

## Starfish 🎓

STUDENT & TEACHER RESOURCE

# Suggested Activities







## Supporting Activities

#### 1. What do we know about fishing in NZ?

Using a Concept Frame (see appendix) have the students individually or in pairs or small groups of 3 or 4 note what they know about the topic of fishing in New Zealand.

Undertake this activity at the start of your unit and then midway through the unit as a formative assessment to check students' understanding, or at the end of the unit as a summative activity.

#### 2. Protecting our Coastal Waters

Why is the sea important to us? Students discuss as a think pair share. Share ideas with another pair. Share as a class.

With your partner record a reason why each of the people in the table (see appendix) would want to protect the coastal waters around NZ.

Activity could be used as a diagnostic task and then as a summative task at the end of the unit.

## 3. Te Reo Maori

With a partner create a game that will help your peers learn the following Te Reo Maori vocabulary.

koura	crayfish
mango	shark
hokarari	ling
mekameka	kai food chain
kupara	John Dory fish
ngu	squid
wheke	octopus
patiki	flounder
rawaru	blue cod
rahui	to place a ban, an embargo
tio	oyster
papaka	crab
kourangi	krill
aihe	dolphin
tohora	whale
tamure	snapper
kekeno	seal
rimurimu	seaweed
kaimoana	seafood
Tangaroa	God of the Sea
Kina Sea	Sea Urchin

## 4. Tony Ryan's Thinking Keys

Teachers can use some or all of the following thinking activities based around the work of Tony Ryan as activities to launch this unit. Teachers can also use these activities to either begin or end a lesson or as possible short homework tasks during the class' focus on this unit.

#### Brainstorming key:

Brainstorm all the questions you have about this topic. In your group select your top 10 questions. Now choose the question that you think will challenge everyone to think really deeply about this unit. Share this question with the class.

What if Key:

Generate as many 'what if ...' questions linked to the topic of ...

e.g. What if we had no fishing regulations?

What if you could only harvest paua on odd years?

What if crayfishing became only a customary fishing right?

#### Forced Relationship Key:

How might a recreational fisher keen to catch kahawai use some or all of the following items to increase the likelihood of them catching a fish? – an i-Pod, a book, a sandwich, an empty plastic, clear water bottle

#### Commonality Key:

What are the commonalities between a recreational fisher and a fish and chip shop owner?

Picture Key:

What could this picture have to do with crayfishing?

or

What could this picture have to do with fishing?

Different Uses Key:

Find 10 different uses for:

- A fishing rod or
- A cray pot or
- A fishing net

The Invention Key:

Either on your own or with a partner invent a way to remember the list of our top 10 exported NZ fish.

#### Top 10 export species 2007

Ι.	NZ\$ 175m Mussels	6.	NZ\$	57m Orange Roughy
2.	NZ\$ I4Im Hoki	7.	NZ\$	54m Ling
3.	NZ\$ 121m Rock Lobster	8.	NZ\$	43m Mackerels
4.	NZ\$ 86m Squid	9.	NZ\$	38m Hake
5.	NZ\$ 58m Paua	10.	NZ\$	36m Salmon





#### ABC Key:

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0 0 Students in pairs brainstorm all the words they can connect with the topic FISHING. Students then join up with another pair. Share their ideas. Categorise their words.

As a class share categories for words. Gives teachers a snapshot of what students know about the topic at the start of the unit.

A	
В	
С	
D	

#### 5. Environmental Impacts

On a T-chart note the things which might impact negatively on the environment when fishing both recreationally and commercially.

Environmental issues related	Environmental issues related
to recreational fishing	to commercial fishing
<ul> <li>Undersized fish caught</li> <li></li> </ul>	<ul> <li>Over-fishing of one species of fish</li> <li>.</li> <li>.</li> <li>.</li> </ul>

## 6. Silent Card Shuffle

Students match key terms/topic related words with their definitions.

Using this unit's glossary, have students undertake a silent card shuffle in small groups of 4 -6.

The teacher can select 18 - 25 key words from the glossary for this task.

Record the key vocabulary on one colour paper and the meanings of each word on another colour paper. Give each group a set of these cards well shuffled in an envelope.

As a group the students must match up the meanings of the words with the actual word or concept. They must remain silent during this exercise.

This activity can be completed at the start of the unit and then later in the unit when students will have been exposed to many/all of the key concepts and vocabulary.

Supporting Vocabulary Task: Teachers can also plan to use the *Vocabulary Word Map* activity on the **www.aquaculture.govt.nz** site to support their students to understand and use some of the technical and topic-specific language introduced in the fact sheets.

## 7. Vocabulary Activities

You can support your class as a whole or specific groups of students to become more familiar with the key vocabulary using one or both of these activities.

You can support your class as a whole or specific groups of children to become more familiar with the key vocabulary using one, some or all of these activities:

#### Bingo I

Students write down on a  $3 \times 3$  grid nine of the new words of the topic that they have been introduced to.

- The teacher says a word off the main list
- Students cross off the word if they have it.
- The first person with all 9 words crossed out is the winner. The words must be spelt correctly.

#### Bingo 2

- Students write down 6 words from the topic-related vocabulary list.
- The teacher says the definition for a word. If the student has that word she/he crosses it out.
- The first person with all 6 words crossed out is the winner. The winner must have all 6 words spelt correctly.

## 8. 3 Minute Masters

After reading one of the fact sheets use the following supported reading task.

Students can read the fact sheet themselves or teacher can use the fact sheet as a shared reading task.

- Break the reading into bits.
- Give the students 3 minutes to summarise what they have read in small groups of 3 or 4 students. Students are to focus on the key points of the lesson up to this point.
- Encourage students to also make connections with previous learning and prior knowledge. What connections can you make/ What does this remind you of?
- Are there things you still are not clear about? Encourage students to pose clarifying questions.
- Read the next section of the fact sheet. Repeat the 3 minute pause and reflect process.
- Complete the reading of the fact sheet using the 3 minute pause and reflect process.





## 9. 3-2-1

After reading one of the fact sheets use the following supported reading task.

Students read individually or the teacher uses the fact sheet as a shared reading exercise. Students use 3-2-1 as a summarising exercise.

Students record in their books or on a template provided for them:

- 3 Things you have found out
- 2 interesting things
- I question you still have

**3** things I found out

2 interesting things

question I still have

#### See www.readingquest.org



## 10. Sum it up!

After reading one of the fact sheets use the following supported reading task.

a) Students read individually or the teacher uses the fact sheet as a shared reading exercise.

Students list/record the main ideas as they read or as the teacher reads each section of the fact sheet. Students note these points as bullet points.

Students then write a summary of the article/fact sheet using as many of the main ideas and words they have recorded.

Each word in your final summary is worth 10cents and you only have \$2.00 to spend. Write your final summary using only 20 words!

Refer to: www.readingquest.org

b) Students then summarise their key ideas visually by creating an A3 poster.

As a class students and teacher can create the success criteria for this task which could include the following criteria:

- graphics clearly linked to or supporting the poster's text
- bold, clear text that can easily be read
- · carefully chosen use of colour linking the poster to the sea

After creating and agreeing the success criteria with the students, you can use the criteria for students to self and peer evaluate their completed work against.

## 11. Catch only What You Need

Read the school journal articles:

Whitebaiting School Journal Part I Number 4 2004

Protecting our Kaimoana School Journal Part 3 Number 3 1990

A Gift from Tangaroa School Journal Part 3 Number 3 1990

Inati School Journal Part 2 Number 4 2003

- Summarise the key messages of each of these articles. What is the main idea being expressed by each of these writers? What do they want you to come away appreciating after having read each article?
- What could we learn from the people of Tokelau when it comes to the sharing of natural resources?





## 12. What do you think? A persuasive writing task

Choose one of the following topics and write a piece of persuasive writing that expresses strongly how you feel about one of these statements.

- a) Managing our fisheries is not just the responsibility of Ministry of Fisheries (MFish) but the responsibility of all New Zealanders.
- b) Fish are a gift from Tangaroa and should be treated as such.
- c) The health of the ocean, the health of the land, and our health are all linked.
- d) We need to use the sea's resources in a sustainable way, without damaging the marine ecosystems, otherwise we could lose a lot, not least Friday night's fish and chips.
- e) For New Zealand to maintain its 'clean green' image it must ensure its seas and coastal waters are cared for.

In order to do this task you may need to:

- re-read some of the fact sheets you have read during this unit
- highlight on the fact sheets supporting data and/or facts that you can include in your piece of writing to support your case
- do some additional research to gain further information to support your point of view or to elaborate on your ideas.

This additional research might include emailing or phoning an expert, visiting your local library, searching online for additional information, using the National Library books you might have in your classroom.

You will need to consider both points of view before writing your piece of persuasive writing. To do this you might need to brainstorm your ideas using a T-chart.

Points in favour of the statement	Points against the statement
	•
	•
	•
	•

or you could use a PMI chart that notes the positive, minus and interesting points:

Positive Points	Minus Points	Interesting Points
	•	•
	•	•
•	•	•
•	•	•

Both of these ideas might help your students to get underway with this writing task.

Students can then share their thoughts with a partner or with their table group or with the class. After these discussions students could then add additional points to their original ideas.

A third way to approach starting this task is to use de Bonos' thinking hats.

Yellow hat thinking: Positive, constructive thinking – the strengths, the good points, what are the advantages?

*Black hat thinking:* Analytical thinking – weaknesses, will it work? What are the disadvantages of this idea?

White hat thinking: Informative thinking – gaining the facts & figures, what information do we have? What are the facts? What information do we need?

Green hat thinking: Creative thinking – new ideas & designs, forecast future possibilities, what are some alternative ways to solve the problem?

*Red hat thinking*: Emotional thinking – emotions, feeling, hunches, intuitions, How do different people or groups feel about the idea or solution?

Teachers can share with their students the persuasive writing exemplars in order to agree the key features of a piece of persuasive writing.







## 13. Highly Migratory Species of Fish

Read the fact sheets:

- 4 Fishing on the High Seas
- 14 Highly Migratory Species of Fish

After reading the fact sheet *Highly Migratory Fish Species*, and in particular the life cycle of the southern bluefin tuna, research, either on your own or with a partner, another highly migratory species. The mako or blue sharks, the marlin or the swordfish are good examples.

You will also need to read the fact sheet Fishing on the High Seas for additional information on the management of southern bluefin tuna.

Use the case study of the southern bluefin tuna as a model for your own research.

For the species you have chosen, you need to find out: feeding habits, its migratory journey, what preys on it, and its life cycle.

You also need to include in your finished report an illustration and a description of your chosen fish, and a labelled map that clearly shows its migratory journey.

- Will you and your research partner display your work on A2 or A3 paper?
- Will you present it as a written booklet report?
- Can you think of another visually interesting way to present your findings?

With the students, the teacher should agree the success criteria for this completed work. Students on completion of their work can use the agreed success criteria to self and peer evaluate their finished work.

#### 14. Learning from the past

Read the fact sheets:

- 4 Fishing on the High Seas
- 14 Highly Migratory Species of Fish

Oysters were an early boom-and-bust fishery in New Zealand. Both rock and dredge varieties of oyster were exported in their millions over the 1880s, but by the 1890s beds were stripped and the fishery collapsed (www.TeAra.govt.nz).

Compare this to what has been put in place to ensure the Southern Bluefin Tuna fishery does not collapse. Discuss why measures that have been put in place for the Southern Bluefin Tuna are important. Discuss what fishers may have learnt from the early oyster industry.

## 15. Managing our Fisheries

You will need to read each of the following fact sheets to complete this task:

- 3 Managing Fisheries
- 4 Fishing on the High Seas
- 5 Customary Fishing Regulations
- 6 Fishing Rules
- 7 Fishery Officers
- 9 Observers
- 14 Highly Migratory Species of Fish

Having read each of the above fact sheets, complete with a partner the table (see appendix). These fact sheets show that New Zealand's fisheries are managed in a variety of ways. Discuss with your partner the positives and negatives of each of the methods listed in the table. You will be using de Bono's thinking hats for this task.

Yellow hat thinking: Positive, constructive thinking – the strengths, the good points, what are the advantages? You will list these ideas in the *Positives* column.

*Black hat thinking:* Analytical thinking – weaknesses, will it work? What are the disadvantages of this idea? You will list these ideas in the *Minus* column.

White hat thinking: Informative thinking –What other information do we need to know? You can list these thoughts in the Interesting column.

Green hat thinking: Creative thinking – new ideas, forecast future possibilities, how could this initiative be extended or developed further? You can list these thoughts in the Interesting column.

Red hat thinking: Emotional thinking – emotions, feeling, hunches, intuitions, how do I feel about this idea or solution? You can list these thoughts in the *Interesting* column.

You need to record at least 2 points in each box for each initiative.

#### 16. Fish for the future

Read the fact sheet:

3 - Managing Fisheries

In a small group of 4 students or with a partner discuss the following:

By the early 1980s, with dwindling inshore stocks and too many boats, the New Zealand fishing industry and the government realised that a new fisheries management was needed. The warning that 'too many boats are chasing too few fish' was being rephrased by one fisherman as, 'too many boats chasing no fish.'

In their small group or with their partner students need to discuss and record their opinions on: Why was the Quota Management System needed?

List the positive outcomes of such an initiative.







## 17. Paua Sniffer Dogs

Read the fact sheet:

6 - Fishing Rules

Visit the media releases links on paua that are noted on the Fishing Rules fact sheet.

In a small group of 4 or with a partner discuss why the Ministry of Fisheries has had to train paua sniffing dogs.

What does such an initiative suggest about the number of paua being poached and sold overseas?

Record your thoughts on this initiative.

How do you think such an initiative could be extended?

#### Linked Activity

Students could complete the Assessment Resource Bank (ARB) task:

Paua LW 2012 a level 4/5 science Assessment task where students use information given to answer questions about laws for protecting paua. The assessment focus is on students thinking about the reasons for the laws.

#### http://arb.nzcer.org.nz/resources/science/living/2000/Lw2012,htm

Students could also complete *Protecting Our Kaimoana* WL2434 English Assessment Resource Bank Task. This level 3 task asks students to read a report on a fishery officer's work and make mainly short written responses. The assessment focus is on comprehension and vocabulary.

#### http://arb.nzcer.org.nz/resources/english/written/2000/WI2434.htm

Both ARB tasks could be completed if students were undertaking all or one of the following tasks:

- Paua Sniffer Dogs
- Poaching
- Paua Preservation
- Protecting Our Paua

#### 18. Poaching

Read the fact sheet:

6 - Fishing Rules

Visit the media releases links that are noted on the Fishing Rules fact sheet

Compare and contrast the poaching of paua and the poaching of crayfish. Use a Venn diagram to record your comparison (see appendix).

Or

Compare and contrast the poaching of paua or crayfish with the poaching of rhino or elephants or rare birds from Australia or South America or tigers in India. This task will require you to undertake some research of your own. In researching your chosen animal consider too what has been done to prevent such poaching. How do these preventative measures compare to the fisheries management initiatives put in place here in New Zealand?

#### 19. Paua preservation

Read the fact sheet:

6 - Fishing Rules

Visit the media releases links that are noted on the Fishing Rules fact sheet.

In small groups of 4 - 6 students use Tony Ryan's Brainstorming key to brainstorm a list of possible solutions to ensure all New Zealanders know the regulations for 'harvesting' paua.

When you have your list work in pairs and decide what your top 3 ideas are for ensuring all New Zealanders both know and understand the regulations around harvesting paua.

Use the decision making grid to help you decide your best idea (see appendix).

## 20. Protecting our Paua

Read the fact sheet: 10 - How to Catch a Fish

Read also the School Journal articles *Protecting our Kaimoana* and *One Day on the Beach* in School Journal Part 3 Number 3 1990.

Divers gathering paua can only use snorkels, not scuba gear.

Why do you think such a fishing regulation was created?

How does such a regulation ensure the sustainability of this shellfish?

Why is such a law necessary?





## 21. Fishing Methods

Read the fact sheet:

10 - How to Catch a Fish

Summarise what you have learnt about the different fishing methods that you were introduced to in the fact sheet *How to Catch a Fish*. Use the table supplied in appendix.

#### 22. Working Together

Read the fact sheet:

3 - Managing Fisheries

After reading the case study on how a rock lobster fishery is managed consider the following:

The key stakeholders in this fishery are local lwi, commercial and recreational fishers, and the Ministry of Fisheries. Why do you think all the different stakeholders want to improve everyone's knowledge about crayfish fishing rules?

Record your ideas on the table provided (see appendix). Record at least 3 ideas for each stakeholder.

Wrap up your thoughts about such a forum and such an initiative. Are there any key messages that you can draw from this?

#### 23. Getting to terms with it all!

You will need to read each of the following fact sheets to complete this task:

- 2 What is a Fishery?
- 3 Managing Fisheries
- 4 Fishing on the High Seas
- 5 Customary Fishing Regulations
- 13 Marine Biodiversity

With a partner define each of these words:

- Commercial fishing
- Recreational fishing
- Customary fishing
- Shared fisheries
- Exclusive Economic Zone (EEZ)

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- Biodiversity
- High seas
- Mataitai reserve
- Taiapure

#### Variation:

Pairs of students could be given one word to define or several words to define instead of the complete list.

Having defined their allocated word(s) students could share their definitions with the class as a whole or with another pair to see if other students can identify with ease the word being defined.

## 24. Fishery Officers

Read the fact sheet:

7 - Fishery Officers

Read also the School Journal articles *Protecting our Kaimoana* and *One Day on the Beach* in School Journal Part 3 Number 3 1990.

- a) How does the work of Kelvin and other fishery officers support sustainable fishing in New Zealand's coastal waters? In discussing their work consider why you think such officers are necessary?
- b) With a partner draw up a job description for a Fishery Officer.

What qualities and experiences would such an officer need?

- Consider the different and varied aspects of their job.
- Consider also the people skills they would need to have in order to carry out their duties down on the boat ramp and out on the coast.
- When considering the people skills they might need to have imagine how a person fishing might act/behave when they knowingly have an illegal catch and a fishery officer approaches them.

Students could create a published job advert for a Fishery Officer on the computer, modelling their advert on a published newspaper job advert.

#### Linked Activity

Students could complete *Protecting Our Kaimoana* WL2434 English Assessment Resource Bank Task. This level 3 task asks students to read a report on a fishery officer's work and make mainly short written responses. The assessment focus is on comprehension and vocabulary.

http://arb.nzcer.org.nz/resources/english/written/2000/WI2434.htm

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## 25. What is a Fishery?

Read the fact sheets:

- 2 What is a Fishery?
- 10 How to catch a fish
- 11 Effect of Human Behaviour
- 13 Marine Biodiversity

Consider why each of the following aspects of the fishery need to be thought about when managing a fishery. Record in bullet points why each aspect of the fishery needs to be taken into account. Use the table provided in appendix.

#### 26. Ecosystems and Foodchains

You will need to read each of the following fact sheets to complete this task:

- I How New Zealanders Value Our Fisheries
- 3 Managing Fisheries
- 11 Effect of Human Behaviour
- 12 Environmental Issues
- 13 Marine Biodiversity

When we think about new fishing ventures on or near our coastlines in New Zealand, we need to consider what effect they might have on the environment. We need to consider the effects the relationships between the living things have on each other specifically the survival of some species and not others.

Threats to the New Zealand's marine biodiversity can include the basic functioning of ecosystems.

Food chains start with a plant and contain consumers linked in the order they get eaten. Food chains represent energy flow from the plant to the top consumer.

Here is an example of one food chain:

plankton --> whelk --> crab --> squid --> orange roughy fish --> commercial fisher

Students need to consider food chains and food webs in order to consider the following scenario:

On the coast of the South Island crayfish were over-fished over a number of seasons. In the same ecosystem kina were able to increase their numbers dramatically as there were fewer crayfish feeding on them. The kina then began eating large quantities of bull kelp.

Discuss the changes that took place in this ecosystem.

Discuss what happens when one link of the food chain is temporarily or permanently removed from an ecosystem.

What animals might be affected if too much bull kelp was eaten by the kina?

What do you think local commercial and recreational fishers needed to agree on and why?

#### Refer also to:

Ministry of Education (2002). Building Science Concepts Book 21, *Life between the tides*. Wellington: Learning Media.

Ministry of Education (2002). Building Science Concepts Book 22, *Tidal communities*. Wellington: Learning Media.

Ministry of Education (2001). *Making better sense of the living world*. Wellington: Learning Media. Topics are:

- Earthworms
- Mosses and ferns
- Aquarium and pond life
- Microbiology

Ministry of Education (2006). Connected 3. *The Secret Life of Estuaries*. Wellington: Learning Media. This article explores food web ideas with a particular emphasis on the role of organisms that break down detritus (rotting plant and animal matter).

#### www.mos.org/oceans/life/game.html - The Web of Life game

#### Refer to NZCER ARB task **www.nzcer.org.nz**

Assessment Resource Bank (ARB) tasks:

The following Level 4 assessment resource items can be used to support and scaffold students in their understanding of food chains and food webs:

- LW 2046
- LW 2015
- LW 2048
- LW 2046
- LW 2039
- LW 2038
- LW 2004
- LW 2000

Linked Activity

Students could also complete Living in the Ocean LW2061 Science Assessment Resource Bank Task. This level 4 task asks students to complete a drawing of things found in or near an ocean, and describe the relationships between them This assessment focus is on students being able to discuss interdependence in an ocean environment.

This activity could be completed as both a diagnostic and summative assessment task.

#### http://arb.nzcer.org.nz/resources/science/living/2000/Lw2061.htm





## 27. Marine Reserves

Read the fact sheet:

13 - Marine Biodiversity

After reading this fact sheet, undertake some research of your own into one of New Zealand's marine reserves.

Your findings need to include:

- A map of New Zealand with the reserve clearly marked on it
- A history of the reserve including why it was established
- Your own personal point of view on marine reserves using a PMI (Positive Minus Interesting). Record at least 4 points of view under each of the 3 headings.

#### **Helpful links:**

#### www.nabis.govt.nz

#### http://www.doc.govt.nz/templates/summary.aspx?id=33756

This task lends itself to the teacher and students agreeing the success criteria for their finished and published research work. Both the teacher and students can then use the agreed success criteria to evaluate the completed work.

#### 28. We can all make a difference

Read the fact sheets:

- I How New Zealanders Value Our Fisheries
- 6 Fishing Rules
- 11 Effect of Human Behaviour
- 12 Environmental Issues

Read also the School Journal article *Blue Fish on the Footpath* in School Journal Part 2 Number 2 1992. This article looks at the danger of what goes down our stormwater drains and the effects on our fish stock.

Read also the school journal article Plastic Fantastic in School Journal Part 3 Number 3 2007.

After reading these fact sheets work with a partner to create a presentation for your class that looks into one of the key issues that impact on fishing in New Zealand. You could focus on one of these issues:

- Pollution
- By-catch
- Climate change
- Sedimentation
- Fishing techniques

- Poaching
- Over-fishing

Your presentation (which could be a Power Point presentation) needs to cover the following points:

- A clear explanation of your chosen area of concern why is this a problem for fisheries in New Zealand?
- A discussion on how this impacts on New Zealand fisheries
- Identify what species are specifically affected. After you and your partner have brainstormed possible solutions to this problem you need to decide on one solution which you are going to sell as the ideal solution to the class. Use your green, blue and yellow de Bono's thinking hats for this task.

*Green hat*: Using your green hat brainstorm as a group/with your partner all your ideas. This hat allows you to consider/list all the possibilities.

*Blue hat:* Using your blue hat agree your 3 most favoured options eliminating all but 3 options. This hat allows you to group and order your ideas. From this final list of 3 solutions choose your best solution.

Yellow hat: Using your yellow hat list the strengths of each of your 3 best ideas. What solution looks the stronger contender?

You will need to market your idea. You need to be able to convince your class it is an excellent solution to the problem. Be CREATIVE!

This task lends itself to the teacher and students agreeing the success criteria for their finished and published research work. Both the teacher and students can then use the success criteria to evaluate the completed work.

#### Linked Activity

Students could complete the Assessment Resource Bank (ARB) task:

Cleaning Up the Beach PE 9505 a level 3 science Assessment task where students identify how four items of rubbish will impact on the beach, plants and animals found there, and humans. Students are asked to select items they would remove or leave there, and justify their decisions.

http://arb.nzcer.org.nz/resources/science/planet/9000/Pe9505.htm





#### 29. Observers

Read the fact sheets:

- 7 Fishery Officers
- 8 Fisheries Research
- 9 Observers
- a) After reading these fact sheets discuss why you think the fishing industry values the work of observers. Why is it in the fishing industry's interests to support this kind of research work?
- b) Compare and contrast the work of a honorary fishery officer and the work of an observer on a commercial fishing boat. Consider how these two jobs ensure our fisheries remain healthy and sustainable.

Use a Venn diagram to record your ideas (see appendix).

#### 30. By-catch

Use these fact sheets:

- 10 How New Zealanders Value Our Fisheries
- 11 Effect of Human Behaviour
- 12 Environmental Issues
- 13 Marine Biodiversity

Undertake your own research to further investigate one of the by-catch issues that affect some species in New Zealand waters.

Your investigation needs to cover:

- Information about the species under threat
- Information about the fishery that affects it
- Regulations currently in place to help protect the threatened species
- Groups working to protect the species
- Possible solutions you think should be considered to save this animal

## 31. Tiriti o Waitangi

Read the fact sheets:

- I How New Zealanders Value our Fisheries
- 5 Customary Fishing Rights

Read also the School Journal article A *Gift from Tangaroa* in School Journal Part 3 Number 3 1990.

The first part of Article 2 of the Treaty of Waitangi guarantees that Maori have rights over lands and estates, forests, fisheries and other treasures will be protected.

How does this apply to the coastal waters around NZ?

Discuss this with a partner and then together agree 3 essential points that link the Treaty of Waitangi to the care for and of our coastal waters.

Display your work as if it was an aged document. You could tea stain your paper to give it an aged feel to it.

## 32. Fishing Zones

Read the fact sheet:

2 - What is a Fishery?

On a map of New Zealand (see appendix) using the map's scale, shade in the 12 mile zone around the coast of NZ. Shade this in red.

Using yellow shade in the 200 nautical mile radius around the country which is our exclusive economic zone.

Next shade in the area beyond the EEZ – this is the high seas.

Give your map:

- A title
- A border
- A key your key needs to note the 3 zones around New Zealand and it also needs to note the types of fish caught in each zone







## 33. Fish the Family Dish

Read the fact sheet:

I - How New Zealanders Value Our Fisheries

In New Zealand people have been actively encouraged to choose to eat white meat and fish as a protein source. Explore why this is the case and why there have been increases in fish consumption in New Zealand.

Your task is to find 4 fish recipes.

One recipe must be a Pacific Island dish, one dish must be a traditional European dish, one dish must be Asian influenced and the final dish must be a curry.

Read the School Journal article *Raw Fish:* A *Recipe* in School Journal Part 2 Number 4 2002. This Samoan recipe is for marinated fish.

Choose one of your recipes and arrange with your family to cook this dish as an evening meal.

Seek feedback from your family on;

- The dish itself was it delicious?
- Your presentation skills
- Your tidy-up skills

#### **Helpful links:**

Health education resources (www.healthed.govt.nz)

Seafood New Zealand – recipes (http://www.greatestmeal.co.nz/recipe)

Aquaculture in Action – factsheet I (http://www.aquaculture.govt.nz/files/pdfs/ AQUACULTURE\_FACTSHEETS\_WEB.pdf - see table I, fish consumption)

Students could self evaluate the success of their meal and invite written feedback from their whanau/family.

## 34. Resource Conflict

This task could be completed as a diagnostic task to ascertain students prior knowledge about conflicting resource use of the sea. It could be then completed again at the end of the unit's focus as a summative assessment.

Read the fact sheet:

I - How New Zealanders Value Our Fisheries

This activity could be completed before students read the fact sheets that introduce them to fishery management initiatives.

Print out a copy of the resource conflict cartoon (see appendix). Print off enough copies for one copy per group of 4 students.



Students brainstorm in groups the competing interests of the different groups in this cartoon.

Students then discuss and brainstorm in small groups how these different groups could successfully use the sea and the local coast line without depleting fish stocks and ruining the environment.

How might this be managed well? What might need to be put in place to ensure that one group does not control/use all of the resources for themselves?





Starfish 🎕



STUDENT & TEACHER RESOURCE

# Appendix -Activity Templates





#### Activity 1 - What do we know about fishing?

Fishing		
Recreational fishing is	Commercial fishing is	
Rules about fishing	Specific examples of fishing methods	





#### Activity 2 - Protecting our costal waters

Tourist visiting NZ	Minister of Fisheries	12 year old child
Commercial fishing boat owner	Parent of 6 children	Owner of a sea kayaking company
Fish and Chip shop owner	Department of Conservation employee	Recreational fisher
Local Maori iwi	Business person in Rotorua	Commodore of the local yachting club

## Activity 15 - Managing our fisheries

Fisheries Management Initiatives	Positives	Minus	Interesting
Sniffer Dogs			
Fisheries Officers			
Observers			
Quota Management System			
Mataitai			
Regional Fisheries Management Organisation conventions (see Southern Bluefin Tuna)			









#### Activity 21 - Fishing methods

Fishing method	Brief description of the fishing method	Types of fish caught using this method of fishing	Question I still have about this method of fishing
Nets			
Lines			
Trawling			
Danish Seining			
Purse Seining			
Dredging			
Potting			
Diving			

Activi		
Rock Lobster Fishery Stakeholders	Reasons for Supporting A Campaign to increase knowledge of Crayfish Fishing Rules	
Local Iwi	• •	
Recreational Fishers	• •	
MFish Staff	• •	
Commercial Fishers	• •	



#### Activity 25 - What is a Fishery?

Key Considerations	Reasons for Including this Aspect of the Fishery
Abundance or numbers of the fish species itself	• •
Where the species is usually/commonly found	• •
The key fishers – the people who catch the fish	• •
How the fish are caught – the fishing gear or methods used to catch the fish	• •
Possible by-catch – other species that interact with the fish or might accidentally be caught	• •
Other species that could also be affected by the fishing activity	• •





#### Activity 34 - Resource Conflict



