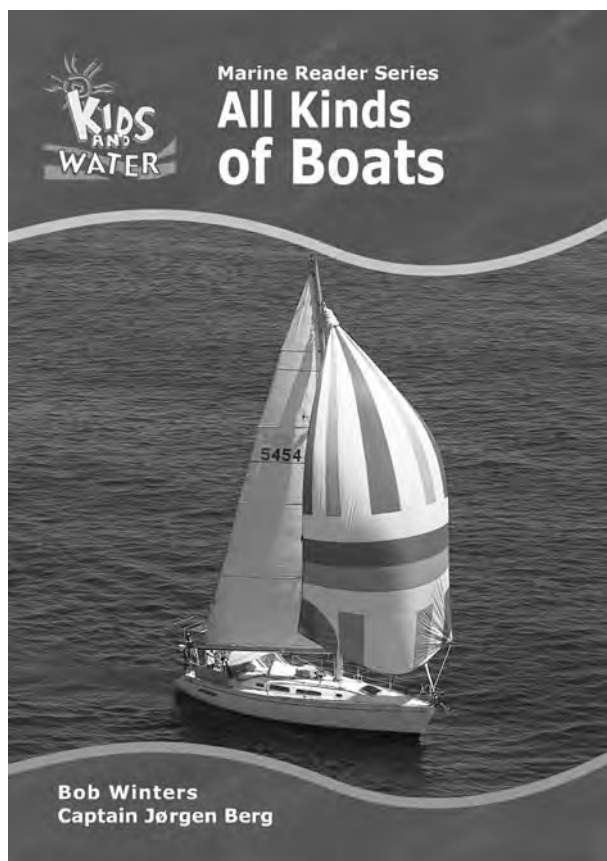
- Introduce the title of the book. Ask the students what types of boats have they seen? What types of boats they have been on? What types of boats do they know? Do they know what the purpose of the boat is?

After reading the book

- Recall information from the text.
- Relate to the students' personal experiences.
- Create discussion about the text. Which boat was their favourite? Which one did they not like and why? Had they ever seen any of these types before?

Other suggested activities

- Invite a speaker to visit the school who has experience with some type of boat or ship and can tell a good sea story.
- Search the internet to learn more about different types of boats.
- Research an oil spill from an oil tanker such as Exxon Valdez in Alaska, Apollo Sea in South Africa, the Sea Empress in Wales UK, the Kirky off Western Australia or the Iron Baron off Tasmania. Find out what caused the incident and the effects of the spill on the local area.
- Carry out simple experiments to demonstrate the relationship between oil and water (floating, sinking, detergents, effect on feathers).
- Learn how to sailboard, swim or sail.



Download the oil spill
game -

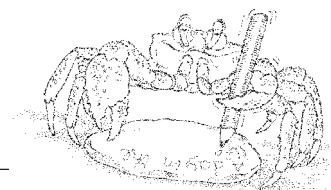
Oil and Water Don't Mix
from:

www.amsa.gov.au/amsa/env.htm



Australian Maritime
Safety Authority

Learning outcomes



Activity	KLA	Outcome
1 Oils ain't oils -p13	Science SOSE	LIFE AND LIVING – 3.9 Explains why some living things have become extinct and identifies current endangered species. PLACE AND SPACE – 3.6 Identifies issues about care of places arising from the different ways in which they are.
2 Making waves and surface currents -p14	Science	EARTH AND BEYOND – 3.2 Relates changes in the physical environment to physical processes. WORKING SCIENTIFICALLY – 3.14 Organises and uses equipment to gather and present information.
3 Boat builder -p15	Technology	DESIGNING, MAKING AND APPRAISING – 3.1 Examines and identifies key design features, including aesthetic features, and environmental effects of products and processes.
4 A boating adventure -p15	English SOSE	WRITING – 3.9 Experiments with inter-relating ideas and information when writing about familiar topics within a small range of text types. PLACE AND SPACE – 3.5 Describes how natural features affect the ways people live in particular places.
5 Marine pests research -p16	SOSE	TIME, CONTINUITY AND CHANGE – 3.2 Constructs a sequence from a set of events. 3.3 Gives reasons why the local community and environment have changed and are likely to change.
6 Ship shapes record sheet -p17	English	WRITING – 3.9 Experiments with inter-relating ideas and information when writing about familiar topics within a small range of text types.
7 Make your own boat that floats -p18	Technology	DESIGNING, MAKING AND APPRAISING – 3.1 Examines and identifies key design features, including aesthetic features, and environmental effects of products and processes. 3.2 Generates designs that take into account some social and environmental implications. 3.3 Plans and carries out the steps of production processes, making safe and efficient use of resources.

Name: _____

Oils ain't oils

Oil spills

Some large ships transport oil across the ocean to another country.

If this oil escapes from the ship it can kill the marine life and has to be cleaned up.

1. Name three things people use oil for.

2. Finish these sentences about oil spills.

The ships that carry oil across the sea are called _____

They carry the oil in huge _____

Sometimes these ships can _____

The oil spills _____

The oil spreads _____

The sea creatures in the ocean _____

Seabirds also _____

Some of the oil washes _____

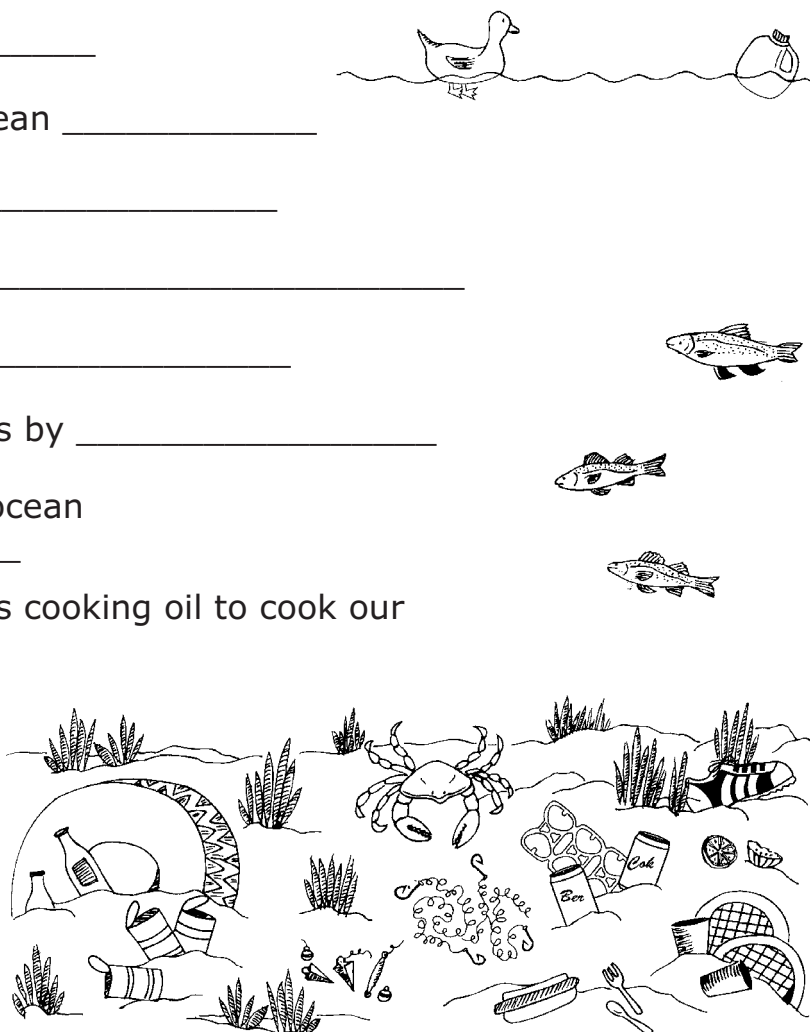
The oil has to be _____

People can help the seabirds by _____

Other sea creatures in the ocean _____

Another type of oil we use is cooking oil to cook our foods.

What is one thing we can do with our cooking oil waste to make sure it does not enter the sea and harm any sea creatures?

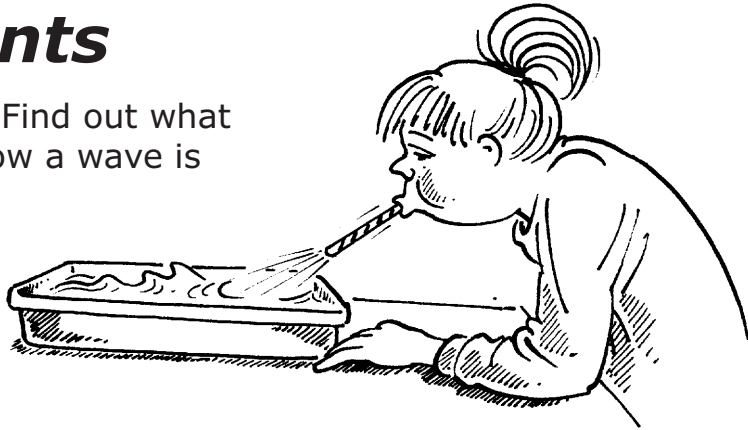


Making waves and surface currents

Want to make some waves? Find out what happens in the ocean and how a wave is made by doing the simple experiments.

Making waves

- Step 1. Fill the pan half full with water.
- Step 2. Hold one end of the straw close to the surface of the water.
- Step 3. Blow air across the water surface. Blow gently then blow harder.



What happens?

- The energy of the moving air is transferred to the surface of the water, forming waves.
- The faster the speed of the air the bigger the waves.

Want to know what a surface current is? Find out by doing this simple experiment.

Surface currents

- Step 1. Fill the shallow pan with water.
- Step 2. Cut out 10 circles with the hole punch from the card.
- Step 3. Place the paper circles on the surface of the water near the left side of the pan.
- Step 4. Direct your exhaled breath (not with the straw) across the surface of the water where the paper is floating. Observe the motion of the paper as you continue to exhale.

What happens?

- The paper will move in an anticlockwise direction around the outside of the pan. The breath starts a surface current.

Materials

- Large shallow pan
- Drinking straw

Extra materials needed for surface currents

- 1 sheet of dark coloured construction paper and a paper hole punch

Boat builder

Often in boat building yards and yacht clubs we can see how boats are built and repaired.

Visit a boat building yard or yacht club or other place where you can observe work being done on some boats.

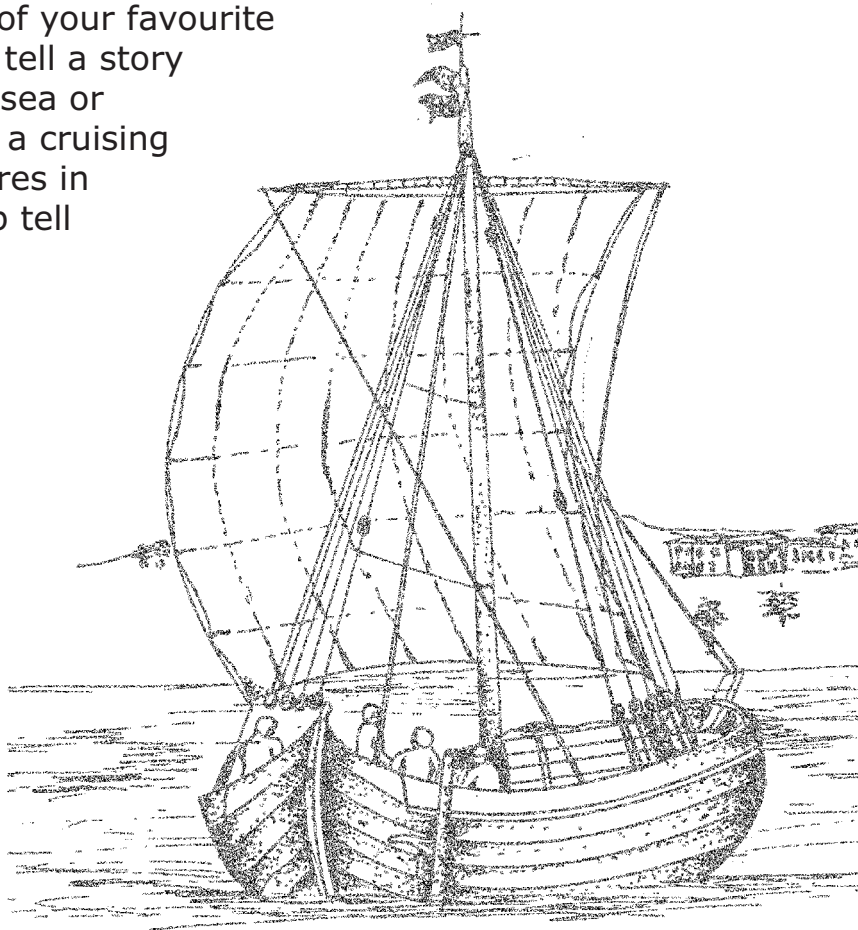
Write down some questions you would like to find out before you go!



A boating adventure

Collect some old boating magazines that you can cut up.

Cut out some pictures of your favourite boats and use them to tell a story about an adventure at sea or maybe a fishing trip or a cruising holiday. Stick the pictures in your workbooks to help tell the story.



Name: _____

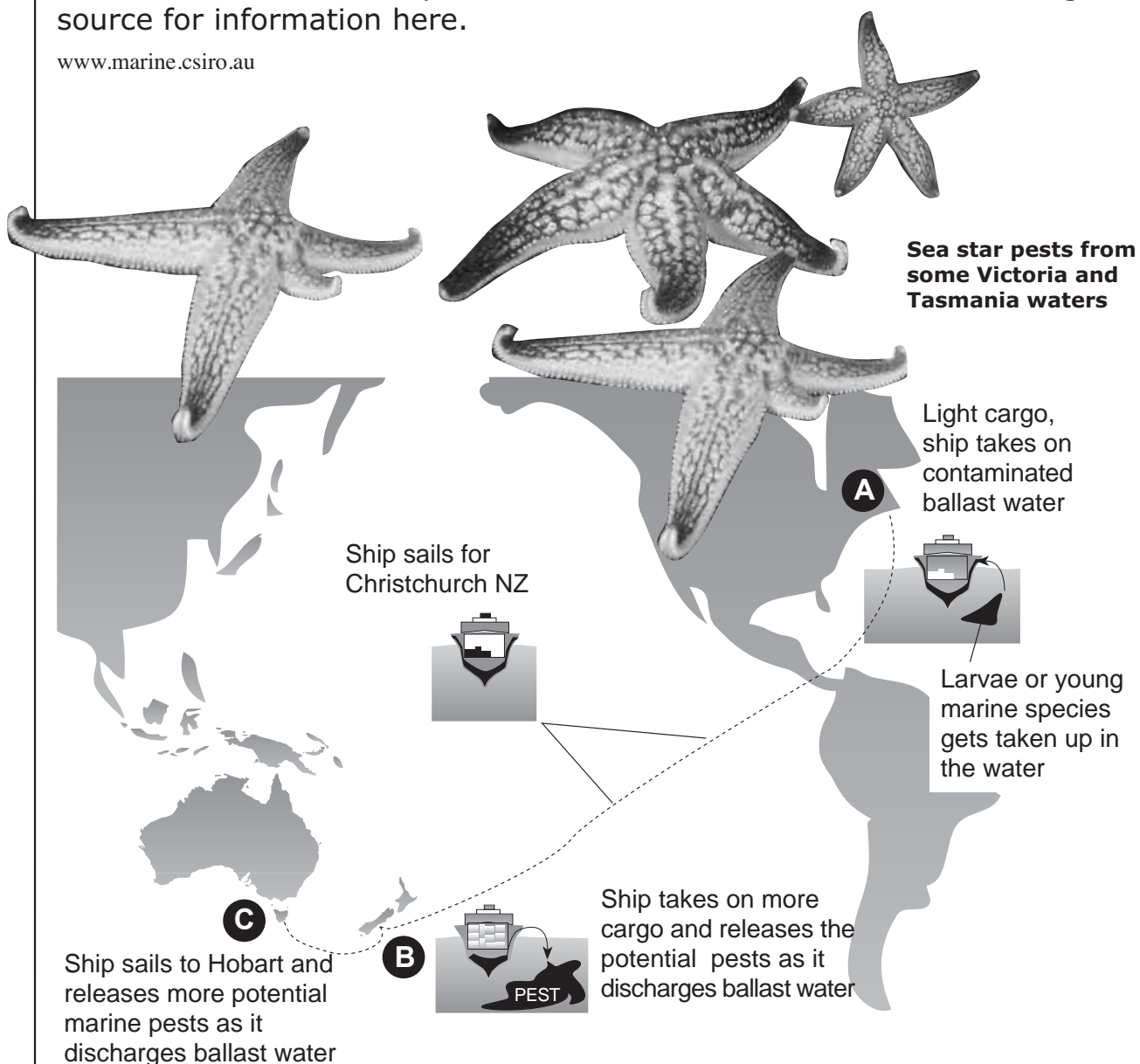
Marine pests research

One way that marine pests are spread to other seas is by travelling in the ballast water of ships. What is ballast water and why is it so important to ships?

Find out what marine pests have entered your local bays or seas through the ballast water of ships. Make a poster or research paper on one of these.

Some examples are the Northern Pacific sea star from Japan. It has established itself in Tasmanian and Victorian waters. *Undaria* — a Japanese seaweed also in Victoria and Tasmania and *Drupella*, an exotic sea snail is causing devastation to coral reefs in Western Australia. There are many others around Australia. The internet is a good source for information here.


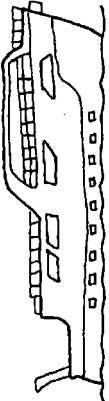
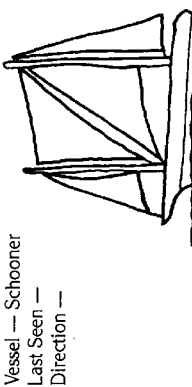
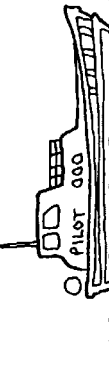
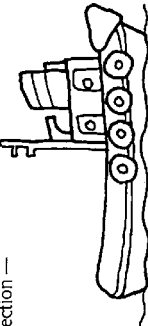
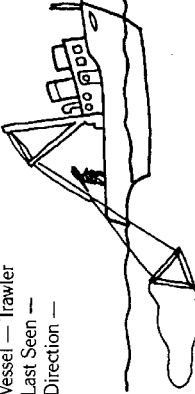
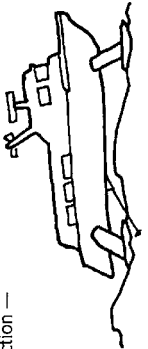
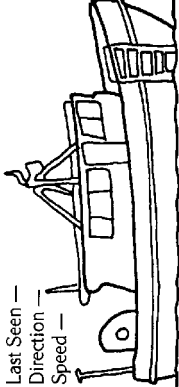
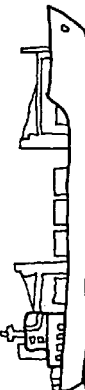
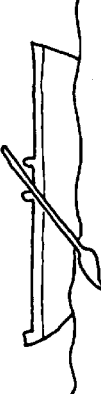
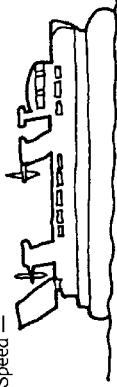


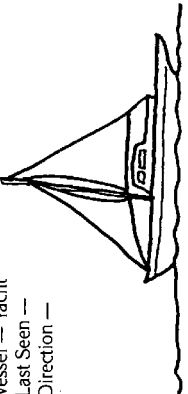

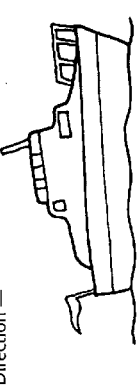
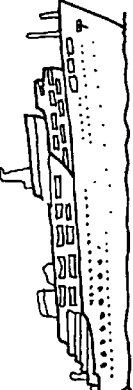
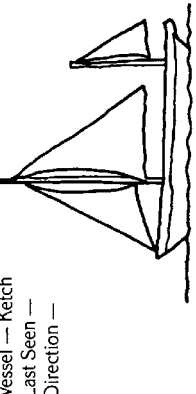
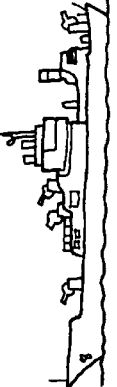
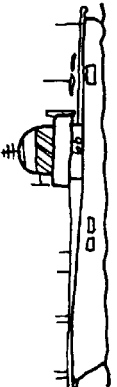
www.marine.csiro.au



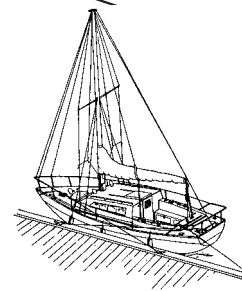
Ship shapes record sheet

Mark off the different boat shapes you saw during a visit to the sea.

Cut out the ones you saw and write a short poem or describe what types of cargo they might be carrying.

<p>Vessel — Tanker Last Seen — Direction —</p> 	<p>Vessel — Car ferry Last Seen — Direction —</p> 	<p>Vessel — Schooner Last Seen — Direction —</p> 	<p>Vessel — Pilot vessel Last Seen — Direction —</p> 
<p>Vessel — Tug Last Seen — Direction —</p> 	<p>Vessel — Trawler Last Seen — Direction —</p> 	<p>Vessel — Hydrofoil Last Seen — Direction —</p> 	<p>Vessel — Research launch Last Seen — Direction — Speed —</p> 
<p>Vessel — Container vessel Last Seen — Direction —</p> 	<p>Vessel — Dinghy Last Seen — Direction — Speed —</p> 	<p>Vessel — Hovercraft Last Seen — Direction — Speed —</p> 	<p>Vessel — Speedboat Last Seen — Direction — Speed —</p> 
<p>Vessel — Merchant ship Last Seen — Direction —</p> 	<p>Vessel — Yacht Last Seen — Direction —</p> 	<p>Vessel — Barge Last Seen — Direction —</p> 	<p>Vessel — Cabin cruiser Last seen — Direction —</p> 
<p>Vessel — Cruise ship Last Seen — Direction —</p> 	<p>Vessel — Ketch Last Seen — Direction —</p> 	<p>Vessel — Destroyer Last Seen — Direction —</p> 	<p>Vessel — Aircraft carrier Last seen — Direction —</p> 

Make your own boat that floats



Use a range of materials to make a boat that floats! Try experimenting with different materials.

- Step 1 Draw a plan of your boat before you begin. Does the dough float? Try making different shapes with it. What happens when you put these in the water?
- Step 2 Use the foil or dough for the base, experiment with different shapes for your boat.
- Step 3 Use the other materials provided to decorate your boat, make it go faster or make it sail.

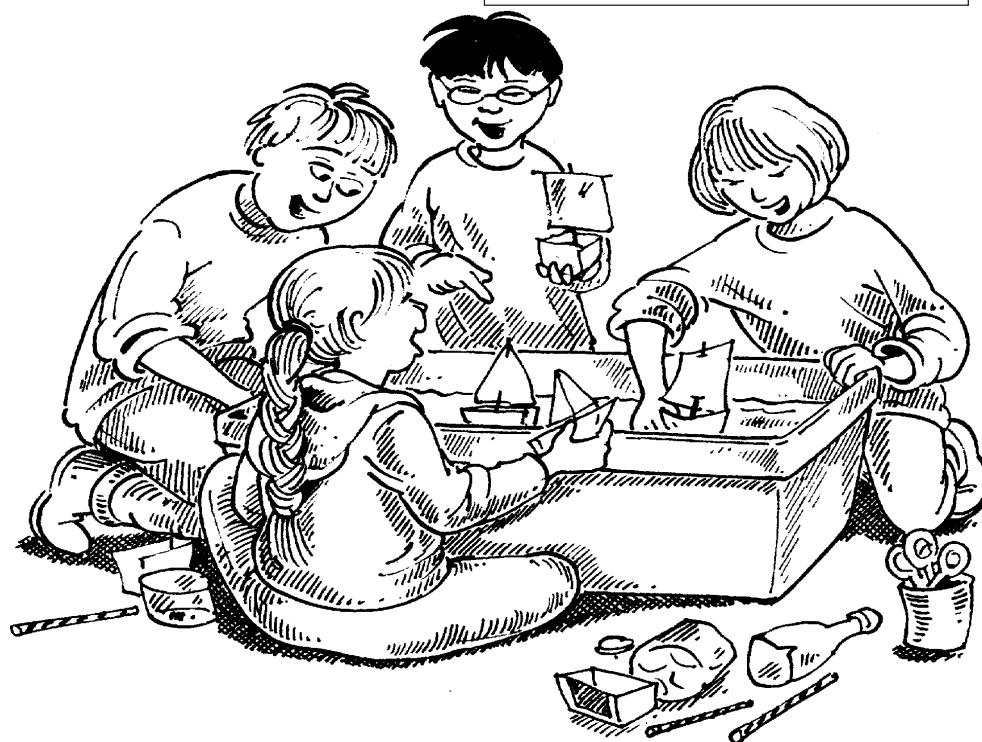


Take a look at the other designs students made in your class.

Were any similar? How is the boat you made similar to a real boat?

Materials

- Pieces of foil or small foil trays
- Balls of dough/plasticine
- Bottom part of a milk carton and soft drink bottle
- Trays of water
- Icy pole sticks
- Pipe cleaners
- Tissue or coloured paper
- Extra materials to decorate the boats
- Scissors
- Glue
- Straws



Book 9

Rock Pool Life

Before reading the book

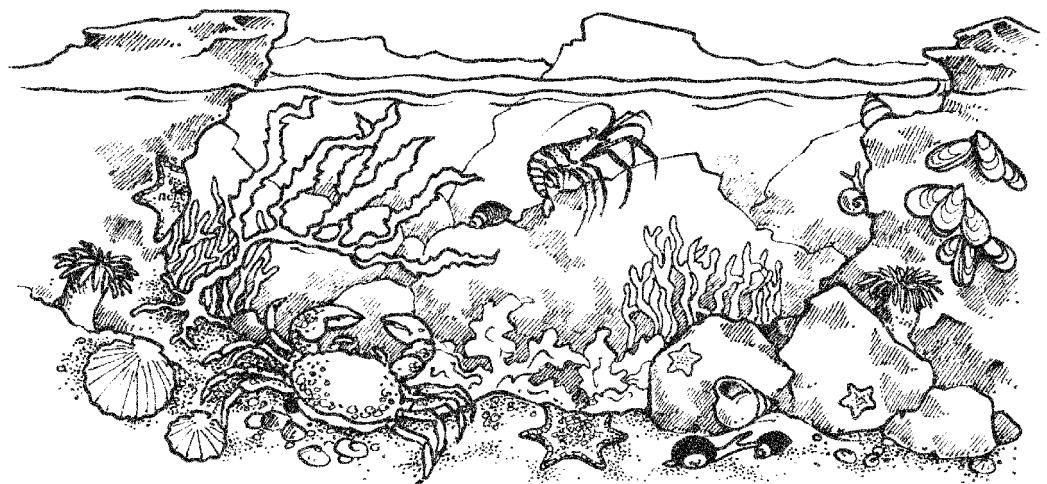
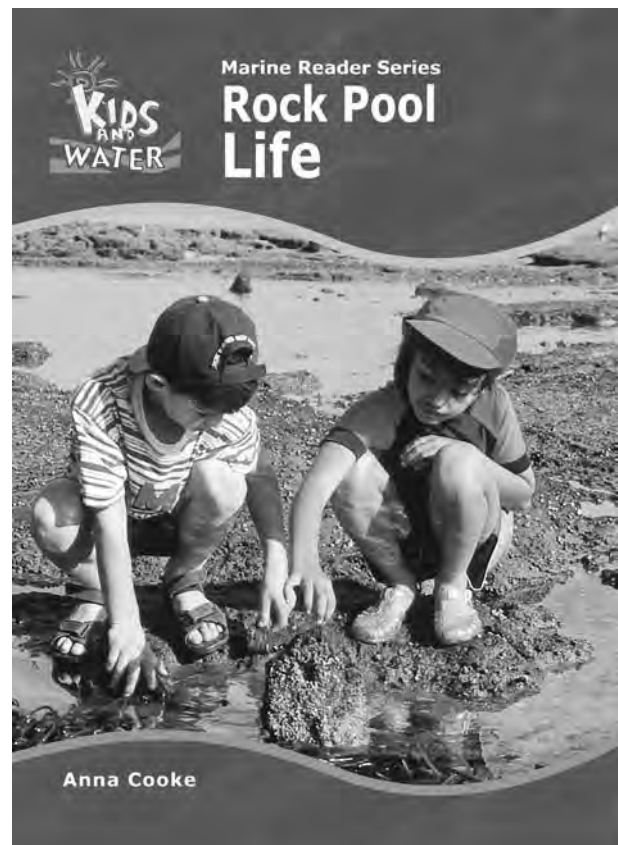
- Ask the students what they think a rock pool is. Where would we find a rock pool? Are there any rock pools at your local beach or bay.
- Introduce tides and ask the students to explain what they think a tide is.
- Use a tide chart in the newspaper to show how tides are recorded and what time there will be a high tide and a low tide.
- Use some pictures from magazines and posters to show the students some pictures of rock pools.
- Discuss what sort of sea creatures might be found in a rock pool.
- Create discussion about the different sea creatures. Has anyone seen any of these before?

After reading the book

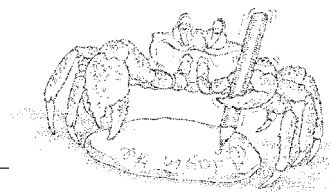
- Share and recall information about the text.
- Discuss any new or difficult words.
- Use the glossary to discuss terms with the students and recall information from the text.
- Use the photographs to discuss adaptations for survival, e.g. spiky skin for protection.
- Under what conditions do rock pool creatures need to survive? (Example wind, rain, sun, drying out, waves.)
- What are the effects of tides. Discuss the photographs on page 5.
- Complete the 'Turtle' questions. All the answers can be found in the text close by.

Other suggested activities

- Visit a site with rock pools and take a guided rock pool ramble.
- Research one of the rock pool creatures and find out how it feeds, moves and survives in an intertidal environment.
- Turn the classroom into a rock pool habitat. Make rock pool creatures to hang in the room and paint a corner or window.
- Have a book display on sea creatures in the classroom.
- Compare rock pool habitats to open sea or deep sea habitats.



Learning outcomes

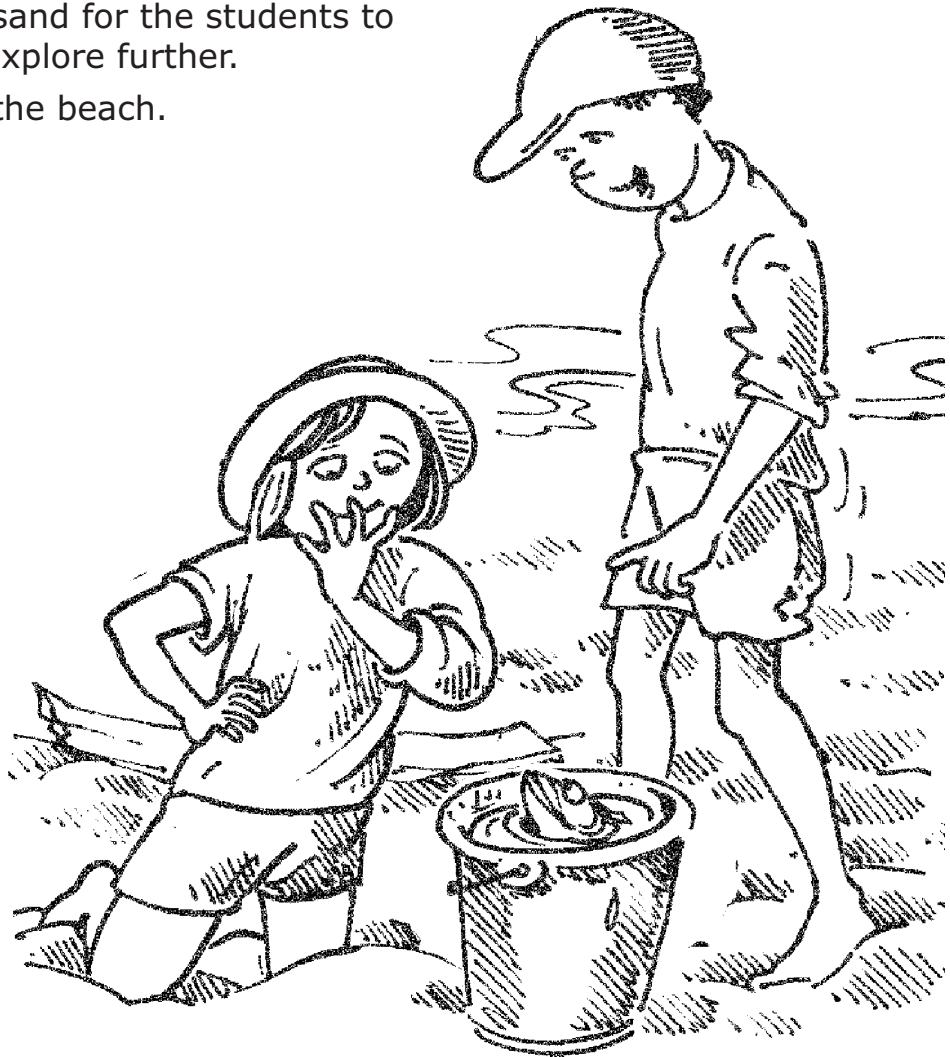


Activity	KLA	Outcome
1 What's in the bucket? -p21	English Science	SPEAKING AND LISTENING – 3.1 Interacts for specific purposes with people in the classroom and school community using a small range of text types. LIFE AND LIVING – 3.8 Identifies external and internal features of living things that work together to form systems with particular functions.
2 Adapted for survival -p22	Science	LIFE AND LIVING – 3.8 Identifies external and internal features of living things that work together to form systems with particular functions.
3 Beach detective record sheet -p23	Science SOSE	LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat. TIME, CONTINUITY AND CHANGE – 3.1a Describes different periods of time in the local area.
4 Survival in the sea -p24	Mathematics SOSE	NUMBER – 3.12 Identifies, continues and invents whole number patterns involving the four operations, including where successive terms in a sequence can be linked by an addition or subtraction strategy. NATURAL AND SOCIAL SYSTEMS – 3.13 Describes an example of a cycle within natural systems and the place of people in it.
5 Sea creature movement -p25	Science	LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat. 3.8 Identifies external and internal features of living things that work together to form systems with particular functions.
6 Rock pool creatures field guide -p26	Science	LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat. 3.8 Identifies external and internal features of living things that work together to form systems with particular functions.
7 Dying for food relay -p27	SOSE	PLACE AND SPACE – 3.6 Identifies issues about care of places arising from the different ways in which they are valued. NATURAL AND SOCIAL SYSTEMS – 3.13 Describes an example of a cycle within natural systems and the place of people in it.
8 Make a rock pool mobile -p28	Science The Arts	LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat. VISUAL ARTS – 3.22 Explores and uses several art elements and uses specific skills and techniques appropriate to the medium

What's in the bucket?

Organise a school excursion to the beach.

- At the beach take the students on a guided beachcomb searching for beach treasures washed ashore by the sea. Look for cuttle bones, shark egg cases, different coloured seaweeds, strange shaped shells and shells with unusual patterns, dried pieces of sea creatures like bones or crab shells.
- Without discussing what they are, have the students place what they found in a large bucket.
- Sitting down somewhere on the sand, or in a shady spot, ask students one at a time to collect something from out of the bucket.
- Ask the students to guess what it might be or where it came from. If the student does not know they can ask for help from other students who may know.
- Go through all the items in the bucket and lay them out in the sand for the students to touch, feel and explore further.
- Return items to the beach.

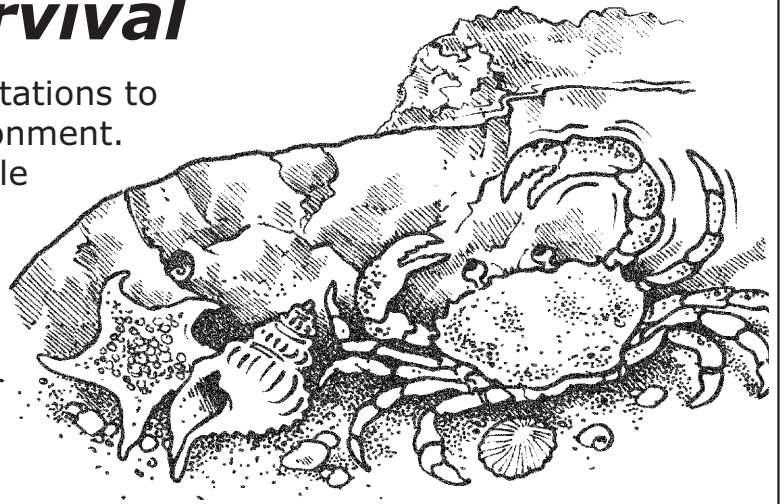


Name: _____

Adapted for survival

Sea creatures have special adaptations to help them survive in their environment.

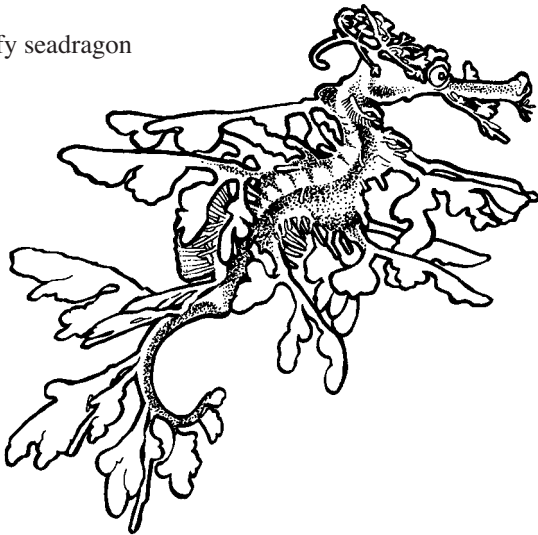
Some of these adaptations enable them to get their food, some help to protect their bodies, some help them to hide from predators and some can stop their bodies from drying out when they are not covered by water.



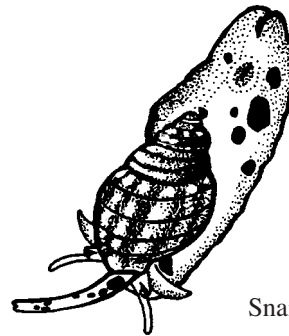
Using the five sea creatures on this page label the parts of their body that enable them to survive in their habitat .

There will be more than one for each!

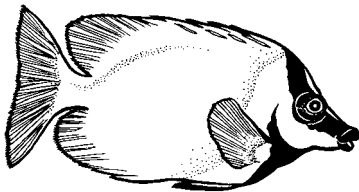
Leafy seadragon



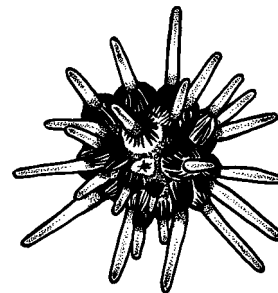
Snail



Fish



Sea urchin



Hermit crab



Name: _____

Beach detective record sheet

Use the record sheet to record monthly observations at the beach. Tick or colour in the square opposite the animal, plant or object during each visit.

Record the weather for each excursion.

Use these symbols for the weather conditions:



Month	J	F	M	A	M	J	J	A	S	O	N	D
Weather conditions												
Grass-wracks												
Sponges												
Bryozoans, corals												
Anemones, sea-jellies												
Polychaete worms												
Gastropods and egg-cases												
Bivalves												
Octopus, squids												
Chitons												
Crabs												
Prawns, shrimps, etc.												
Barnacles												
Sea-squirts, salps												
Sharks, rays and egg-cases												
Eels												
Flounders, soles, etc.												
Box fishes, etc.												
Seahorses, etc.												
Seaweeds												
Other sea fishes												
Birds												
Petrels, shearwaters												
Albatrosses												
Sandpipers, plovers												
Gulls, terns												
Cormorants												
Seals												
Dolphins, whales												
Rock skinks												
Sand weevils, earwigs												
Bottles												
Cans, drums												
Plastic refuse												
Rope												
Buoys, floats, etc.												
Timber, crates												
Other objects												

Name: _____

Survival in the sea



1,000

A.

B.

C.

D.

E.

F.

G.

Total
survived

A fish has just laid 1000 eggs in the sea

A. Half of these were eaten by small fish.

B. A person fishing pulled up an anchor with lots of seaweed and 62 of these fish eggs were caught in it.

C. During a huge storm 38 fish eggs were washed ashore.

D. Of the remainder one quarter of these were blown into a rockpool which dried out in the hot sun.

E. Once the remaining eggs had hatched into small fish 42 were then eaten by bigger fish.

F. One third of the fish left grew into medium sized fish and were eaten by seals.

G. Half of all the surviving fish were caught on fishing lines and eaten by people.

1. How many fully grown fish from the initial 1000 eggs laid were left to survive and reproduce in the sea?

2. Why is it important for some sea creatures to have many eggs?

3. What might happen to a species like this fish if she released only a few eggs?

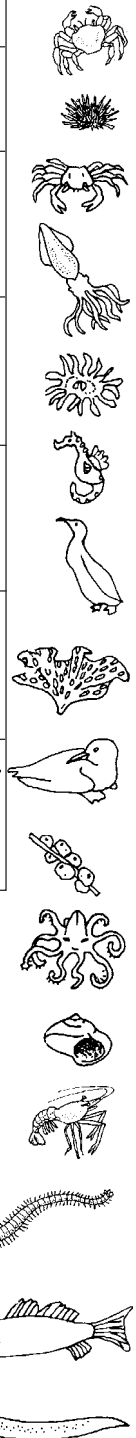
Name: _____

Sea creature movement

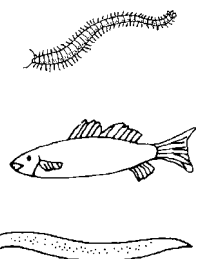
- Write down a list of as many sea creatures as you can think of.
- Use the table below to put your sea creature into one of the columns or add your own column.
- Do any of the sea creatures fit into more than one column? If so write them in both columns.



Name of creature	Walk	Float	Swim	Slide	Crawl	Don't move



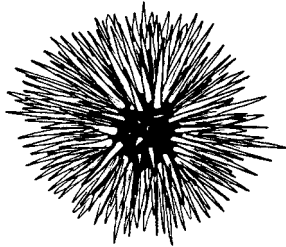
Discuss how the way they move affects their chances of survival in the sea.



Name: _____

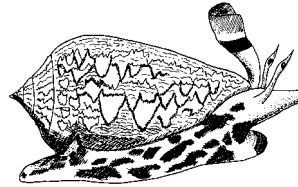
Rock pool creatures field guide

Use the pictures to help make up your rock pool guide research report.



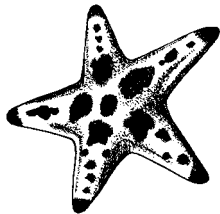
Sea Urchin

An urchin has spines and soft long sticky tube feet.



Sea Snail

They carry their shell around protecting their body.



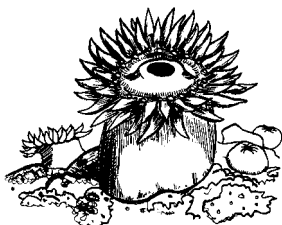
Sea Star

It has hundreds of tiny sticky tube feet under its arms.



Crab

They have eight legs and two nippers to pick up their food. Some use pieces of seaweed and shells to disguise themselves.



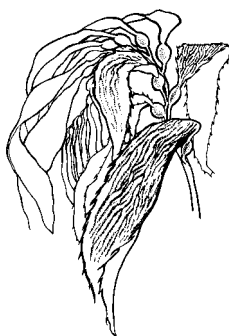
Sea anemone

It looks like a flower with sticky tentacles to catch its food.



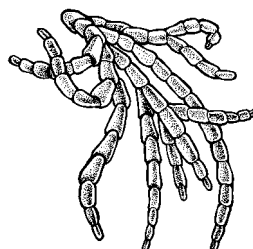
Octopus

They can change colour to camouflage themselves!



Brown seaweed

There are many different colours and shapes.



Green seaweed

There are many different colours and shapes.

Dying for food relay

This fun relay is best carried out at the beach but can also be done at school.

The relay highlights problems associated with rubbish and pollution in the sea that harms the sea mammals.

Step 1: Place the students into two equal relay teams.

Step 2: Assign each team a sea mammal to be and act out as they compete in the relay.

Step 3: Mark an area in the sand and arrange the brown bags or boxes (with the hidden food inside) at the end of the relay course.

Step 4: Tell the first student in each line to run to the end of the relay course and select a bag.

The student should open the bag and show it to the instructor but no one else.

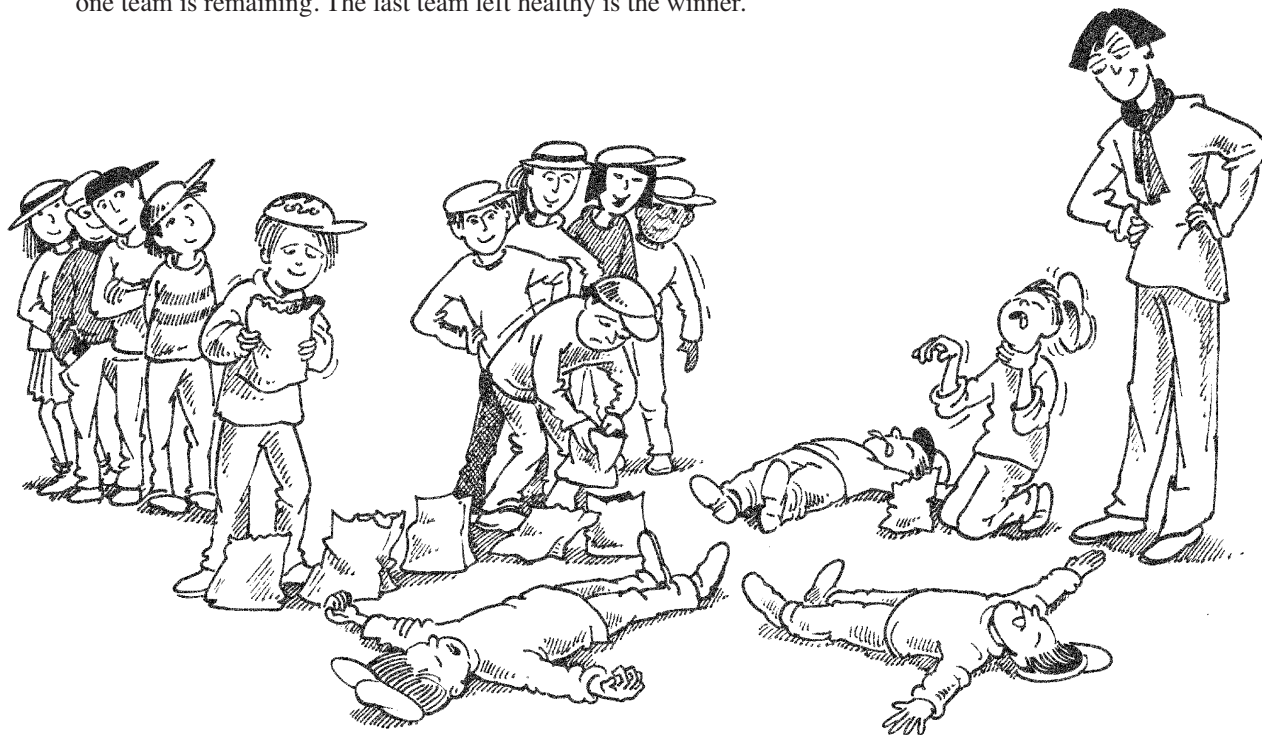
Step 5: If the bag has fatal food in it, the student should moan, groan then go to the sick and dying section off to one side.

If the bag has good food in it the student will go back to their relay team.

Step 6: Repeat the activity until all children have gone or only one team is remaining. The last team left healthy is the winner.

Materials

- 2 brown paper bags or small boxes
- Good food:
 - 8 plastic sea food creatures or cards with names of sea creatures – e.g. squid, crabs, octopus, fish, sea jelly, plankton, krill
- Fatal food:
 - 8 samples of rubbish e.g. balloon, plastic bags, foam, six-pack ring, fishing line, drink can



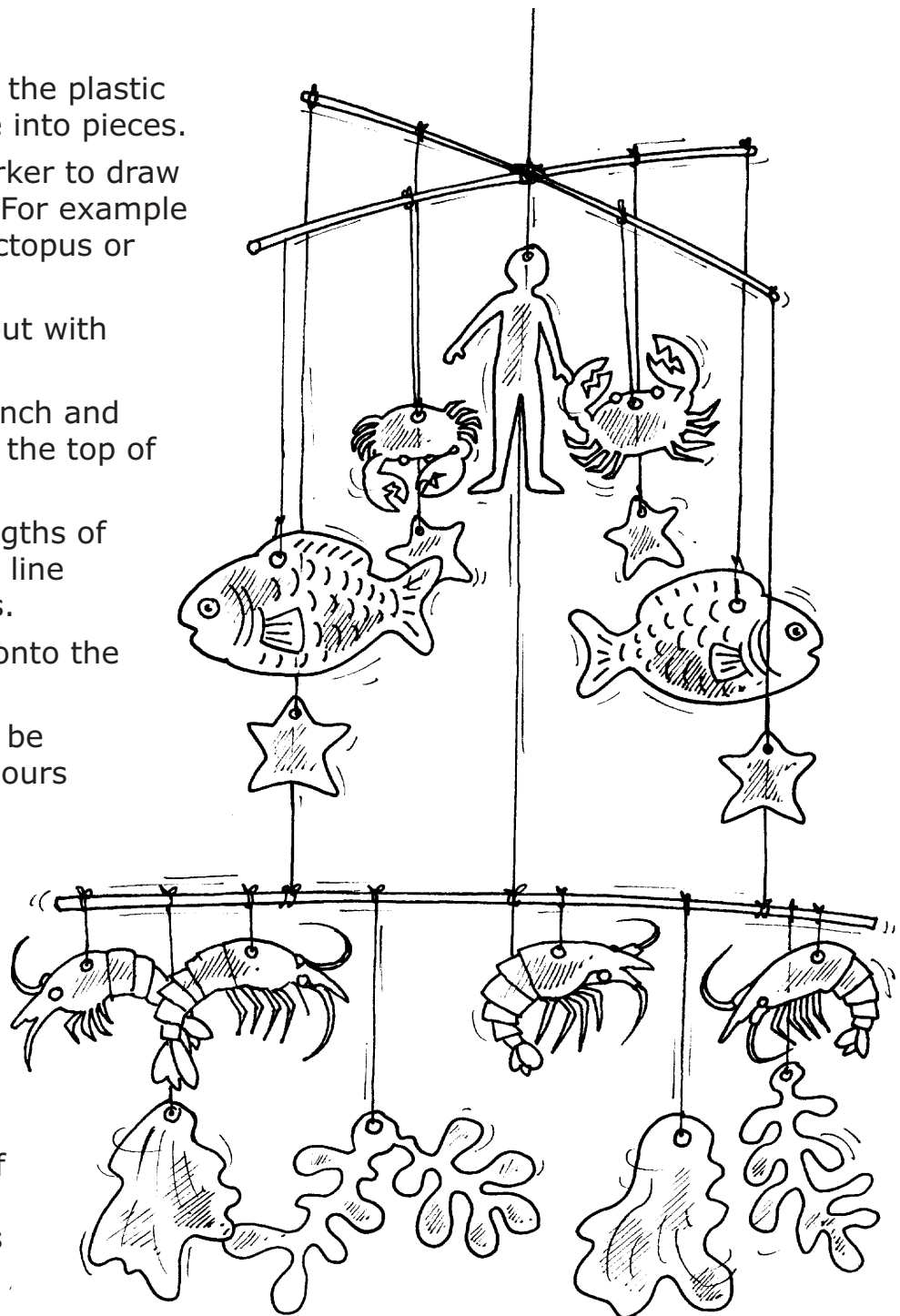
Reflection

- Discuss after with the “sick” and “dying” students what made them sick and why?
- Discuss what types of litter are on the beach today? Where might it have come from?
- Discuss the slogan — Only let rain go down the storm drain!

Make a rock pool mobile

What to do

- Cut the walls of the plastic soft drink bottle into pieces.
- Use a black marker to draw a sea creature. For example fish, sea star, octopus or crab.
- Cut the shape out with scissors.
- Use the hole punch and punch a hole at the top of each shape.
- Tie different lengths of string or fishing line onto the shapes.
- Tie the shapes onto the rod or bamboo.
- The shapes can be painted with colours or covered with coloured paper.



Equipment

- A collection of clean (PET) plastic bottles (e.g. a clear plastic Coke bottle)
- Scissors
- Piece of bamboo or rod for each mobile
- Hole punch
- Black marker
- Paint, coloured paper or textas

Book 10

Creatures of the Deep

Before reading the book

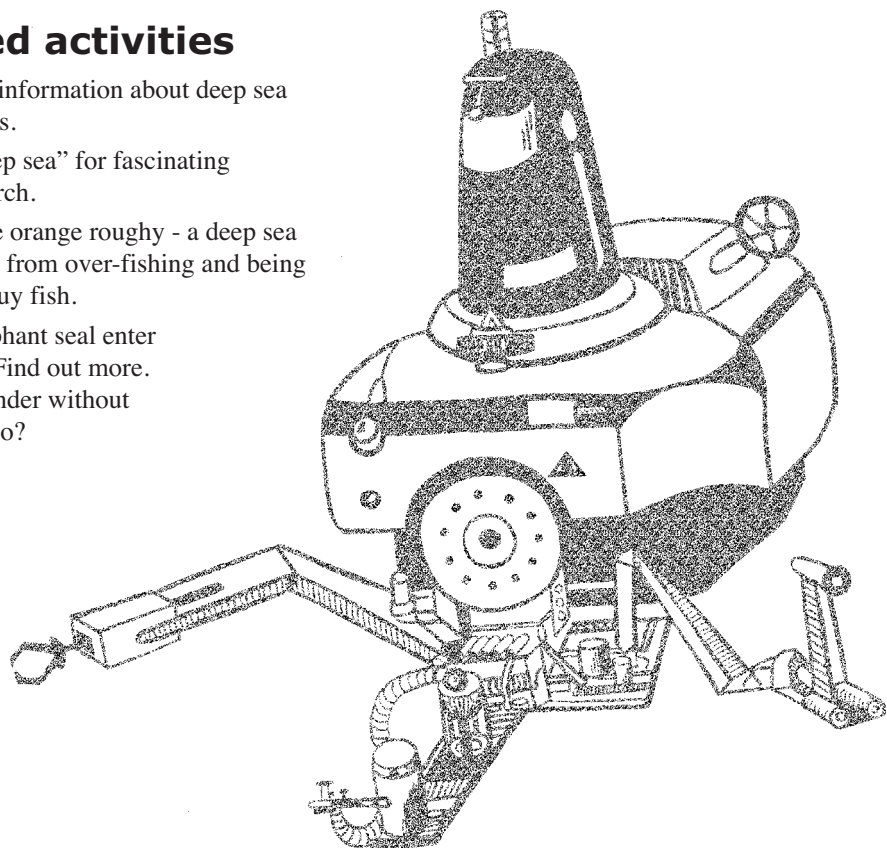
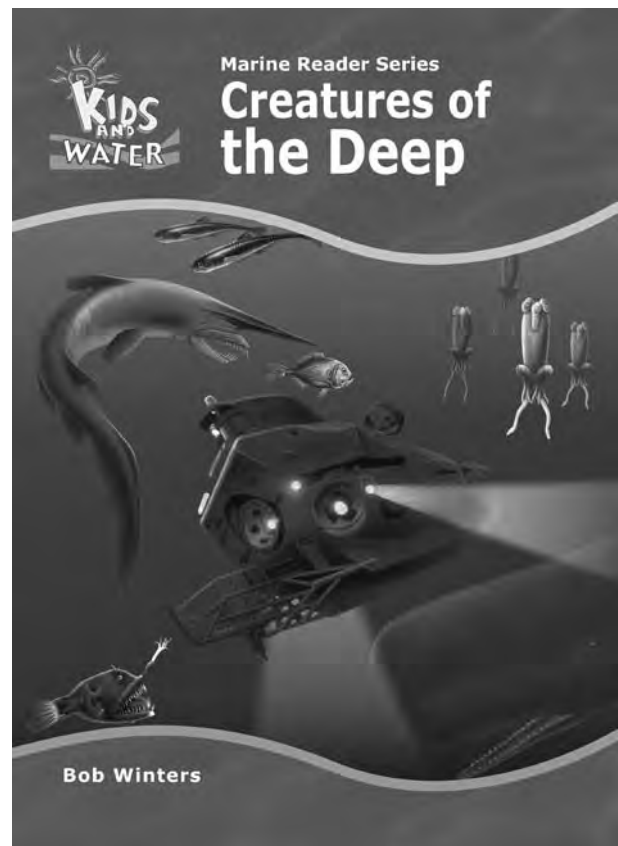
- Students could watch a video such as *The Abyss* or *Twenty Thousand Leagues under the Sea* to introduce them to life in the deep sea.
- Use their knowledge of the deep to introduce concepts such as darkness, pressure and cold associated with depth.
- Ask the students to write down anything strange or wonderful that they have heard or seen about in movies, books or magazines. Use the internet and library to search for information about what is fact, fiction and what is unknown.
- Find out how deep is deep.

After reading the book

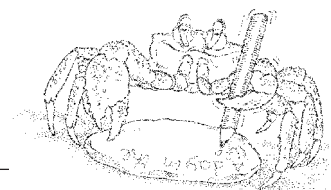
- Recall and discuss information from the text.
- Discuss the text with the students. What did the students think? Is the deep sea a place they would like to visit?
- Use the pictures to discuss adaptations of the sea creatures in finding food and for protection from predators.

Other suggested activities

- Library research – gather information about deep sea creatures and submersibles.
- Internet search under “deep sea” for fascinating pictures and current research.
- Research the threats to the orange roughy - a deep sea fish currently under threat from over-fishing and being sold in places where we buy fish.
- The sperm whale and elephant seal enter these dark zones to feed. Find out more. How long can they stay under without air? How deep can they go?



Learning outcomes



Activity	KLA	Outcome
1 Adaptations -p31	Science	LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat. 3.8 Identifies external and internal features of living things that work together to form systems with particular functions. WORKING SCIENTIFICALLY – 3.15 Argues conclusions on the basis of collected information and personal experience.
2 Deep sea scratch art - p32	Science The Arts	LIFE AND LIVING – 3.8 Identifies external and internal features of living things that work together to form systems with particular functions. VISUAL ARTS – 3.22 Explores and uses several art elements and uses specific skills and techniques appropriate to the medium.
3 Journey into the deep dark sea - p33	English Science	WRITING – 3.9 Experiments with inter-relating ideas and information when writing about familiar topics within a small range of text types. EARTH AND BEYOND – 3.2 Relates changes in the physical environment to physical processes. LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat.
4 Living in the deep ocean - p34	Science	LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat. 3.8 Identifies external and internal features of living things that work together to form systems with particular functions.
5 The depth chart - p35	Science Mathematics	LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat. SPACE – 3.9 Interprets common spatial language and uses it to describe and compare features of things.
6 Make your own deep sea fish - p36	Science	LIFE AND LIVING – 3.8 Identifies external and internal features of living things that work together to form systems with particular functions.
7 Make a miniature deep sea vent - p37	Science	EARTH AND BEYOND – 3.2 Relates changes in the physical environment to physical processes. LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat.
8 Making an angler fish - p38	Science The Arts	LIFE AND LIVING – 3.8 Identifies external and internal features of living things that work together to form systems with particular functions. VISUAL ARTS – 3.22 Explores and uses several art elements and uses specific skills and techniques appropriate to the medium.

Adaptations

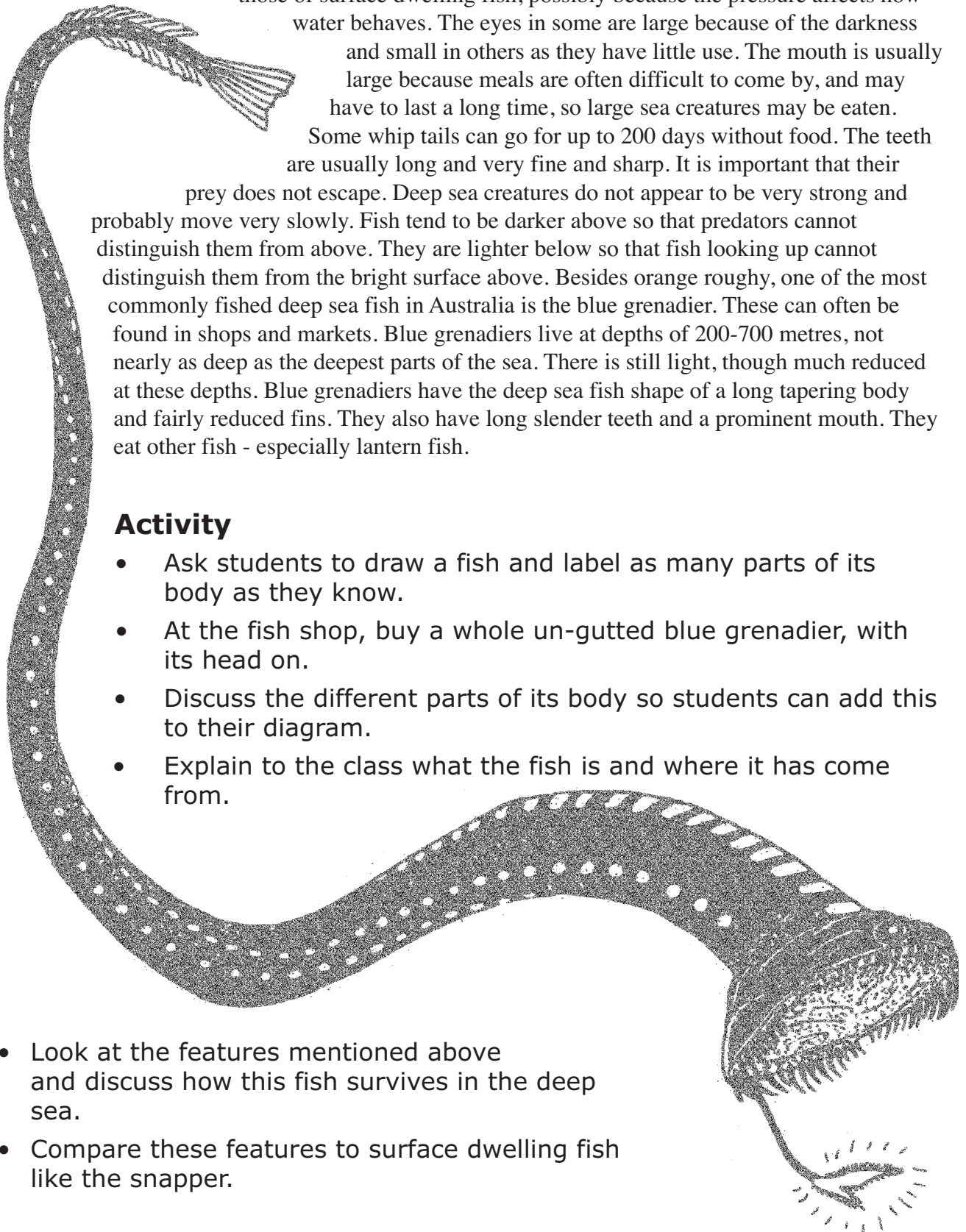
The long bodies of deep sea fish are thought to help them detect vibrations in the water, because the low light does not always allow detection of predators or prey. The fins do not need to be as big as those of surface dwelling fish, possibly because the pressure affects how water behaves. The eyes in some are large because of the darkness and small in others as they have little use. The mouth is usually large because meals are often difficult to come by, and may have to last a long time, so large sea creatures may be eaten.

Some whip tails can go for up to 200 days without food. The teeth are usually long and very fine and sharp. It is important that their prey does not escape. Deep sea creatures do not appear to be very strong and probably move very slowly. Fish tend to be darker above so that predators cannot distinguish them from above. They are lighter below so that fish looking up cannot distinguish them from the bright surface above. Besides orange roughy, one of the most commonly fished deep sea fish in Australia is the blue grenadier. These can often be found in shops and markets. Blue grenadiers live at depths of 200-700 metres, not nearly as deep as the deepest parts of the sea. There is still light, though much reduced at these depths. Blue grenadiers have the deep sea fish shape of a long tapering body and fairly reduced fins. They also have long slender teeth and a prominent mouth. They eat other fish - especially lantern fish.

Activity

- Ask students to draw a fish and label as many parts of its body as they know.
- At the fish shop, buy a whole un-gutted blue grenadier, with its head on.
- Discuss the different parts of its body so students can add this to their diagram.
- Explain to the class what the fish is and where it has come from.

- Look at the features mentioned above and discuss how this fish survives in the deep sea.
- Compare these features to surface dwelling fish like the snapper.



Deep sea scratch art

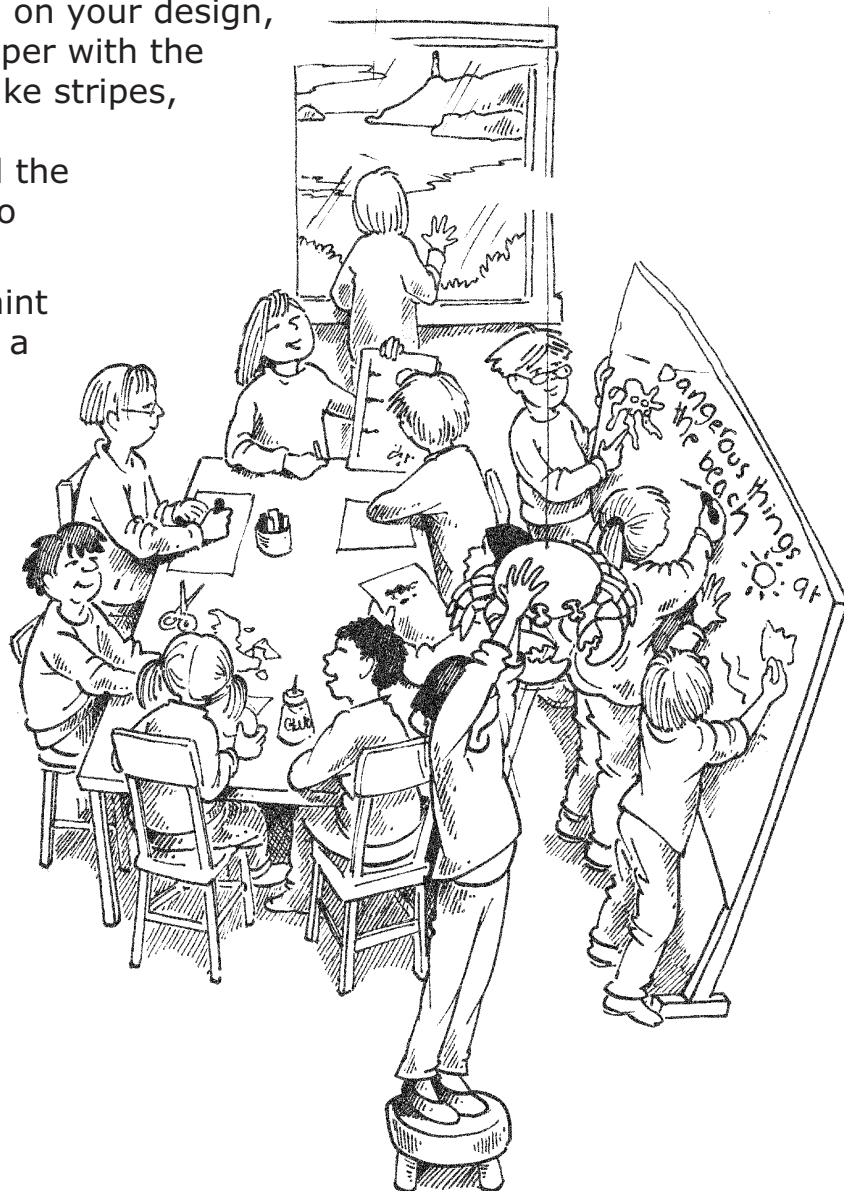
A cool new surf shop is opening and they need your help! Design a logo and create a name for the shop that they will also be able to use on the clothing and equipment they sell. Use the pictures in the book to help you with ideas. Scratch your design into the paper (see below) and put them up for display.

Materials

- Paper
- Many wax coloured crayons
- Black poster paint
- A drop of dish washing soap
- Paintbrush

Activity

- Once you have decided on your design, colour your sheet of paper with the bright wax crayons. Make stripes, patches, waves or any pattern, try to cover all the paper and press hard to smudge the crayon.
- Paint a coat of black paint all over the paper (add a drop of soap here to get the paint to stick to the wax crayon).
- When it is dry, scratch your logo design into the paper. The colours you designed will appear.
- Scratch in the name of the new shop you chose and put all the designs up for display!



Journey into the deep dark sea!

Imagine you are a scientist in a miniature submersible and are sinking slowly down to the floor. Ninety minutes later you have travelled almost two kilometers and the water temperature submersible is just above freezing. You turn on lights to see around you and look out into the water. The water pressure is 275 times greater sea level where you left from. Your submersible strong otherwise it will be crushed like an under the pressure.

You don't know what is out there and it is so cold and dark outside.

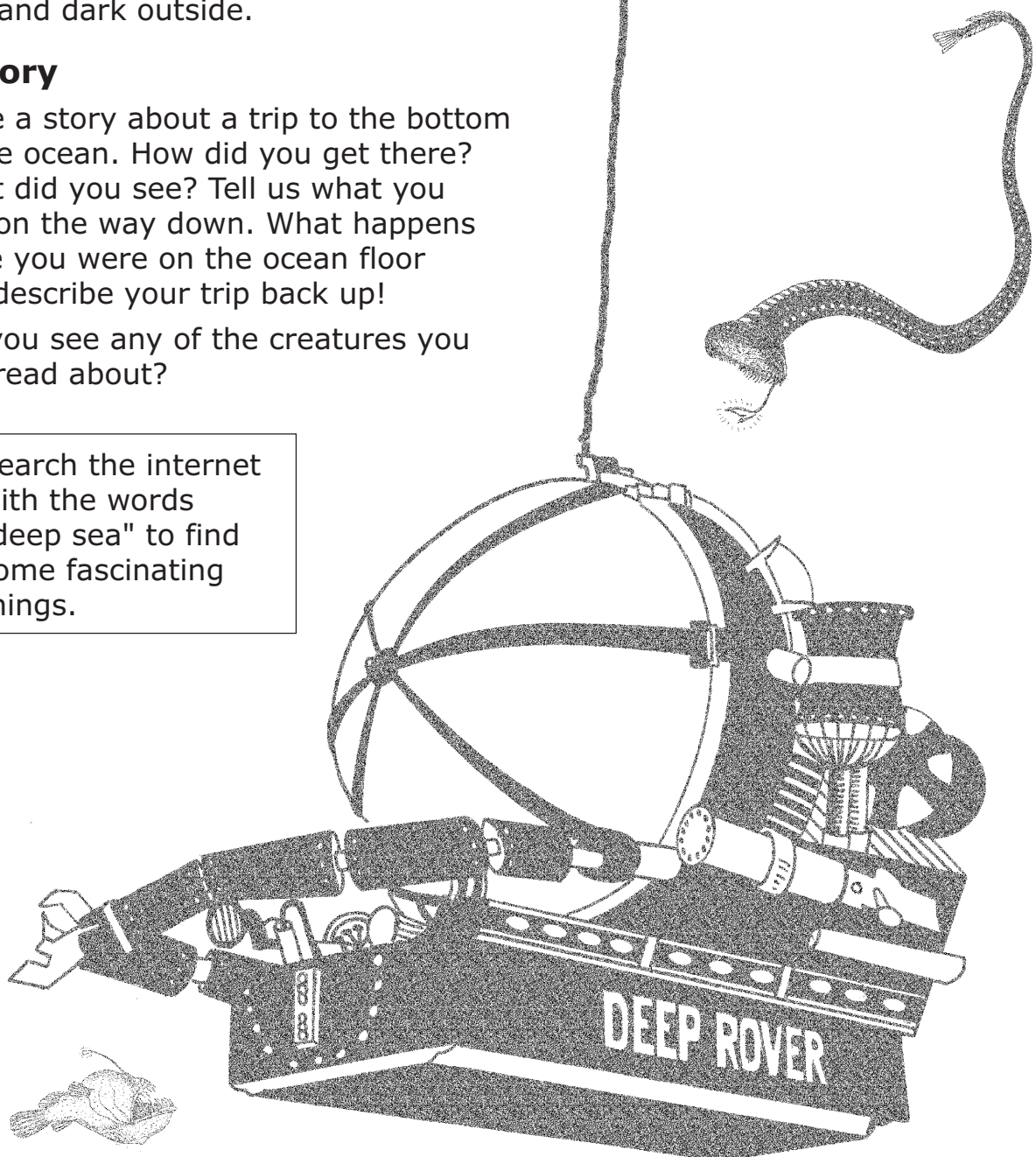
A story

Write a story about a trip to the bottom of the ocean. How did you get there? What did you see? Tell us what you saw on the way down. What happens while you were on the ocean floor and describe your trip back up!

Did you see any of the creatures you just read about?

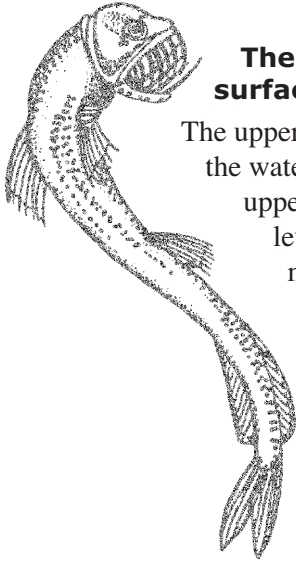
Search the internet with the words "deep sea" to find some fascinating things.

ocean
down
outside your
the bright
dark, murky
than that at
has to be
aluminium can



Living in the deep ocean

Teacher information



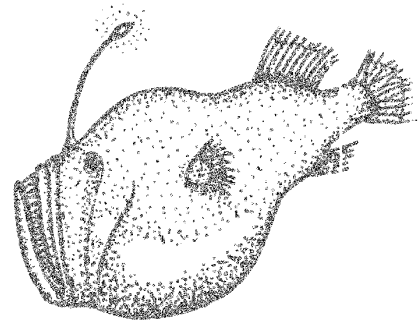
The sunlit zone (0-200 m below the surface)

The upper part of this zone is bathed in sunlight. The amount of light decreases and at 200 m the water has filtered out most of the light. Phytoplankton can grow vigorously in the upper part of this zone. These plants provide most of the food for the animals at all the levels in the ocean. Some additional food is washed in from the land. Bacteria and microscopic animals act upon the remains of any plants or animals and the material they produce is called detritus. The animals in the depths of the dark sea rely on this detritus for food. In some areas sufficient material falls from above to be described as marine snow that rains onto the ocean floor.

Beyond the sunlit zone (0-200 m below the surface)

Little light is available for the growth of phytoplankton. Whatever food is available for animals must come from above, either

as material which is washed off the land, or animals and plants from the waters above. The remains of living things are acted on by microscopic animals and produce detritus. In some areas sufficient material falls from above to be described as marine snow that rains onto the ocean floor.



The twilight zone (200-1000 m)

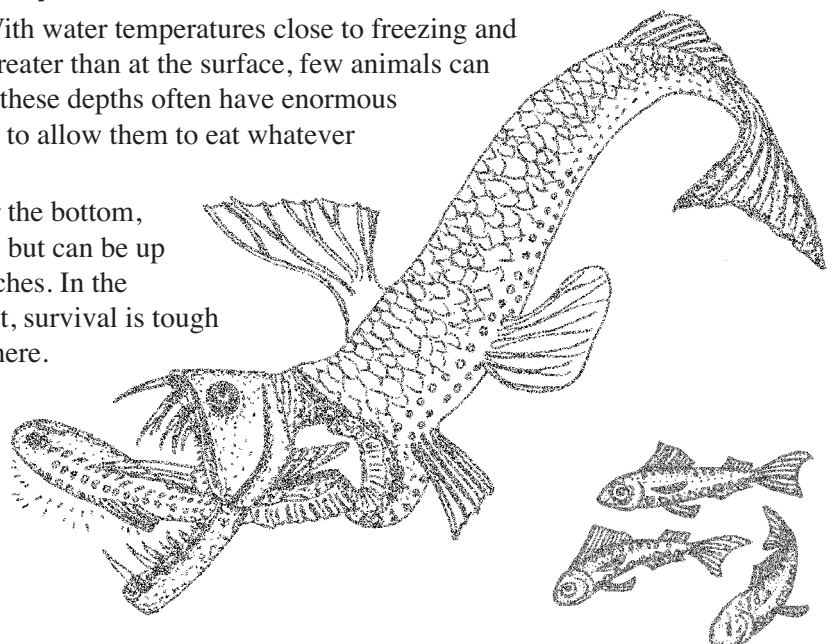
In this zone where light from above is very dim, conditions are more difficult for the survival of animals, and fewer types can survive. Apart from the lack of light and the shortage of food, animals must cope with low temperatures and high water pressures. Many animals that live in these depths of the ocean have developed ways of producing their own light (called bioluminescence) which is used to attract food and signal to other members of the same species. Communities of large jelly-like animals that filter some of the detritus from the water have also been discovered by remote operated vehicles. Some of the animals that inhabit the twilight zone include large squid, fish and even sperm whales and elephant seals that dive in search of food then return to the surface for air. Some animals from the depths move up to the surface at night to feed from this zone at a time when there are fewer predators around.

In the dark zone (1000-4000 m)

There is no light at all in this zone. With water temperatures close to freezing and the pressure up to a thousand times greater than at the surface, few animals can live in this zone. Animals that live at these depths often have enormous mouths and stomachs that can stretch to allow them to eat whatever comes their way.

Beyond the dark zone is the abyss, or the bottom, which is usually around 4000 m deep but can be up to 10,000 m deep in some of the trenches. In the intense cold, just above freezing point, survival is tough and we can find hydrothermal vents here.

There is however, a surprising amount of food available, enough to support some strange communities of worms, brittle stars and anemones that can exist in the soft materials without sinking. Some amazing fish called the tripod fish have especially long fins to support them on the ooze along the bottom.



The depth chart

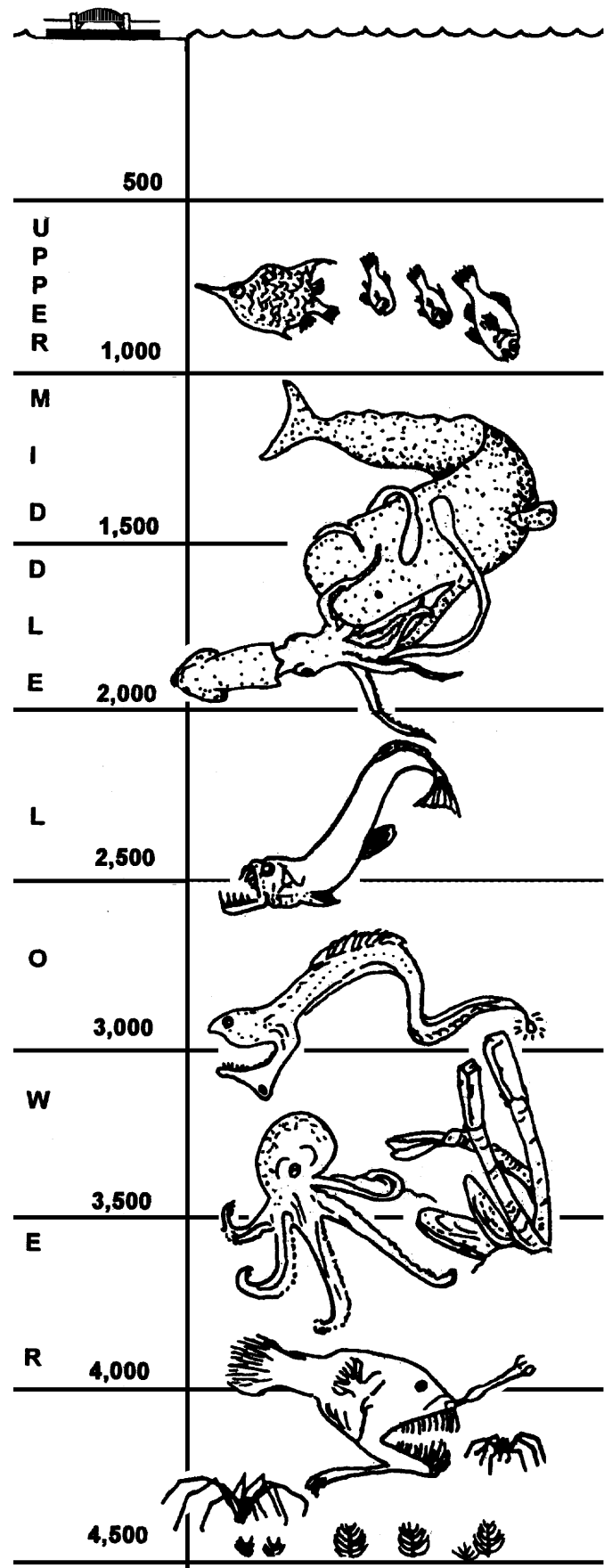
This activity helps students to gain some concept of the depth of the sea. When we look out over the sea it appears flat. Underneath this there are canyons, trenches, volcanoes and mountains. Make a depth chart for the classroom to demonstrate just how deep the sea actually is and what might live down there.

Activity

- Use a piece of card or paper 2 metres long.
- Divide it into ten scaled 500 metre sections.
- The top section is above the water. Put a heading here and some object like a boat or person to establish the scale.
- The other nine sections will take your chart to 4500 metres. Using the depth described in the information, place sketches of the various sea creatures on the chart or label them at the correct depth. Label the different zones as described on the previous page.

Materials

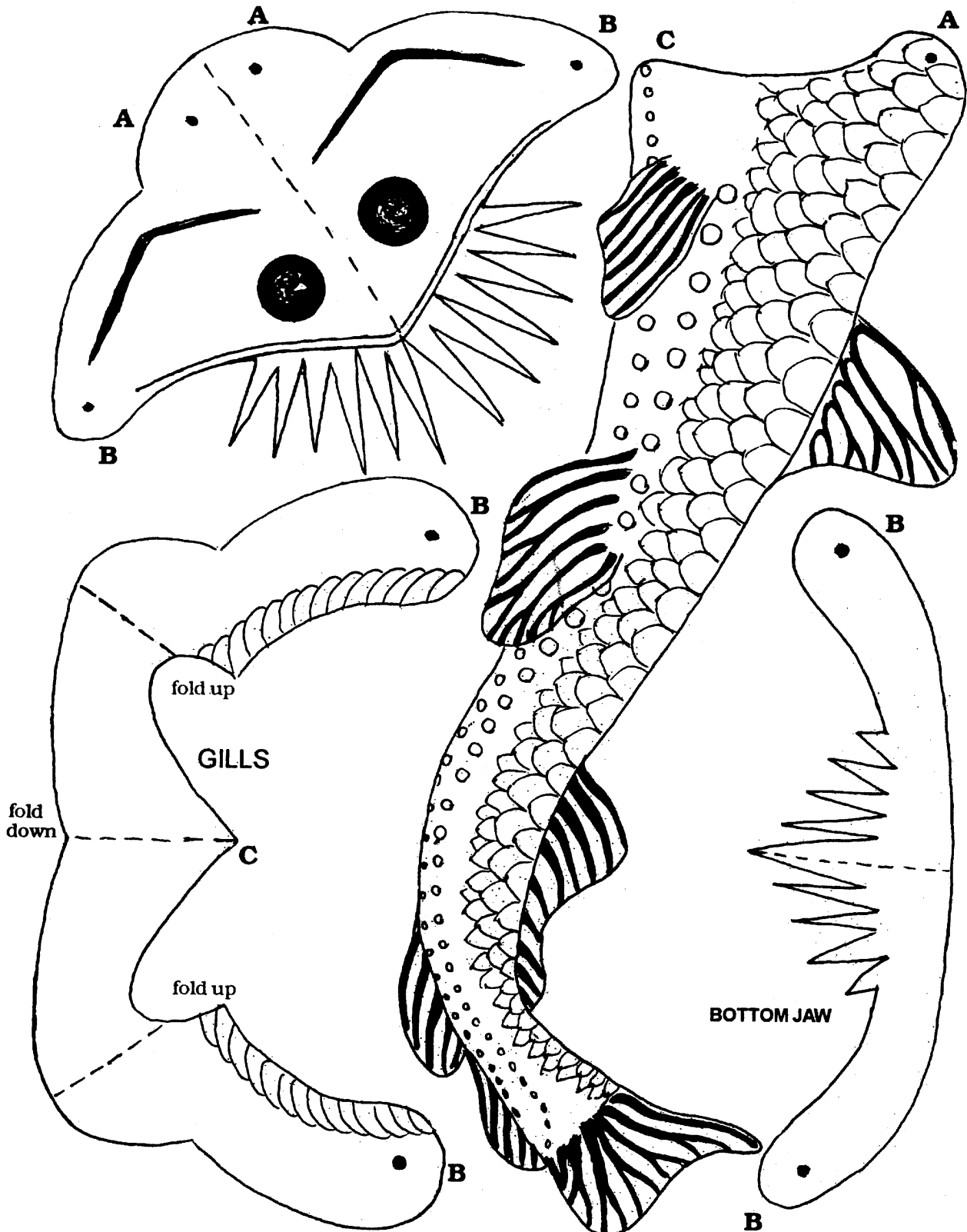
Pieces of card or paper joined together to reach a length of 2 metres
Ruler and markers



Name: _____

Make your own deep sea fish

Connect the pieces with small paper binders at points A and B. Tape C to C.



Make a minature deep sea vent

In 1977 researchers aboard the deep diving submarine Alvin, discovered some mysterious chimneys, or vents, and found an incredible variety of life around them. These under water vents are escape points for water trapped below the ocean floor. The water is heated by volcanic activity underground and can reach very high ($>500^{\circ}\text{C}$) temperatures inside the vent but cools quickly when it mixes with the near freezing water at the ocean floor. Researchers are very curious about the abundance of life around these vents. How do these animals survive in this unusual environment? Scientists have discovered that these animals depend on chemicals in the water to survive unlike animals on earth that depend on sunlight to survive. Research indicates that the vents are not permanent and may close up after about 50-100 years after they break open. Scientists have discovered giant tube worms protruding from milky white tubes, giant clams, huge yellow sea jellies and blind fish that look like giant tadpoles living around these vents. Do the activity below to find out how a deep sea vent works!

Materials

- 1 large glass container
- 1 small bottle
- Blue food colouring
- A piece of string
- Hot and cold water

Activity

1. Fill the large glass container with cold water.
2. Tie the string to the neck of the small bottle.
3. Fill the small bottle with the hot water and add a few drops of food colouring.
4. Carefully lower the small bottle into the glass container keeping the bottle upright until it rests on the bottom.
5. Watch what happens.

Internet sites

Check out the internet for interesting news articles on deep sea vents!

Search under deep sea.



Making an angler fish

This fun crafty activity requires skill and teamwork. It will stimulate careful observation and discussion of adaptations, and will develop an idea of the size of an angler fish. The female prickly angler fish is one of the most spectacular fish in the book. It grows up to 40 cm long.

Group the students into three or four persons per group.

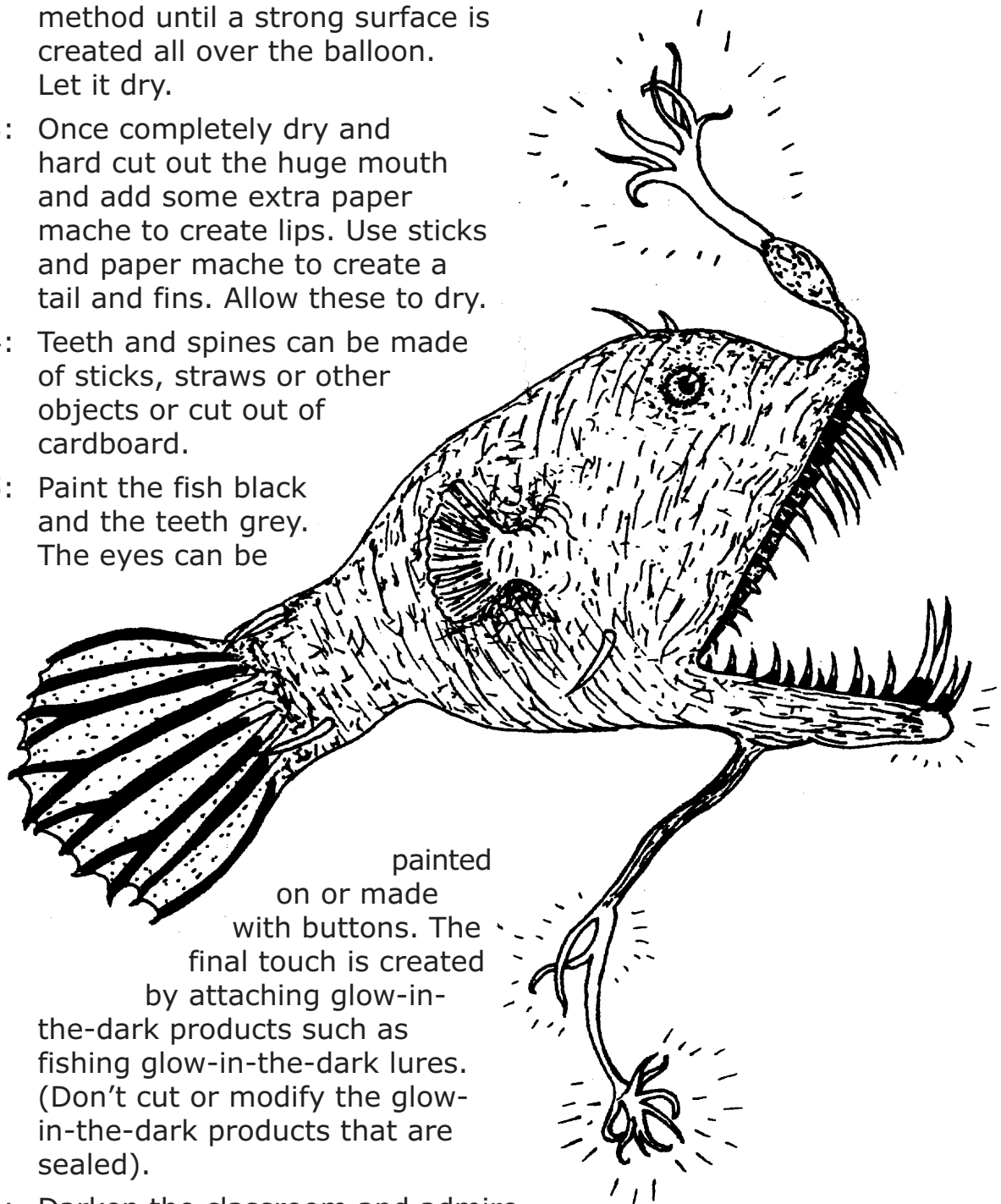
Step 1: Blow up a balloon to about 30 cm long and tie the end.

Step 2: Cover the balloon in newspaper using the glue paper mache method until a strong surface is created all over the balloon. Let it dry.

Step 3: Once completely dry and hard cut out the huge mouth and add some extra paper mache to create lips. Use sticks and paper mache to create a tail and fins. Allow these to dry.

Step 4: Teeth and spines can be made of sticks, straws or other objects or cut out of cardboard.

Step 5: Paint the fish black and the teeth grey. The eyes can be



Step 6: Darken the classroom and admire your work!

Book 11

Shipwrecks

Before reading the book

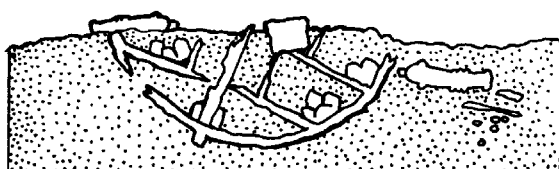
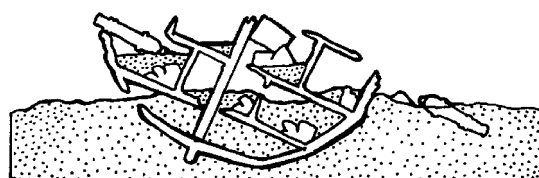
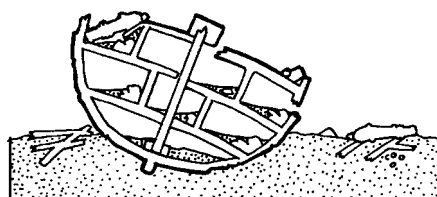
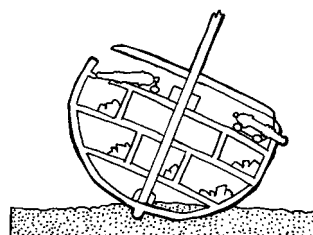
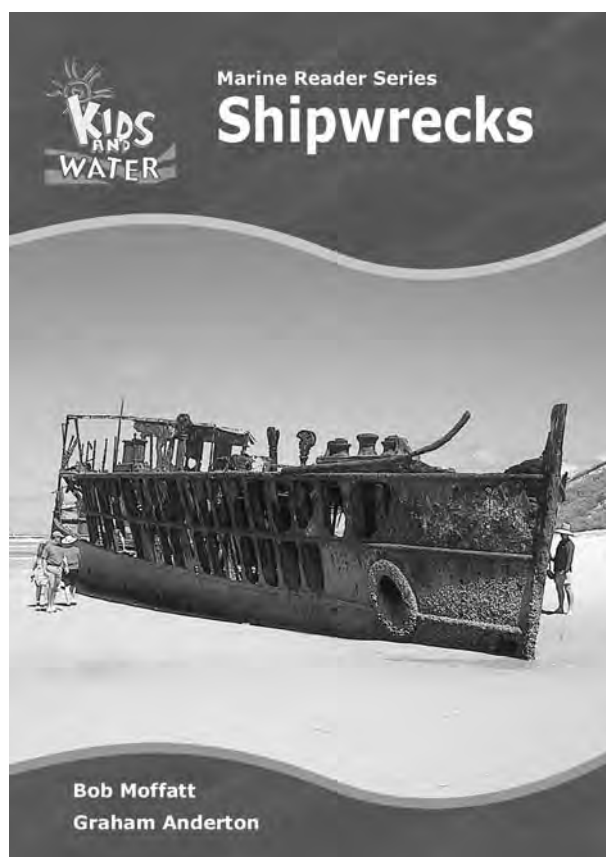
- Watch a video of a famous ship that was wrecked at sea e.g. Titanic. Discuss the video with the students.
 - What would happen after the ship sank? What might the ship look like in 2 years, 50 years or 100's of years later? What happened to items on the ship? How is this like a time capsule?
- Introduce the title of the book.
- Ask students what type of information might be in the book?

After reading the book

- Refer to students ideas about what might be in the text.
- Recall information from the text for discussion.
- Use the glossary to introduce new words.
- What other shipwrecks do they know about?

Other suggested activities

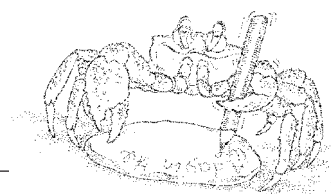
- Library research – gather information about vessels used in early cultures, Dutch exploration, Spanish navigators or other.
- Find out information about the laws protecting Australian and New Zealand and overseas shipwrecks.
- Make a time capsule of how people live today.
- Find out what shipwreck sites exist in your state.
- Visit a maritime museum.
- Research the story of the Batavia, Pandora or other well known shipwrecks.
- Check out web sites by typing in the word shipwrecks into the internet browser.



Answer to question Page 3

Shipwrecks are time capsules because they capture amongst many other things, the types of equipment, cutlery, household items that were used at the time. For example, the surgeons' watch discovery showed today's scientists what technology was available in the late 18th century.

Learning outcomes



Activity	KLA	Outcome
1 Shipwreck Survival - p41	English Health & PE	WRITING – 3.9 Experiments with inter-relating ideas and information when writing about familiar topics within a small range of text types. HEALTH OF INDIVIDUAL AND POPULATIONS – 3.11 Explains how the places where people live, work and play can influence health.
2 Magic Messages - p42	Science	NATURAL AND PROCESSED MATERIALS – 3.10 Demonstrates how the performance of common materials is altered by combining them with other materials.
3 Shipwrecks - p43	English SOSE	WRITING – 3.9 Experiments with inter-relating ideas and information when writing about familiar topics within a small range of text types. TIME CONTINUITY AND CHANGE – 3.1b Interprets accounts and artefacts of people in other times.
4 Trash and Treasure - p44	English The Arts	WRITING – 3.9 Experiments with inter-relating ideas and information when writing about familiar topics within a small range of text types. MUSIC – 3.16 Explores ideas and feelings through creating and making music.
5 School Treasures - p45	Mathematics	SPACE – 3.8 Visualises, follows and gives descriptions of locations and paths and attends to order and proximity in reading and making maps. 3.9 Interprets common spatial language and uses it to describe and compare features of things.
6 Shipwrecked! - p46	English Science	WRITING – 3.9 Experiments with inter-relating ideas and information when writing about familiar topics within a small range of text types. NATURAL AND PROCESSED MATERIALS – 3.10 Demonstrates how the performance of common materials is altered by combining them with other materials.
7 Wanted Poster - p47	SOSE	NATURAL AND SOCIAL SYSTEMS– 3.14 Illustrates the linkages between rights and responsibilities for members of a community.
8 Shipwrecked Words - p48	English	WRITING – 3.9 Experiments with inter-relating ideas and information when writing about familiar topics within a small range of text types.

Name: _____

Shipwreck survival!

You were on a boat that has been wrecked on a reef and some things from the boat have been washed up on the beach.

What things could you find from the island and the boat to help you survive until help comes?



Things to build a shelter with	Things to make a meal with
Things for eating and drinking	Trying to get help
To stay safe	Things to relax

Magic messages

Imagine you have been shipwrecked and need to get a message back to the mainland! Write a message that identifies you and where you are!

You will be amazed as the magic messages you write appear in front of the light.

Activity

Step 1 Each student practises a message they want to write on the scrap paper.

Step 2 Using the lemon juice or vinegar in a small bowl, dip the toothpick in and write your secret message on the thin white paper. Include your name somewhere on the paper.

Step 3 Leave time for your message to dry.

Step 4 Scroll up your message and tie it with string.

Mix all the messages up and have each student choose one to reveal the magic message.

Step 5 To make each message appear, hold the paper near a glowing light bulb. Watch the mystery message appear!

Materials

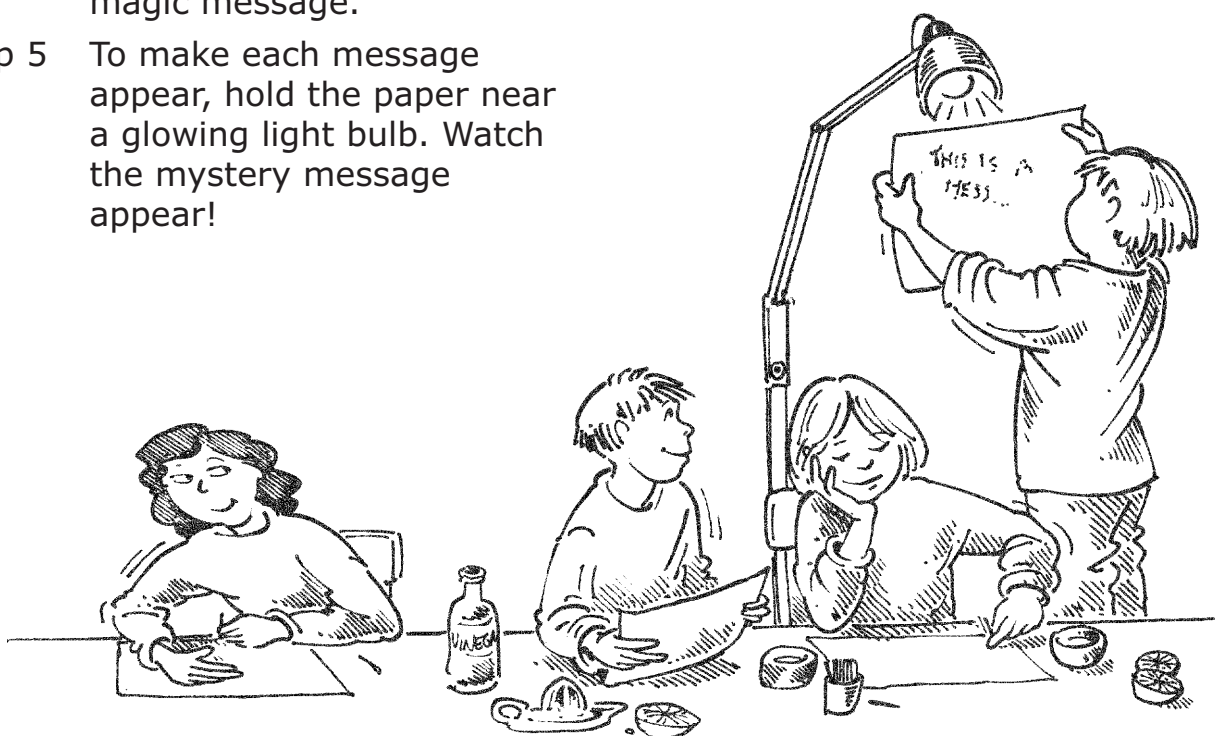
- Lemon juice or vinegar
- Paper cups or small bowls
- Toothpicks (use flat end)
- Thin white paper
- Pencils
- Scrap paper
- Close access to a 100 watt light bulb

* Each student has a piece of thin white paper, a piece of scrap paper, a pencil and a toothpick.

* Explanation: The acid in the lemon/vinegar weakens the fibres in the paper. The heat from the light makes the message appear.



Safety ! Beware of the hot light bulb and do not hold the paper too close.



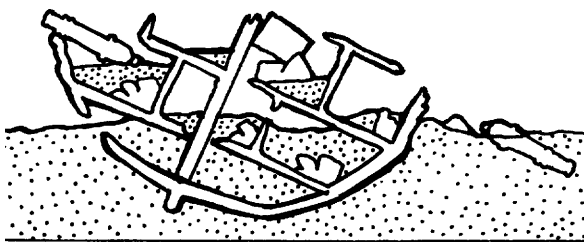
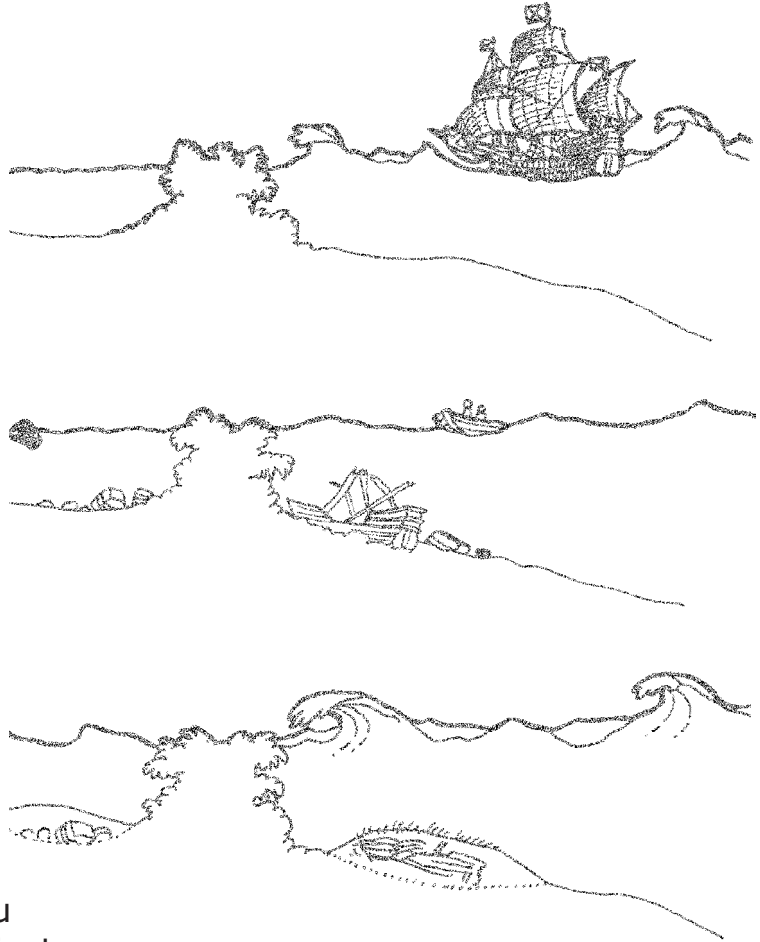
Name: _____

Shipwrecks

What happened in the beginning?

- Visit some shipwrecks off the coast of NSW and Queensland at www.ion.com.au/~stevel/ on the internet. There are so many to choose from!
- Each shipwreck has a brief description about where it is at sea and how it was wrecked.
- Some even tell of how many passengers and survivors! Once you have chosen a shipwreck that interests you, write a story.
- You know how the ship was wrecked, but what happened before this?
- Where did you leave from?
- Who were you with?
- Why were you going?
- Where were you going? (Use an Atlas)
- What cargo if any were you carrying? What happened just before you were wrecked?

Write your story using some of the information you found.



Quick quiz

The answers are in your book.

1. How did the early sailors navigate their way?
2. Why is there little evidence of Pacific island and Aboriginal peoples shipwrecks?
3. What are the Roaring Forties?
4. People who study shipwrecks are called what?
5. Why are perishables not found in shipwrecks?
6. What is an artefact and give an example?
7. Why is it important to treat sea treasures once they are removed from the sea?
8. Why are some shipwrecks protected?

Name: _____

Trash and treasure

Have you ever been to the beach just after a big storm? This is the best time to find trash and treasures. The winds create strong waves and the waves wash ashore some of the stories of the oceans.

- Visit your nearest beach after a storm. Look for anything interesting that the wild windy seas have washed ashore.
- Collect some of these interesting objects, e.g. pieces of washed timber, rope, floaties from boats, clothing, pieces of foam, crockery, netting.
- Make a classroom collection and display the things you have found.
- Write a story about where you think some of the things might have come from. You could tell the tale of an adventure at sea on a boat that was wrecked!
- Be sure to include all the things you have collected.
- Make up a song and dance using your trash and treasures.



Ideas for story



School treasure

How good would you be at finding treasure?

How well can you read a map?

Bury some treasure in your school, make a map and then go treasure hunting.



Activity

Divide the students into small groups.

Each group will choose a site, make a map, bury their treasure then swap maps with another group.

1. Have the students decide on a secret area to bury their treasure in the school.
2. Return to the classroom and draw a map of your chosen site. Use a key to mark in features at your site. Include obvious features like playgrounds, buildings, gates and direction north.
3. The map should have simple clues and instructions on where to start.
4. You could include simple clues such as "walk north for ten steps" or write clues on the map that will help lead the group closer to the buried treasure.
5. Swap maps with another group and see if you can find their buried treasure!

Materials

- Small trowel or spade to bury the treasure
- Small items of treasure to bury (decided on by the students, nothing valuable)
- Pencils and large sheets of paper (items to draw and make a map)

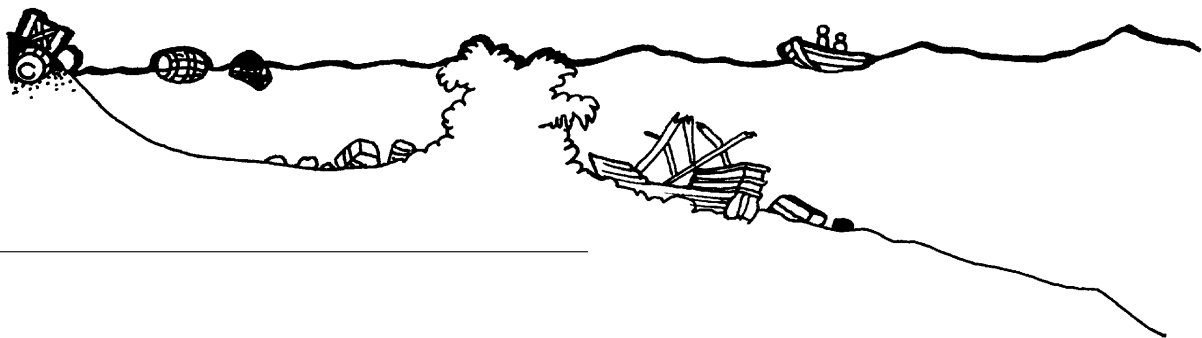
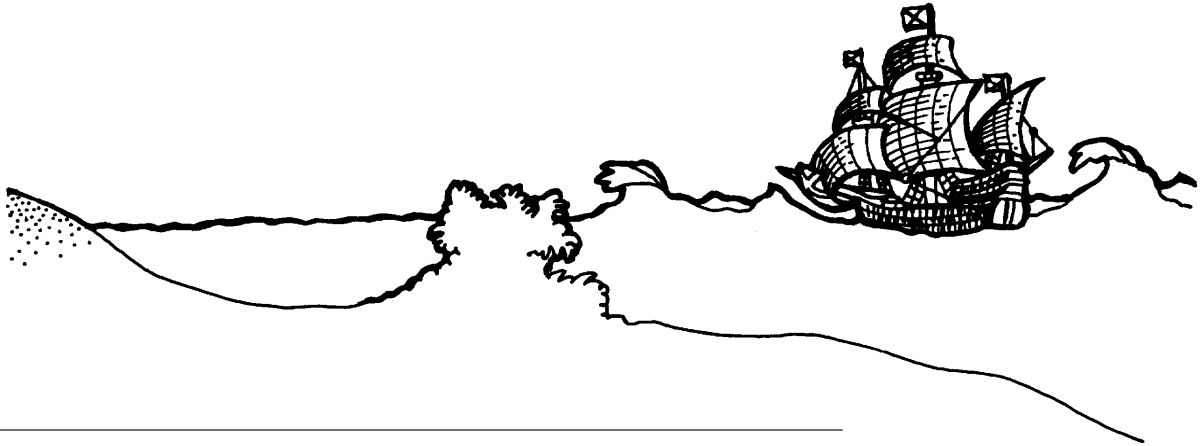


Name: _____

Shipwrecked!

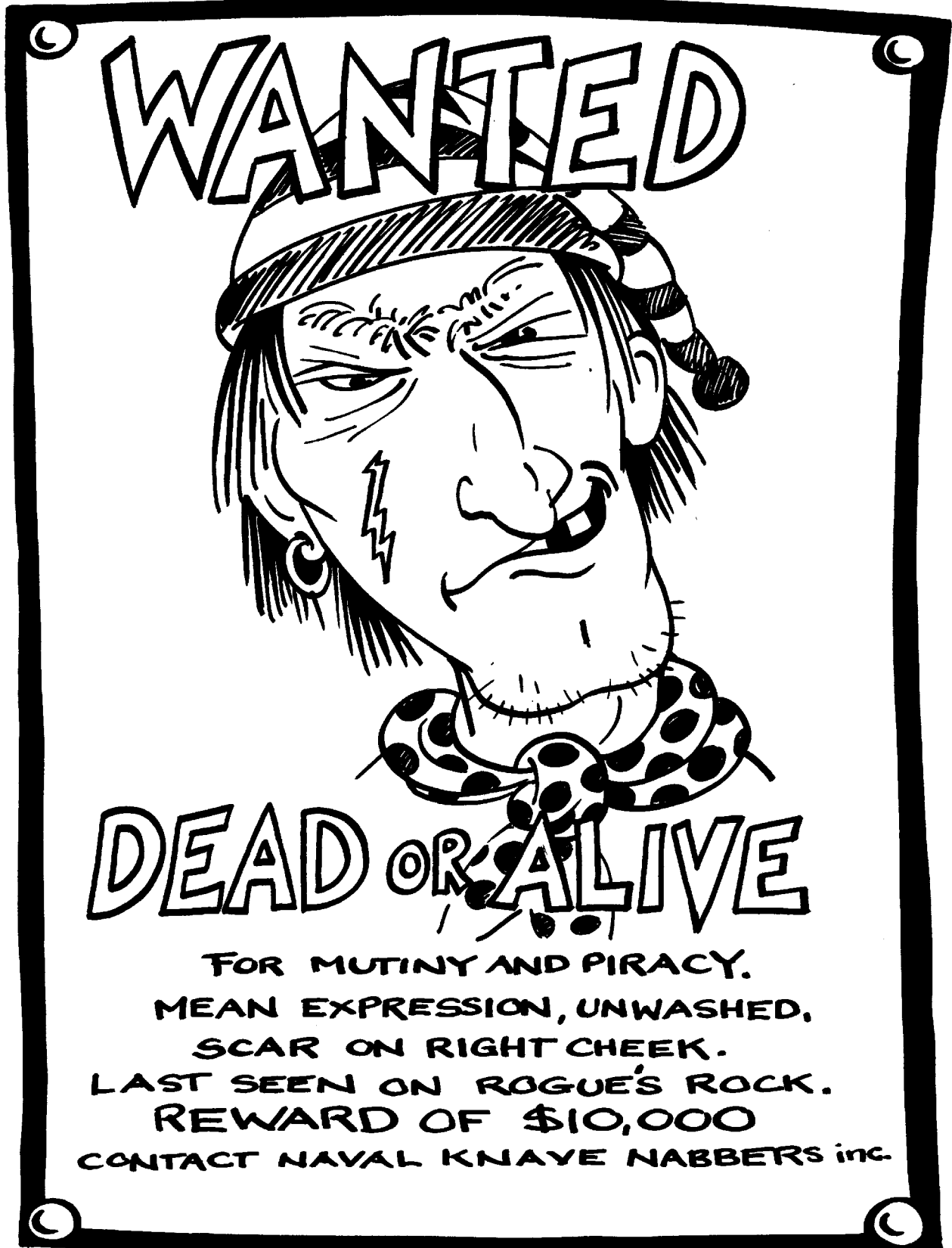
What happened to the ship and everyone on board?

Describe what happens to a ship after it has been wrecked and has sunk to the bottom of the ocean floor. See page 8 of your reader.



Wanted poster

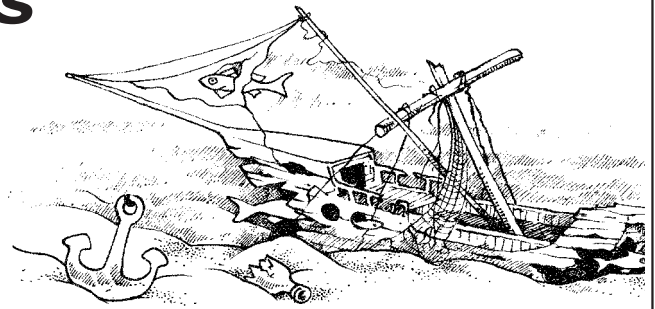
Make a wanted poster for a pirate or mutineer (e.g. the leader of the Batavia mutiny (see page 10 of your reader). Include on your poster the name, description, last seen, reward and any other important information.



Name: _____

Shipwrecked words

1. How many different words can you find in the dictionary that begin with ship?
2. Use a dictionary to find out which of the following words would come first and last. Write them in alphabetical order.



Shipwreck, sunken, storage, scientists, salts, sea, suction, study, steel, sank, ships, silver, sand, seawater, sailed, sailor

Write antonyms (opposite words) for the following:

bottom _____ loose _____ off _____
slow _____ disappear _____ old _____
deep _____ in _____ early _____
heavy _____ found _____ uncover _____
raised _____ complete _____

4. Fill in the following words with the missing vowel sounds

ea ee eu ue eo ai oa ou oo ie



gr _____ t appr _____ ch w _____ d
Qu _____ nsland resc _____ s _____ lors
mus _____ m arch _____ logists _____ t
_____ t tr _____ sure sc _____ nce
disapp _____ r r _____ n p _____ ple
n _____ rly

Book 12

Our Day on a Research Boat

Before reading the book

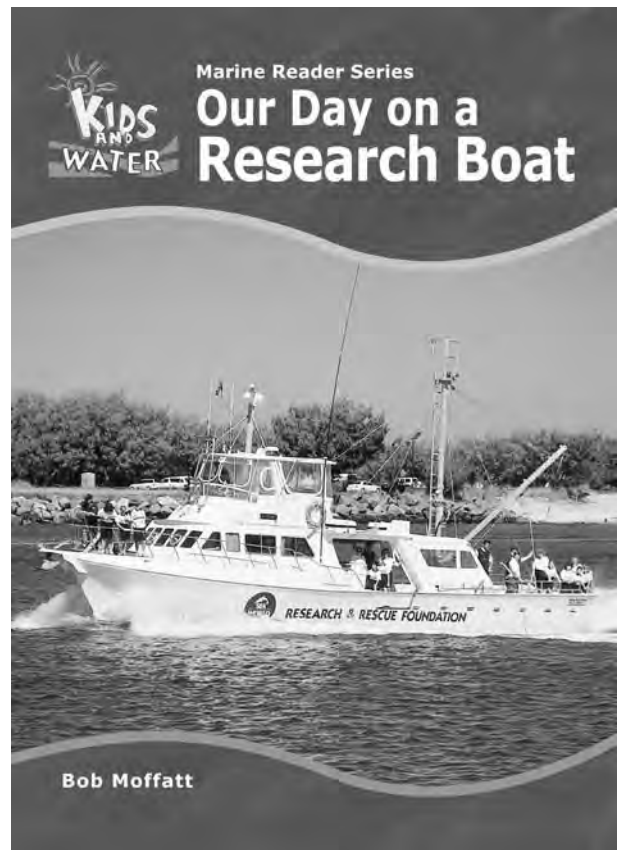
- Encourage discussion about boats. Who has been on a boat before? Who has a boat? What did they do when they were on the boat?
- Draw some of your favourite boats or make a collage of different boats with boating magazines.
- What other types of boats are there? What are they used for?
- Introduce the picture on the cover of the book. What type of boat might this be? What might it do?

After reading the book

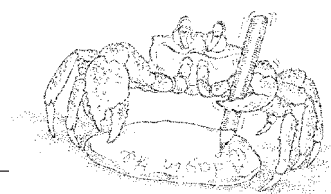
- Recall and share information gained from the text.
- Use the glossary to discuss new or difficult words.
- Use the pictures to highlight or expand on issues.
- Draw on students' personal experiences.
- Use the pictures to discuss safety and proper use of the equipment.

Other suggested activities

- Go for a trip on a boat, or visit a boat that you can get onto to have a look.
- Ask someone who works on boats to come and talk to the students.
- Write some poems or riddles about boats.
- Interview a marine biologist.
- Search the internet for information about boats and what different careers there are working with boats.
- Imagine you want to buy a boat. What sort would you buy? What would you do on the boat? Make a poster of your boat. Use boating magazines to explore your ideas.
- Research plankton further.
- Write a story about a trip on a boat.



Learning outcomes



Activity	KLA	Outcome
1 How many fish in the sea? - p51	Mathematics	CHANCE AND DATA – 3.25 Classifies, sequences and tabulates data to help answer particular questions and varies the classification to answer different questions. NUMBER – 3.12 Identifies, continues and invents whole number patterns involving the four operations, including where successive terms in a sequence can be linked by an addition or subtraction strategy.
2 Make a wind detectors - p52	Science Technology	EARTH AND BEYOND – 3.2 Relates changes in the physical environment to physical processes. DESIGNING, MAKING AND APPRAISING – 3.3 Plans and carries out the steps of production processes, making safe and efficient use of resources.
3 Our day on a research boat - p53	English SOSE	READING – 3.5 Interprets and discusses some relationships between ideas, information and events in written texts with familiar content and a small range of unfamiliar words and linguistic structures and features. RESOURCES – 3.11 Describes how individuals and groups value different forms of work.
4 Food webs - p54	Science SOSE	LIFE AND LIVING – 3.7 Maps relationships between living things in a habitat. NATURAL AND SOCIAL SYSTEMS – 3.13 Describes an example of a cycle within natural systems and the place of people in it.
5 Scientists at work! - p55	English Science	READING– 3.5 Interprets and discusses some relationships between ideas, information and events in written texts with familiar content and a small range of unfamiliar words and linguistic structures and features. Life and living – 3.7 Maps relationships between living things in a habitat.
6 Testing the crew! - p56	Mathematics	CHANCE AND DATA – 3.25 Classifies, sequences and tabulates data to help answer particular questions and varies the classification to answer different questions. NUMBER – 3.14 Makes a suitable choice of operation for situations involving whole numbers, amounts of money and familiar measurements.
7 Research sleuth - p7	English	READING – 3.5 Interprets and discusses some relationships between ideas, information and events in written texts with familiar content and a small range of unfamiliar words and linguistic structures and features.
8 Touchy fish! - p48	The Arts	VISUAL ARTS – 3.22 Explores and uses several art elements and uses specific skills and techniques appropriate to the medium.

Name: _____

How many fish in the sea?

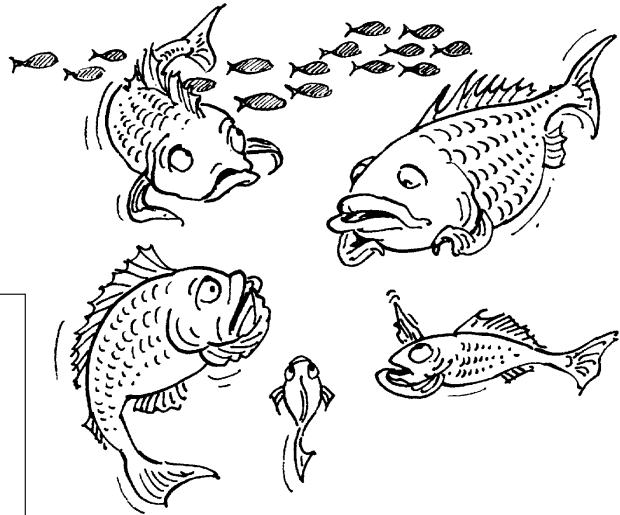
Some marine scientists try to find out how many fish live in the ocean.

It is not possible to count every fish. Instead, marine scientists estimate.

How do they estimate?

Materials you need

- A small box (no bigger than a tissue box), jar or bowl
- Water based paint or black marker
- Lots of small objects e.g. 5 cent coins or buttons
- Pencil



Activity

Have the students draw up the table below into their workbooks.

1. Put all of the coins or buttons into the container (jar, bowl or box) — these will represent the fish in the ocean.
2. 'Catch' a large handful of 'fish' and paint or mark each one with the paint or marker.
3. Count how many you have "tagged" and write this number under A in the chart.
4. Place all the "tagged" objects back into the container and mix the container around by shaking or stirring.
5. Without looking into the container remove another large handful of the coins or buttons.
6. Count the number of items you have removed and write this number under B in the chart.

7. If you have no "tagged" objects in your sample "B" remove some more coins/buttons and add this to your total at B.
8. Count the number of "tagged" objects in your sample and write that number under C.
9. To estimate the total number of coins or buttons in the container multiply "A" times "B" and divide the result by "C".

$A \times B = ? \div C$ = your estimate of the total number of 'fish' in the ocean.

10. Repeat the above process several times.

After many guesses, count all of the coins or buttons and see how close your estimates are.

Remember you are only estimating and the larger the sample you take the closer your estimate will be to the exact answer.

A	B	+B if adding extra	C

Make a wind detector

When you go out onto a boat it is important to know which way the wind is coming from.

Make this wind detector at school.

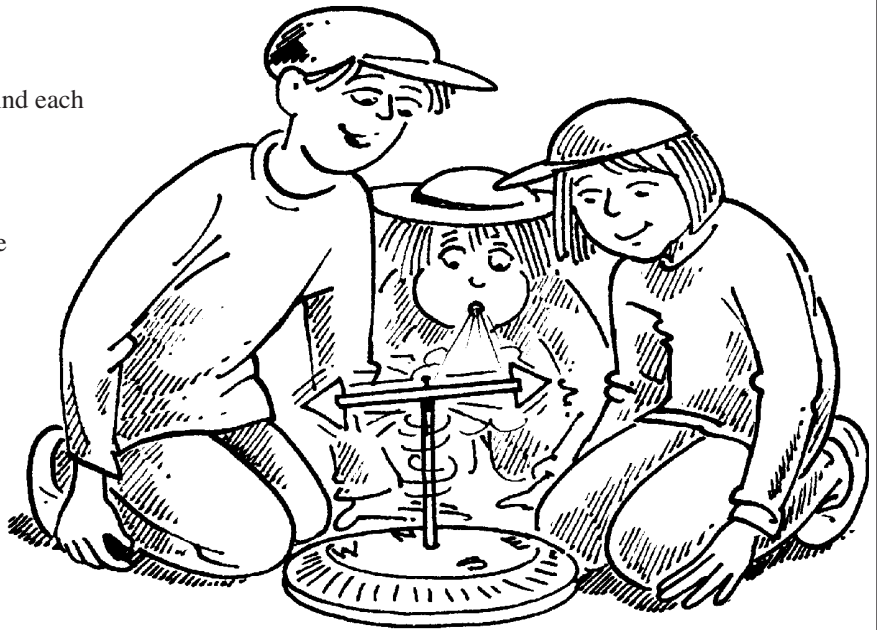
See if you can read the direction of the wind each day.

Activity

1. On the bottom of one of the plates, use the ruler to draw in two lines perpendicular to each other. The lines should cross in the centre of the plate.
Mark in N, E, S and W in a clockwise direction.
2. Punch a small hole in the centre of the plate where the two lines cross.
3. In the center of the other plate press in a small ball of plasticine. Push a few of the stones into the plasticine around the edge.
4. Turn the first plate upside down on top of the other plate and tape the edges together.
5. Push the pencil (lead side down first) in through the hole and into the plasticine. The rubber should be at the top.
6. Cut out two triangles from your coloured plastic sample.

Make a slit in each end of the straw and push the triangles into it. Tape them there. Make sure the pointy part of the triangle is pointing out like an arrow.

7. Push the pin through the straw half way along its length and push it into the rubber end of the pencil.
8. Finished! Put your wind detector on a flat surface outside. Using a compass, position it so that North is pointing North.



Materials

- Two heavy weight paper plates (or disposable plastic ones)
- Coloured marker
- Ruler
- Scissors
- Clay or plasticine
- A few small stones
- Sticky tape
- A lead pencil unsharpened with a rubber in the end
- A drinking straw
- A pin
- A compass
- A piece of coloured plastic (from a yoghurt container or other scrap material)
- Hint: Tape a piece of string just below the rubber end of the pencil and this will help you tell the direction of the wind.

Name: _____

Our day on a research boat

Use the book to help you fill in the missing words!



1. The person in charge of the boat is called the

_____ (p7)

2. As soon as we get on board the first thing we do is a

_____ (p5)

3. The engineer looks after the _____ (p7)

4. The radar shows sailors where _____

_____ (p8)

5. All ships need marine radios so the _____ can keep in touch with people in other

_____ and on _____ (p9)

6. When we arrived at our destination, the marine biologists lowered the heavy steel

_____ (p11)

7. Marine biologists use a _____ to collect samples of water at different depths. (p12)

8. The scientists used a special net to catch tiny marine

_____ and _____ (p13)

9. The marine biologists let us look through their _____

to see the _____ (p14)

Food webs

Let the class construct a food web!

Step 1. Brainstorm a list of sea creatures.

Write this list on the whiteboard (be sure to include phytoplankton and zooplankton).

Step 2. Discuss and find out what these sea creatures eat.

Step 3. Have the students make up some cards with the names of these sea creatures. Stick some "blu tac" onto the backs of the cards so they will stick to the whiteboard.

Step 4. Distribute the cards amongst the students. Start with the sun on the whiteboard.

Ask the students what uses the sun's energy to make its own food? (phytoplankton)

What feeds on phytoplankton to get its energy? (zooplankton)

What feeds on zooplankton to get its energy? etc.

Step 5. Have the students continue the food web making connections between the sea creatures and those they feed on.

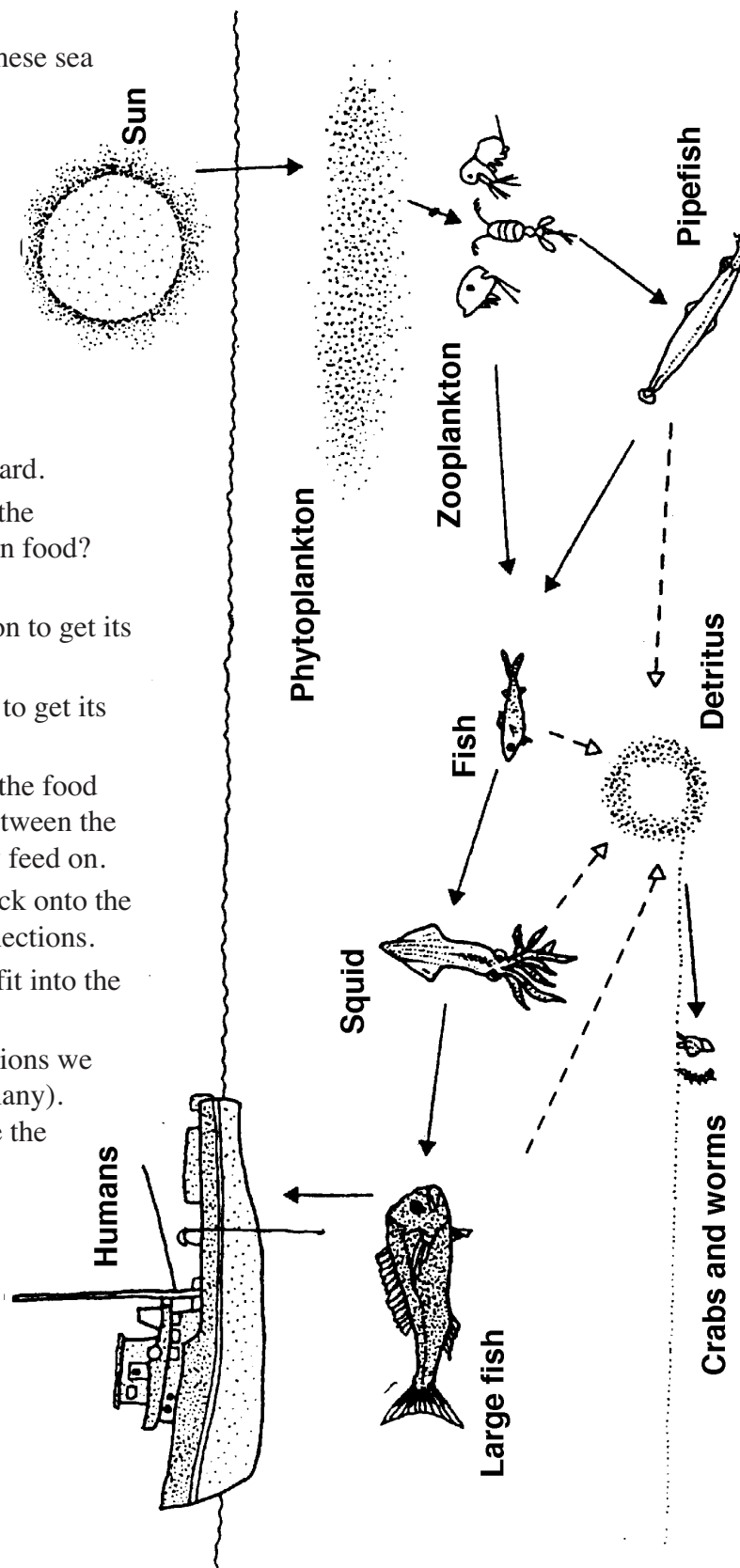
Step 6. The result is a food web stuck onto the whiteboard with many connections.

Ask the students where we fit into the food web?

Are there any other connections we can make? (There will be many).

What happens if we remove the sun?

What happens if an oil spill enters this food web?



Name: _____

Scientists at work!

Plankton means to drift. Plankton is the name given to plants and animals in the sea that drift around the ocean. Plankton are mostly tiny or microscopic.

Who am I?

Almost all animals in the sea depend in some way on plankton for their food!

Can you guess what this zooplankton will grow into?

Put the following words into the right place!

Plankton, phytoplankton, zooplankton, microscopic, drifting, mega plankton, oxygen

Plankton means _____
in the ocean, without being able to
choose which way to swim!

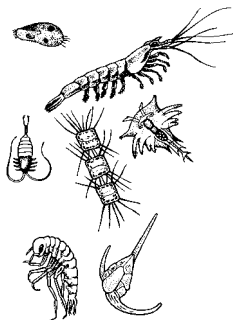
Tiny marine plants and animals are called _____

The tiny plant plankton in our oceans are called _____ and they are
_____.

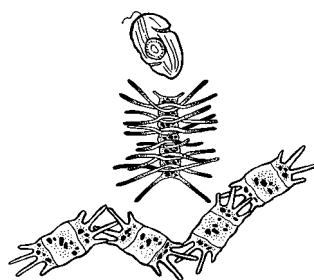
The tiny animal plankton in our oceans are called _____

Zooplankton range in size from microscopic to _____ such as huge sea jellies.

Phytoplankton provide an estimated 80% of the world's _____ supply!



Zooplankton



Phytoplankton

Hint

I have 10 limbs
I have 2 eyes
I use 2 nippers to pick up my food
I am certainly not drab but my name
rhymes with it!

Did you know

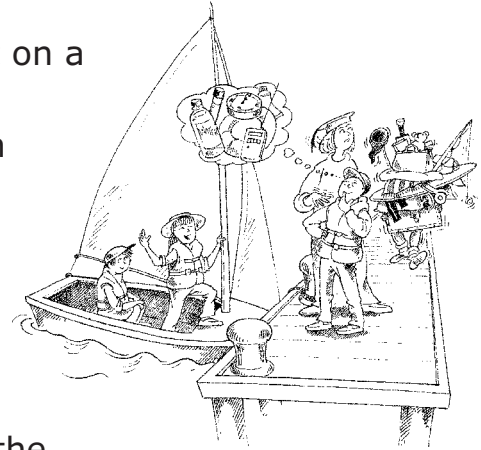
Every time you swallow a mouthful of seawater when you are swimming, you would have swallowed millions of tiny phytoplankton and zooplankton!

Testing the crew!

- Q1. Write a list of 16 things you should take out on a boat.

List them in order of importance to you with the numbers 1 – 16 (1 is the most important).

In your work pad write a short sentence about the first four items (numbers 1-4) and state why you chose them.



- Q2 On the boat you were told there were 26 PFD's. There were 12 students that day on the boat with 3 adults 5 crew and the skipper.

How many PFD's were not being used? _____

- Q3. The marine biologists caught many small plankton in the net. Under the microscope you saw 5 water fleas, 10 comb jellies, 16 fish larva, 4 crab larva, and 3 arrow worms.

How many plankton did you see altogether?

- Q4 On the boat you also did some fish tagging. Each fish caught was measured in length then tagged and released back into the water. The length of the fish caught were 30 cm, 15 cm, 20 cm, 26 cm, 22 cm, 27 cm and 31 cm.

What was the average length of the fish caught and tagged?

- Q5 After lunch we counted up all our pieces of rubbish. There were 10 pieces of plastic lunch wrapper, 5 paper bags, 8 chip packets, 9 yoghurt containers and 8 pieces of fruit scraps. We decided that to reduce our rubbish we would recycle the yoghurt containers and put the fruit scraps and paper bags into the compost bin.

How many pieces of rubbish in total did we have?

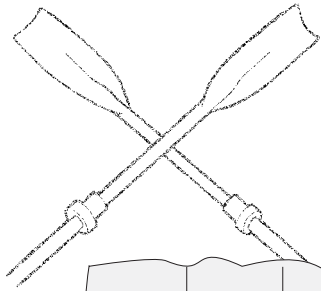
How many pieces did we have after we recycled and composted?

Suggestions for your boat trip (Q1).

Sunscreen, sandwich, sunglasses, pokemon cards, water bottle, towel, chocolate, bathers, hat, chips, binoculars, notebook and pencil, camera, jumper, raincoat, rubber soled shoes

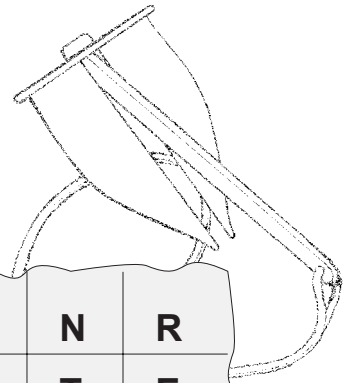


Name: _____



Research sleuth

Find the words in the table below

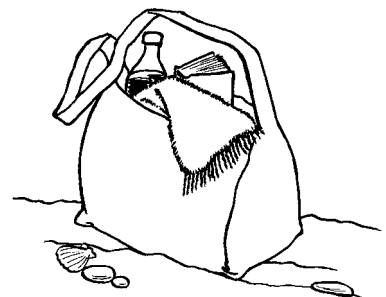


W	E	P	L	A	N	K	T	O	N	R
E	M	A	I	N	D	E	C	K	T	E
R	I	N	F	A	L	R	E	R	I	H
C	O	C	E	D	A	H	A	U	W	T
S	I	H	J	D	U	H	A	R	C	A
E	D	O	A	T	C	W	I	O	H	E
A	A	R	C	Y	G	O	F	T	S	W
S	R	O	K	V	Q	P	A	O	I	L
E	O	C	E	A	N	N	O	M	B	U
O	S	A	T	C	A	B	L	E	B	N
H	E	F	W	H	A	R	F	A	U	C
S	K	I	P	P	E	R	D	I	R	H

ANCHOR
CREW
OCEAN
RUBBISH
DECK
LUNCH
WHARF

CABLE
FOG
RADAR
SKIPPER
SHOES
RADIO
PLANKTON

CHART
MOTOR
LIFEJACKET
WEATHER

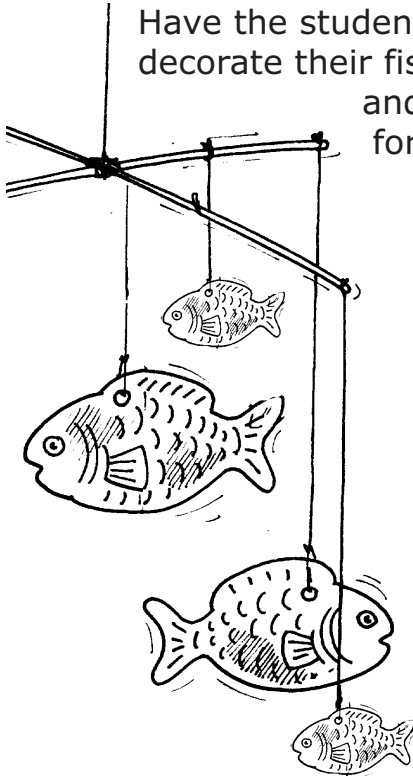


Touchy fish!

Fish have a variety of adaptations that enable them to survive in the sea. In particular the texture and colour of a fish's body is important to its survival.

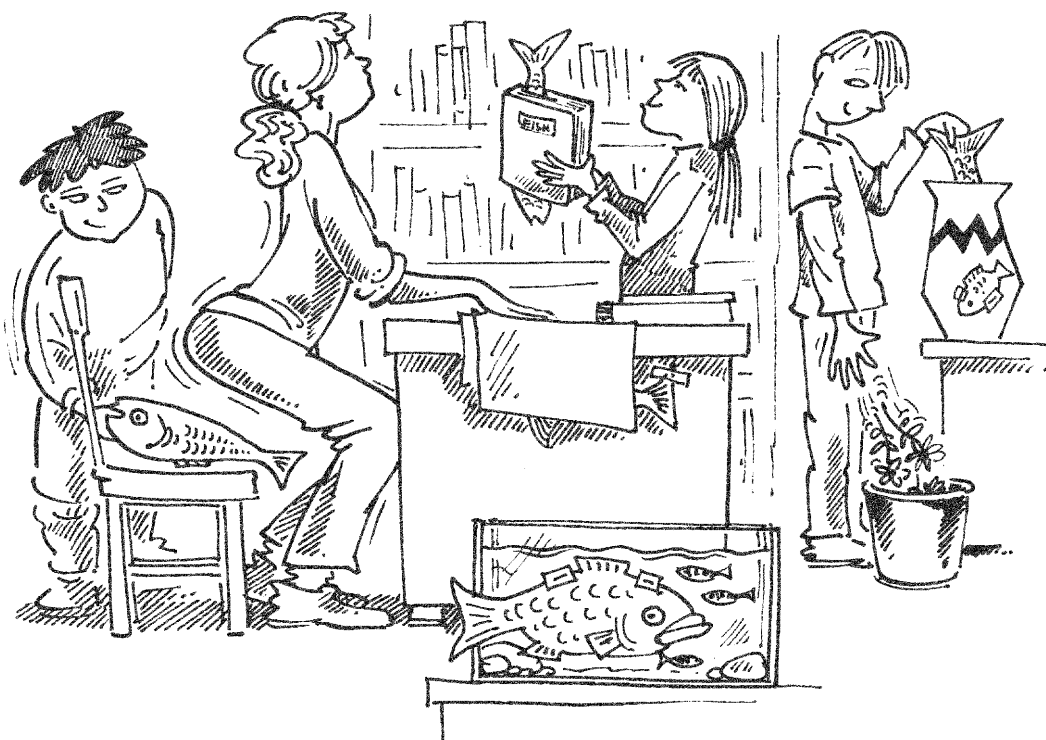
- Explore the different textures and colours of fish in the sea. e.g. shiny, silver and smooth is a trevally; spikey is a porcupine fish; colourful is a parrotfish; spotty is a toadfish; orange and white is an anemone fish; sandpaper is like a sharks skin.

Have the students choose a fish and using a range of materials decorate their fish to demonstrate the different textures, colours and body shapes. Hang all the fish in the classroom for an underwater aquarium effect!



Materials

- Pictures and magazines of fish for ideas
- A stencil outline of a fish
- Materials to decorate your fish with e.g. silver foil, paints, coloured paper, sandpaper, straws, strips of cellophane/wool/cotton, scraps of lace/frills
- String to hang your fish







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more >> Your password is: 1aeaf4a





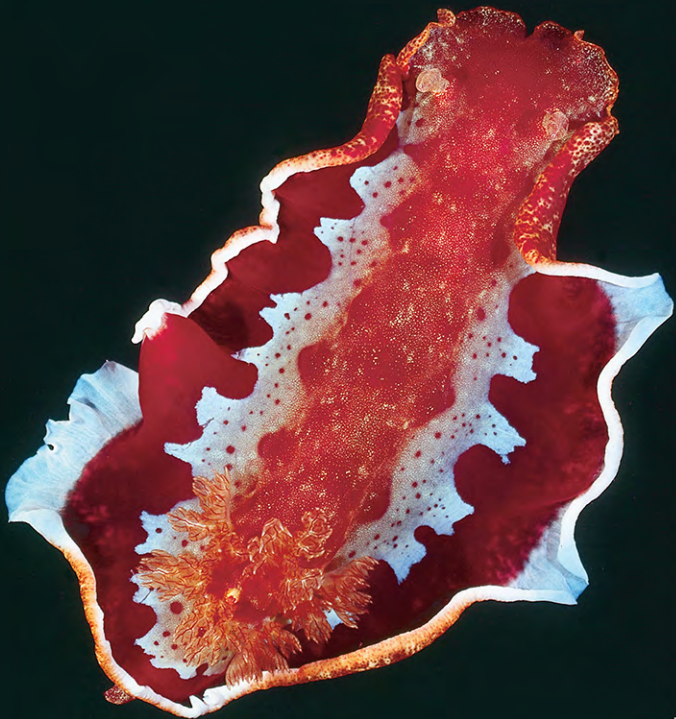




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Reading recovery level information



Method

Books 1-18 were read with a small sample of children (about 150) from a Primary School during March - June of 2001. Sample ages ranged from 5-10 years and were both boys and girls.

Results

The following reading recovery levels are only to be used as a guide until a more extensive sample size and test is conducted. The comments are from the reading specialist who has volunteered her time to Wet Paper

Level 1 Readers

Book 1 Everyone likes the sea:	Minimum level 10/11
Book 2 Sea Creatures:	Approximate level 13
Book 3 At the beach:	Minimum level 10 - 12

Level 2 Readers

Book 4 Fun by the sea:	Minimum level 12/13
Book 5 Working at Sea:	Approximate level 15
Book 6 Be safe at the beach:	Minimum level 12/13

Level 3 Readers

Book 7 Tourists and the Sea:	Approximate level 24/25
Book 8 All Kinds of Boats:	Approximate level 19
Book 9 Rock Pool Life:	Approximate level 30
Book 10 Creatures of the Deep:	Approximate level 20
Book 11 Shipwrecks:	Minimum level 26/27
Book 12 Our Day on a Research Boat:	Approximate level 28 Δ

Level 4 Readers

Book 13 Let's Go Sailing:	Approximate level 20
Book 14 Food from the Sea:	Minimum level 26/27
Book 15 Classification and Survival:	Approximate level 30
Book 16 Sea Creatures at Risk:	Approximate level 29
Book 17 Better Boating Behaviour:	Minimum level 21
Book 18 Don't Mess with the Sea:	Approximate level 28/29 Δ

Some comments

- The book contains lots of text changes with some complex vocabulary and a lot of visual analysis of unknown words is required, For example book 1.
- Language is easily accessible, however vocabulary makes it harder. For example book 2
- Although the pictures are good and give some support, they do not assist in working out with some complex vocabulary - Example: Many children may have difficulty with "squarking". For example book 3

Further information

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