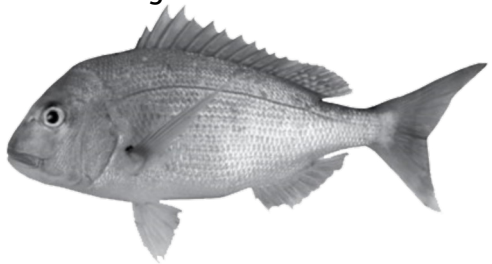
Draw a picture or symbol or write a whakatauaki (proverb) that represents your time with the Te Kura Moana—EMR programme.

Where to next.... Check out the EMR student alumni page on our website www.emr.org.nz



Experiencing Marine Reserves

Te Kura Moana

Whakamana te maunga,
Whakamana te wai,
He mauri o ngā tangata,
Ngā mea katoa he pai.

If we look after the water, from the mountains to the sea, it will look after us, it is our life force.

Learning Journal

Name: _____

Room: _____

School: _____

Term & Year: _____

Experiencing Marine Reserves (EMR) empowers schools and communities by providing hands-on experience in the ocean.

EMR is a programme of Mountains to Sea Conservation Trust
www.mountainstosea.org.nz

To start, complete the first two columns and the question below.

What we know…	What we would like to find out…	What we learnt… (complete at the end)

How important do you think marine conservation is for the marine environment?

(circle the appropriate symbol)

Now that you have experienced a marine protected area, how important do you think marine conservation is for the marine environment?

(circle the appropriate symbol)

I didn't understand...

The strongest feeling I have is...

I was pleased to see that...

I didn't like...

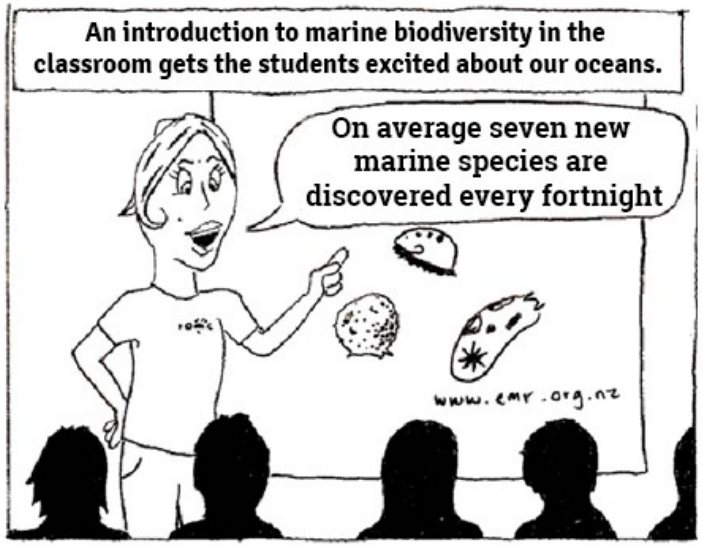
Now I want to...

I will always remember...

Classroom Workshop: Marine Biodiversity

Match the words with the correct definitions.

Marine	the environment where a plant or animal lives
Biodiversity	eats plants and animals
Habitat	anything to do with the sea/ocean
Native	naturally found in a place but may be found in several different places
Endemic	eats only plants
Herbivore	the number and type of different living things
Omnivore	eats only animals
Introduced	naturally found in only one place
Carnivore	has been accidentally or deliberately transported to the new location by human activity



Name examples of marine biodiversity from New Zealand.

1. _____
2. _____
3. _____

Name habitats featured in your EMR presentation.

1. _____
2. _____
3. _____

While I was part of the Experiencing Marine Reserves programme

I was surprised to find...

I really liked...

I thought that...

I felt happy when...

I learned that...

Marine Reserves

E B P Y H L N D Y R M R B E E

V I L M G S X H M L W U Z E N

I O E R O V I N R A C L N E D

T D K S T A R F I S H I R X E

A I C A N R O G Y H R O P F M

N V P R H A R E E A V H A P I

V E T Z A K P R M I R C U Y C

A R A A K B B P N B Q C A N N

O S E C T I S M E R K S A M X

R I E V V I O M E R V J O N C

A T N O K S B S L E K R O N S

G Y R I N S E A P A R O R E Z

N E N K L R N I H Z O W U M O

A A P N V W B I J P W R Z U E

T D Q E A F A F F X F K B P Q

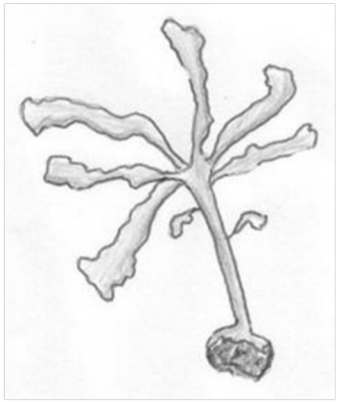
BIODIVERSITY
CARNIVORE
CRABS
CRAYFISH
ENDEMIC
FINS
HABITAT
HERBIVORE
KELP
KINA
MARINE

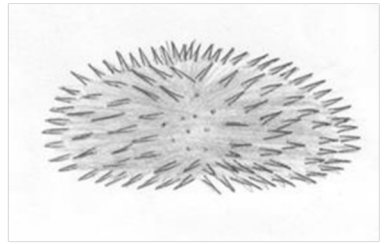
Kina Barren Story

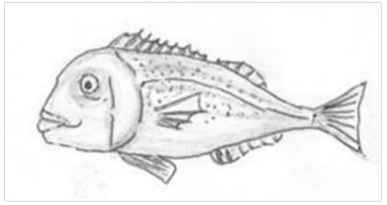
Draw arrows from one organism to the next to show what eats what.

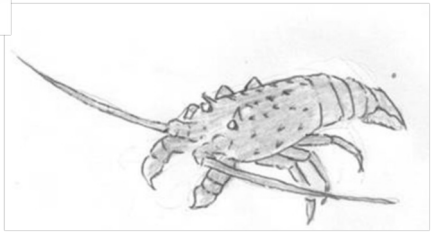
The arrows show a transfer of energy. For example **BIRD → CAT**

Read the 'Hungry Kina' story from the EMR web site www.emr.org.nz

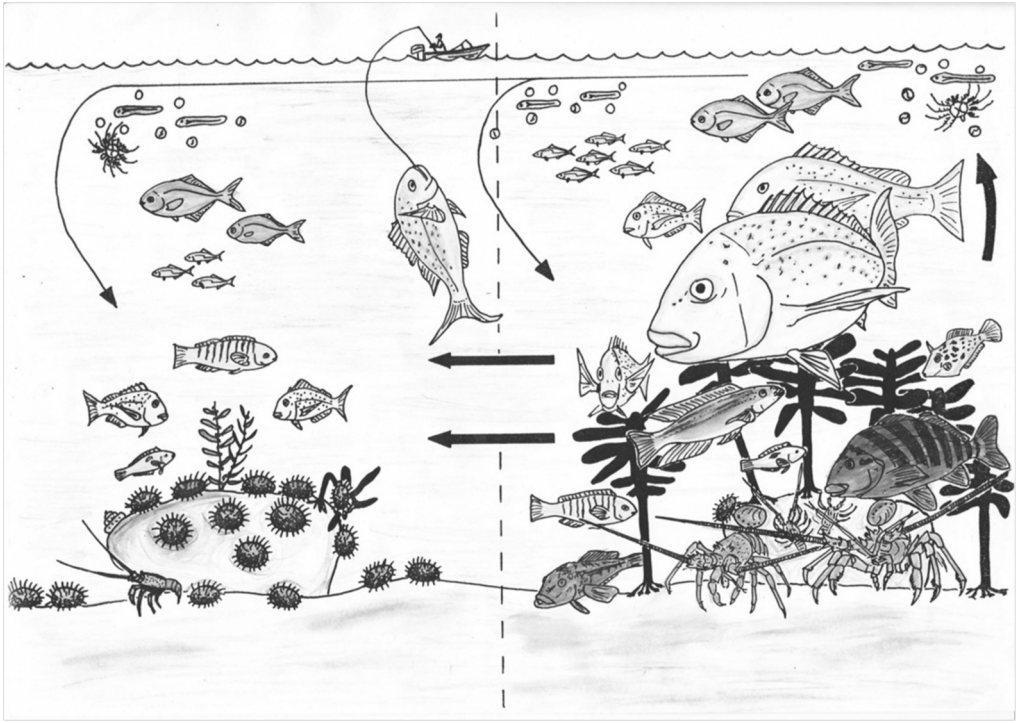








6 The diagram below is based on Goat Island Marine Reserve, describe the difference in both sides below.



"We had no reason to believe that Kina Barrens, widespread throughout Northern NZ, were anything but a natural occurrence. We now know they are an artefact of overfishing. Kina Barrens have all but disappeared at Goat Island and Tāwharanui Marine Reserves... "

— The late Dr Roger Grace - Marine Biologist

29

Describe your action project below

My action	Yes	No
Reaches beyond the classroom	☐	☐
Is about a NZ or local issue	☐	☐

A quiz on New Zealand's oldest marine reserve, Motu Hawere a Maki—Goat Island

- Marine reserves protect unique, ... and representative examples of our coast.
- What are marine reserves most equivalent to on land?
- What are the 6 main things you can do at Goat Island?
- What's the Māori name for Goat Island?
- When was Goat Island marine reserve officially opened?
- What are 6 main benefits of marine reserves?
- What do limpets eat?
- What do goat fish have under their jaws?
- How many eggs does a female kōura produce?
- What do snapper eat?

Te Reo Māori — fill in the blanks...

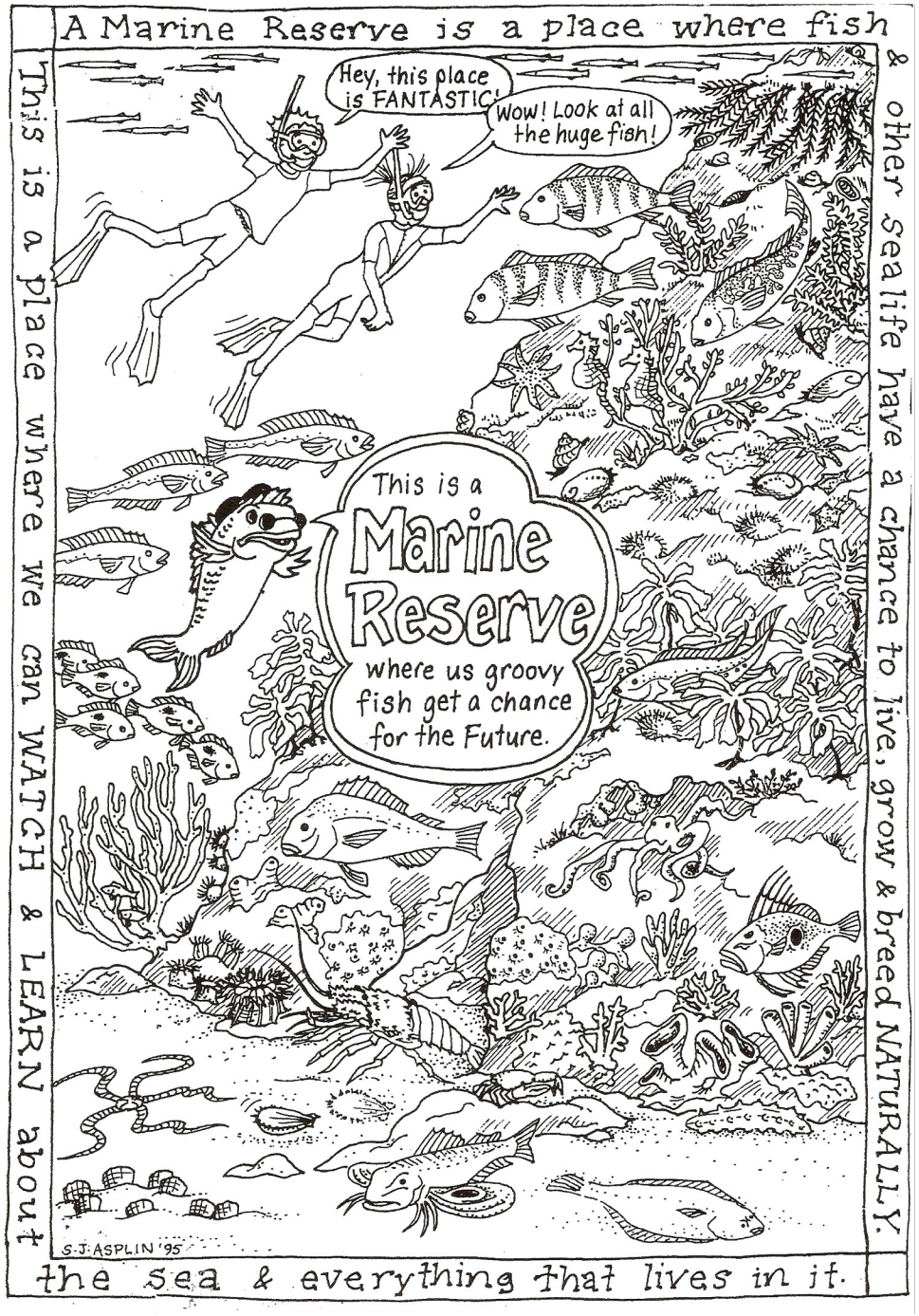
Moana	
	Snapper
Kina	
	Crayfish
Tangaroa	
	Kingfish
Wheke	
	Mussel
Kaimoana	
	Starfish

One fascinating fact I learnt…

Something I would like to find out more about…

A question I have is…

Colour in this image



Compare your local unprotected area with the marine reserve.

Differences

Local Area

Similarities

Marine Protected Area

Differences

Introduction to Snorkelling: Pool Session

Equipment

Label the following equipment with their correct names.

_____

_____

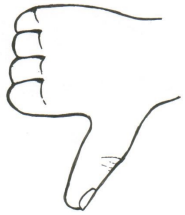
_____

Communication

1 whistle blast means _____

3 whistle blasts means _____

Write the meaning of the signals below the pictures.

Three things that I learnt about snorkelling

1. _____

_____

2. _____

_____

3. _____

_____

I would like to improve my snorkelling skills by

_____

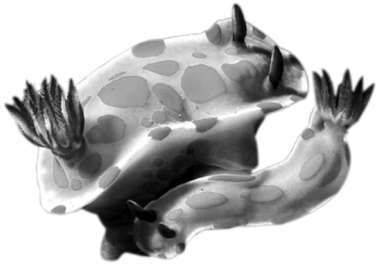
_____

_____

_____

_____

_____



Identify and draw three fish that you saw while snorkeling. Use the fish ID cards to help you.

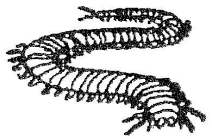
Fish 1:

Fish 2:

Fish 3:

On a scale of 1 – 10 (10 being the highest and most healthy). Rate the well-being or Mauri of your protected marine area by the emotions you felt underwater. Mark the line below.

1 **10**

Worms		
		Chalky tubeworms Segmented worms with crowns of head tentacles for filtering plankton. Their chalky tubes are cemented to the rock and give protection from drying out and predation.
		**Soft (parchment) tubeworms** Segmented worms in soft papery tubes either buried in sand or attached under boulders.
		**Ragworms** Free-roaming segmented worms living in sand or under boulders. Small jaws inside their mouths are used to grab animal food and rasp off the flesh.
Birds		
		Red-billed gull A confident scavenger.
		Black-backed gull A confident scavenger.
		Northern variable oystercatcher Often seen on rock flats at low tide.
		Pied shag These roost in pohutukawa trees over-arching the beach at Goat Island.
		White-faced heron Often seen on rock flats at low tide.

My Local Unprotected Marine Area

Name of area _____

Scavenger Hunt

Write or draw what you found for each box. There must be something different in each box. Leave everything where you found it, except for the rubbish!

Rough	**Slippery**
Smooth	**Human Rubbish**
Shell	**Seaweed**
Round	**Sharp**
White	**Bright Colour**
See through	**Multi-coloured**

Use Your Observational Skills!

Find a shell and some seaweed, and make a detailed pencil drawing.

Shell

Common name:
Scientific name:
Māori name:
My name:

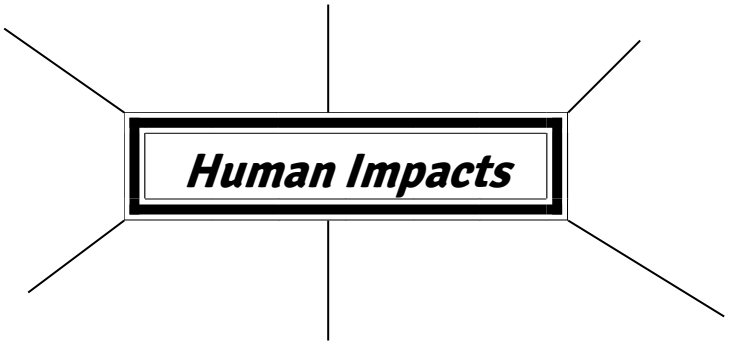
Seaweed

Common name:
Scientific name:
Māori name:
My name:

Crustaceans		
		**Crabs** Flat or wedged shaped body with four pairs of walking legs plus one pair of pincer legs. Reduced tail is tucked away under body.
		Hermit crabs Live in empty snail shells, and have twisted bodies to fit shell. Never out of water.
		**Shrimps** Small long-bodied animals with slender walking legs and swimming legs under a muscular tail. Tail has a large tail fan and can flick forwards or back to power shrimp through water.
		**Sand hoppers** Some have flattened legs for digging or kicking as they jump. Often found under the driftline debris (e.g. seaweed), or that which they eat.
		**Acorn barnacles** Small to tiny crustacea living inside boxes made from chalky shell plates that is cemented to hard surfaces. Under water their lids open so that long feathery legs can beat through the water to strain out the plankton.
Fish—very shy! You will need to sit very still!		
		Triplefins Small blunt headed fish with three distinct dorsal fins. About 20 species, many are less than 5cm long.
		Clingfish or sucker fish Small fish with broad flat heads. Pelvic fins modified to form sucker on belly for clinging to rocks or seaweed.
		Rockfish Long dark fish with scaly bodies. A thick skin of mucus helps them survive under stones when the tide is out.

Molluscs		
		**Chitons** This flexible shell bends to fit the lumps and hollows of rough rocks.
		**Snails—Grazers: Rounded (Nerita or Cats-eye)** Clings to rock or crawls on muscular foot. Withdraws into shell if detached. Most have a lid to close the shell opening.
		**Snails—Grazers: Shaped like spinning tops (Topshells)** See above information.
		**Snails—Grazers: Limpets** See above information.
		Snails—Predators & Scavengers: Whelks Usually pointed at both ends. Have a breathing tube protruding from front for sensing prey or caution.
		**Oysters** Have one shell cemented firmly to the rock or other shells. Top shell thick and often sharp edged.
		**Mussels** Thin, smooth, streamlined shells anchored to rocks by tough elastic threads called byssus.
		Clams Thick or thin shells, usually in equal pairs. Most burrow into sand or mud, but some bore into rock or hide under boulders.

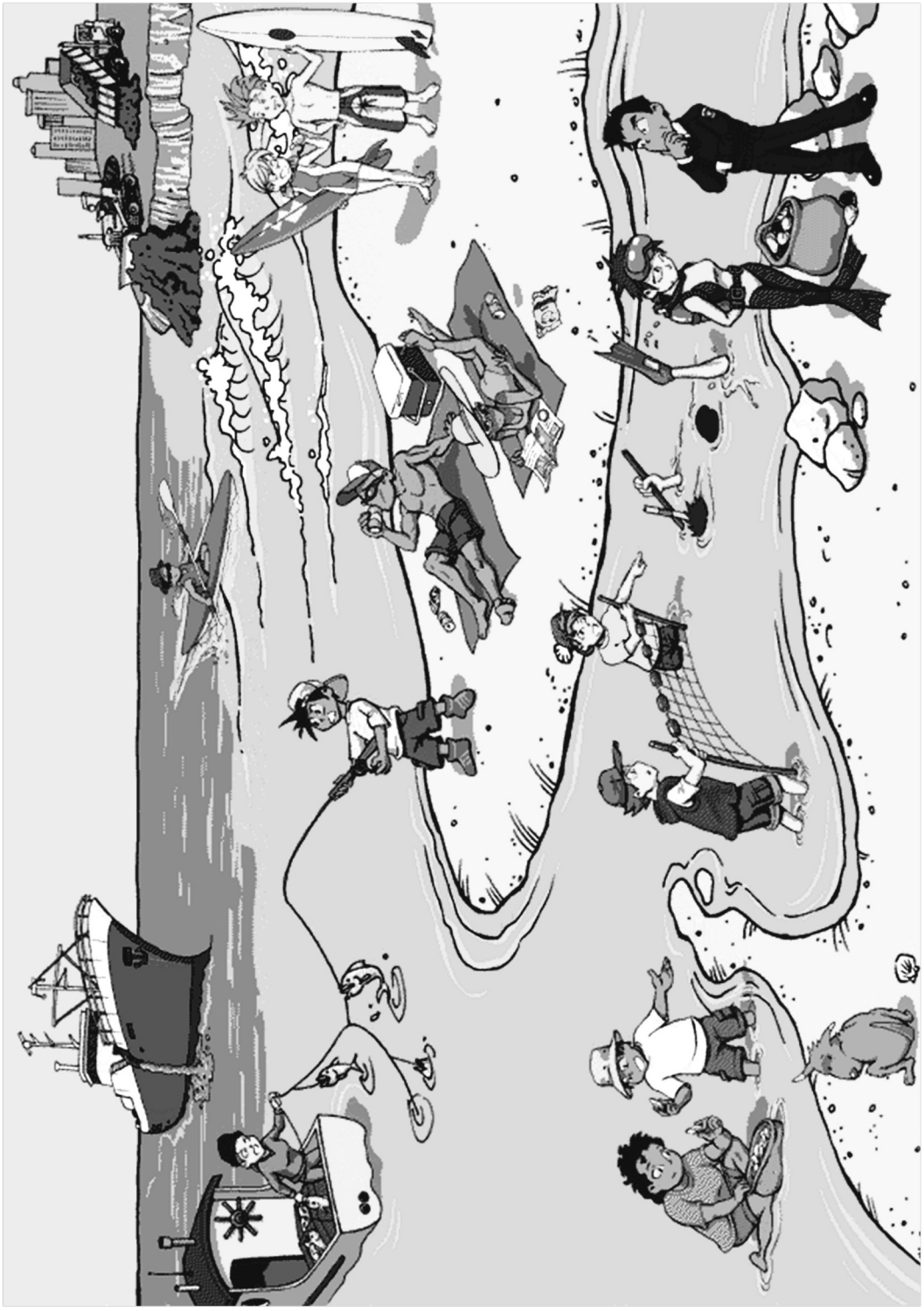
13 Brainstorm below how humans have affected or changed your local area. The picture on the next page may help you.



Circle those that you think are positive.
Put a rectangle round that are negative.
Some may be both!

Choose two of your impacts from above and fill in the table below.

Impact	Effect on Marine Life



A Rocky Shore Area
(marine protected or local area)

Biodiversity Treasure Hunt

Courtesy of John Walsby

Check out the rocky shore and see how many of the following you can spot!

Echinoderms		
		Kina Have a mouth underneath that has five chisel like teeth that grinds up food.
		Starfish Long arms have hundreds of suckered tube feet on the underside. The 11 armed star eats mussels, kina and clams.
		Cushion Star Usually 5 arms, but sometimes 4, 6, or 7 arms. Feeds by inverting its stomach through its mouth to digest whatever it is smothering.
		**Brittle Star** Will often break up if taken out of water.
Sea Anemones		
		A simple, soft-bodied tube shaped animal with a large mouth at the top surrounded by a crown of tentacles. The tentacles catch prey and push it through the mouth to be digested.

Research your two closest marine reserves

Name of reserve?		
Size		
How long has it been a marine reserve?		
Iwi/hapu		
One other fact		
Draw the shape of the marine reserve		

Local Area Investigation Questions

What activities are happening in the local marine area?

How do the locals use and view the area?

What impacts the activities have on the marine environment?

Describe your local area, how has it been modified by humans over time?

After Your Local Investigation

Write an email to someone about what you saw. e.g. What did you see? Plants? Animals? How many and what size? How did your experience make you feel?

☐ Tick once completed

Planning your action project

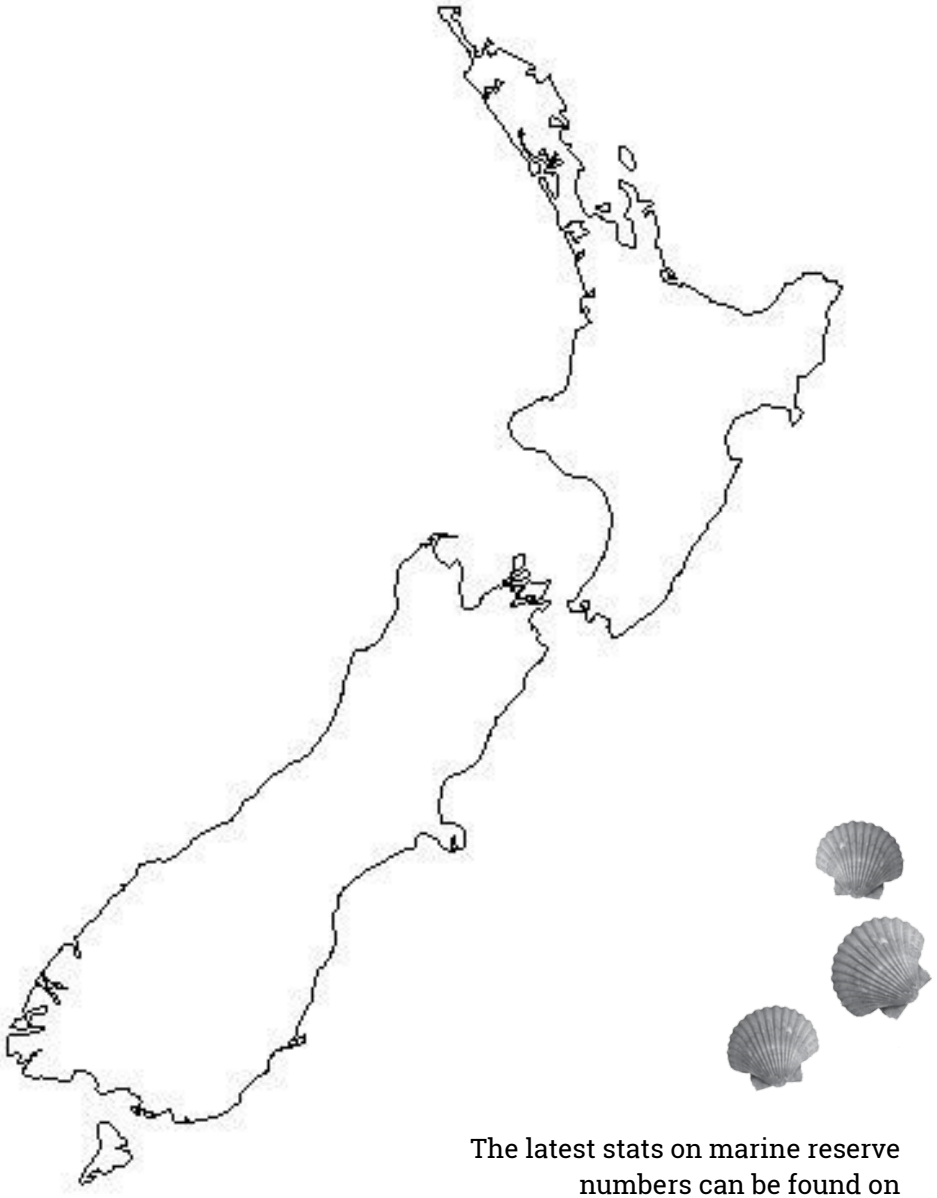
This is where you can become a kaitiaki or guardian and make a difference to your local marine area.

Choose the issue/human impact that you relate to the most.

What is the issue most important to you?	**What will I need to research?**
What is your goal or vision?	**What obstacles/ problems could I face?**
Who could help me achieve this?	**What will my action be to achieve this?**

Location of NZ's Marine Reserves

Label at least three places on the map where there are marine reserves.



The latest stats on marine reserve numbers can be found on www.doc.govt.nz/marinereserves

Marine Reserves Investigation

Answer true or false for the following sentences	True (T) or False (F)
Scientific study is not allowed in a marine reserve.	
Feeding the fish can change their natural behaviour.	
You are allowed to collect shells in a marine reserve.	
Up to 80% of NZ's biodiversity is found in the sea.	
Commercial fishing is allowed in a marine reserve.	
Less than 1% of NZ's mainland coast is fully protected compared to up to 30% of the land.	
On average 7 new marine species are discovered every fortnight.	
You are not allowed to swim, snorkel, dive or picnic in a marine reserve.	
Cape Rodney—Okakari Point (Goat Island) was the first marine reserve in NZ.	
The Maori name for snapper is tāmure.	

Experiencing Marine Reserves
emr.org.nz

Colour in this Ocean in a Drop

Pretty Fish Art
by Candace Loy

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