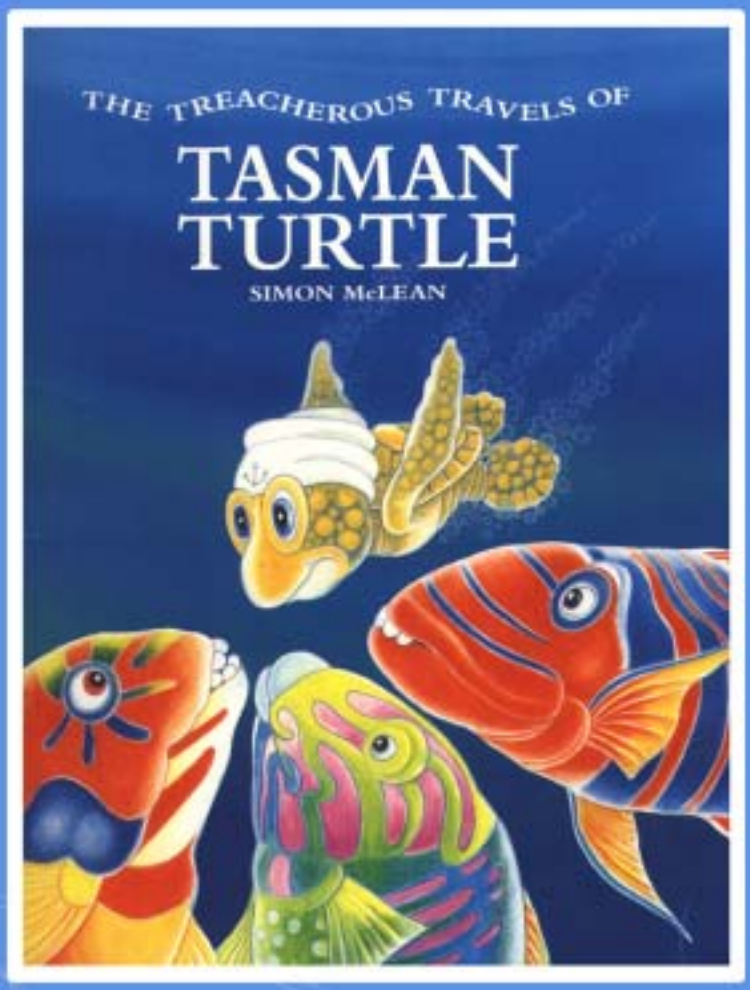
Northern Territory Government
Department of Business, Industry & Resource Development

EXPLORING OUR OCEANS WITH TASMAN TURTLE

MARINE & FISHERIES EDUCATION MODULE - BAND TWO



BASED ON: THE TREACHEROUS TRAVELS OF TASMAN TURTLE BY SIMON McLEAN

For further information please contact

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Forward

The aim of the Fisheries Group of the Department of Business, Industry and Resource Development can be defined as;

"providing for the regulation, conservation and management of fisheries and fishery resources so as to maintain their sustainable utilisation, to regulate the sale and processing of fish and aquatic life, and for related purposes", as stated in the *Fisheries Act* (2001).

The Department of Business, Industry and Resource Development's Fisheries Group has developed an education and communication strategy that provides a framework for the group to deliver educational materials and messages about the marine environment and fisheries in the NT. Stage one of the strategy has been addressed through the production of an education kit for schools where our primary school students can learn how to keep Northern Territory fisheries and marine environment in good health.

A number of Northern Territory schools, including Karama Primary, Nakara Primary, Nightcliff Primary, Humpty Doo Primary and St Francis of Assisi, were involved in the construction and trial stages of the kit during 2002. The result is three education modules spanning three primary school bands (levels of development).

Fisheries Group staff, initially Damian White and more recently Rebecca Solah, have also been working closely with the education department staff to ensure the modules are appropriate and useful for Northern Territory schools. The Northern Territory Department of Education and Training (DEET) staff, Marisa Boscato, Dallas Glasby and Ellen Herden provided invaluable advice and support in the draft stages of the project.

This education kit is provided to schools free of charge and schools will be sent the complete kit on request. Teachers will also able to download the complete kit or individual activities from the Fisheries Group website http://www.dbird.nt.gov.au/

The Fisheries Group will continue to support the schools through presentations and supplementary materials as required and can be contacted by telephone on (08) 8999 2144 or facsimile on (08) 8999 2065.

RICHARD SELLERS
Fisheries Executive Director
Department of Business, Industry and Resource Development

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Introduction to the unit

The Northern Territory aquatic environments provide food, employment and recreational enjoyment for many Territorians and visitors.

In recognition of the importance of the NT marine environment to the life-styles of Territorians, the Department of Business, Industry and Resource Development Fisheries Group has produced an educational package focusing on the marine environment. The goal of this material is to increase the students' understanding of marine habitats and the responsibilities everyone shares in ensuring that it remains in good health.

The resources used for this Module provide an introduction to some new concepts that assist students in exploring the world of the marine environment. Each module encourages students to research the marine environment so that they can begin to realise just how rich and vast the oceans are.

The modules use three keys texts to focus its messages.

Module 1 uses the *Eagle and the Gull* Dreamtime story from the Bardi people of North Western Australia. The story illustrates the influence people can have upon natural resources when used unwisely.

Module 2 uses the book *The Treacherous Travels of Tasman Turtle* by Simon McLean. The story follows Tasman's travels through the ocean and the challenges he has to overcome along the way.

Module 3 uses the book *Blueback* by Tim Winton. The story centres around the life of the character Abel, from his childhood in a small fishing village to his life as a marine biologist.

Junior Code of Practice

The junior code of conduct has been developed from the National Code of Practice for Recreational and Sport fishing. This national Code of Practice was developed as an initiative of Recfish Australia, the peak national body for recreational and sport fishing.

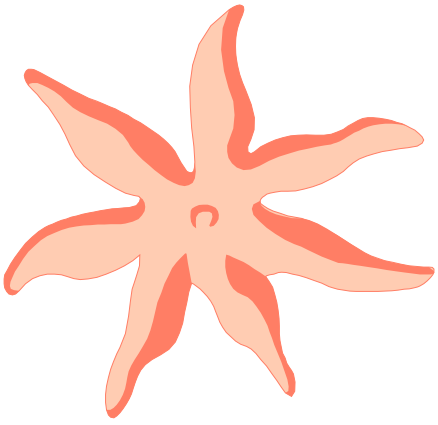
The Junior Code was developed specifically to target children of primary school age and contains the following six points:

1. Take only what you need
2. Fish with friends
3. You're the solution to water pollution
4. Throw the little ones back
5. Don't leave your tackle behind
6. Quality catchments equals quality fish

The Junior Codes was used to develop the Department of Business, Industry and Resource Development, Fisheries Group:

***Into The Blue*;**
***Marine and Fisheries Education Kit* (2003).**

A reference for the code is provided in the resource list at the end of this module and is available on the Victorian Fisheries website



Methodology

These modules are written to cover approximately five weeks of a school term and apply components of the Social Literacy teaching model.

Focus Question - A question is asked or a problem is posed at the beginning of a learning sequence

Consider - A stimulus is given such as a problem situation, a moral dilemma, conflicting points of view, factual information, an historical document, a photograph or drawing.

Analysis - A series of activities critically analyzing the input, moving from analytical process to critical processes.

Main Idea - Learners review and analyse the concept generalisation.

Rationale

Key environmental messages are embedded in each module.

Module 1

• Instilling values for the sharing of marine resources.

Module 2

• Investigating and communicating ideas about interactions in marine environments

• Exploring how the quality of marine environments can be sustained for future generations.

Module 3

• Exploring issues relating to the sustainable use of the marine environment

• Investigating potential negative impacts on marine environments and identifying the scientific solutions.

Addressing Curriculum needs

Each module in the education kit targets students at different stages of schooling. Teachers are encouraged to consider the developmental needs of their learners when using these modules and mapping the activities with outcomes from the NT Curriculum Framework (NTCF).

Module 1 targets early childhood learners and uses NTCF outcomes from Band 1.

Module 2 targets middle primary learners and uses NTCF outcomes from Band 2.

Module 3 targets upper primary learners and uses NTCF outcomes from Band 3.

The **EsseNTial Learnings** lay the foundation for 'connected life-long learning', and are essential in preparing students for complex future life roles. These modules work towards demonstration of Constructive Learner 4 in the EsseNTial Learnings. The Constructive Learner 4 identifies environmental and social issues within the local and global community and takes steps to promote change.

Teachers will need to select or develop indicators of learning appropriate to the learning needs of their students.

The NT Board of Studies ***Environmental Education Policy Statement*** *2nd Edition* (1997) recognises the importance of a sound and balanced environmental education. These modules provide teachers with content focus to achieve the aims of the policy.

The **Learning Areas** specifically targeted by these modules are:

• Studies of Society and Environment

• Science

Teachers are encouraged to consider cross -curricula links and the explicit literacy and numeracy components of all activities.

Assessment

Teachers are encouraged to develop appropriate assessment and reflection tasks to meet the needs of learners.

To help you assess student progress, the modules from ***Into The Blue*** provide the following:

1. **Culminating Tasks** that have been designed back from NTCF outcomes.
2. An **Assessment Checklist** that provides an overview of the activities used to achieve key environmental messages within each module.
3. A generic **Rubric** scoring tool for self, peer, teacher or community based assessment.

Assessment Checklist

Concept	**1**			**2**			**3**			**4**			**5**			**6**		
Student Name																		

Rubric Template

(Describe here the task or performance that this rubric is designed to evaluate.)

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Stated Objective or Performance	Description of identifiable performance characteristics reflecting a beginning level of performance.	Description of identifiable performance characteristics reflecting development and movement toward mastery of performance.	Description of identifiable performance characteristics reflecting mastery of performance.	Description of identifiable performance characteristics reflecting the highest level of performance.	
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http://edweb.sdsu.edu/triton/july/rubrics/Rubric_Template.html

Activity 1. The Travels of a Turtle

Resources required:

• *The Treacherous Travels of Tasman Turtle* by Simon McLean

Focus Question:

What do we know about the interactions between plants and animals that live in the marine environments?

Consider:

Read the story of Tasman Turtle to the students and discuss some of the animal interactions.

Analysis:

1. Play the quick quiz to prompt student thinking about the variety of plants and animals in the marine environment.

2. Respond to the text through the following discussion starters.

• What interaction between animals did you find in the story?

• Do you think the turtles really do get a tutor to help them through life, like Tasman did?

• Which interactions were fact and which interactions were fiction in the story?

3. Construct a diorama (3D model) to demonstrate the factual interactions highlighted in the story.

Main Idea:

Our marine environment is rich and vast, with a variety of plants and animals. These plants and animals interact with each other in order to survive.

Outcomes

Science/Concepts and Contexts/Life and Living

SOSE/Social systems and structures/Natural Systems

Cross Curricula

Literacy - R/V

The Arts

Technology and Design

QUICK QUIZ

1. I have four flippers and a hard shell, what am I? _____

2. I have two long claws, six legs and live inside shells. I am a _____

3. I have a long beak and fly over the water to catch fish and other sea creatures. What am I? _____

4. I can be all different colours and sizes and I can be found in the water by myself or in schools, I am a _____.

5. I am the mean type of no 4. with big beady eyes and a long nose? _____

6. I have stinging tentacles but some special fish can still live in me? _____

7. I am a special fish with a coating on my skin so that I can live in no 6? _____

8. I have eight long legs called tentacles?

_____

Activity 2. Adaptations

Resources required:

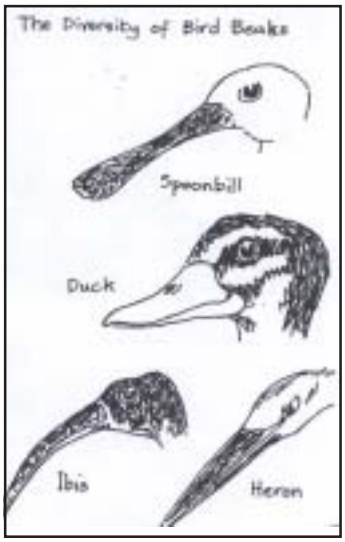
• Tongs, chop sticks, spoons and other implements that might be useful to demonstrate different beak structures

• Six paper bowls

• A collection of different shaped and textured food (cheese blocks, snake lollies, marshmallows, sultanas etc).

Focus Question:

What do we know about animal adaptations that ensure species survival in marine environments?



This activity will help students identify the process of change by showing how groups of animals adapt to their habitat over time (eg a bird's beak fits the shape of the food it eats).

Consider:

Compare and contrast features of animals through analysis of living things in the story. Discuss questions such as

1. How do animals survive without the care and protection of parents?

2. We know that turtles have shells, what purpose does the shell serve?

3. We heard in the story that sea anemone have stinging tentacles - why?

4. What other adaptations have animals in the story made to help them survive in their environments?

5. Can you think of any other examples of animal adaptations?

6. How can we define the word adaptation?

Analysis:

1. Play the "Beak Adaptations Relay" game, which helps demonstrate to the students the variety of adaptations birds have made (the type of food they can eat depends on their beak shape).

2. When the game is finished discuss what has been learned from the game.

Ask questions such as

• Did the students realise that animals are so different, with such a variety of adaptations to their environment?

• How do you think a bird's beak may have changed over time to fit the shape of the food it eats (evolution)?

5. Can you think of any other examples of how animals have changed over time?

6. How can we define the word evolution?

Main Idea:

There are a variety of plants and animals in our marine environment and they all have different adaptations to where they live and what they need to survive. The process of change is called evolution.

Outcomes
Science/Concepts and Contexts/Life and Living
Cross Curricula
Literacy - L/S
SOSE

Beak Adaptations Relay Instructions

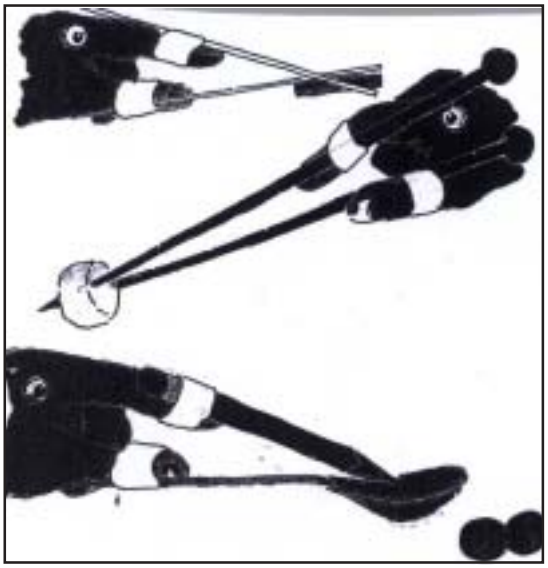
1. Divide the group into three teams and ask them to line up behind a bowl, in preparation for the relay.

2. Give each group a different implement, each implement represents a different species. They need to tape the implements to the fingers (as in the diagram).

3. Fill the bowl in front of each group with a variety of food items, and place another empty bowl a few metres away, for them to place the food in during the relay.

4. Explain to the students that they must attempt to carry as many food items as possible from the full bowl to the empty bowl, one person from each group at a time.

5. Continue the relay until one team empties their bowl or until the concept has been well illustrated (a whistle may help to let the students know when the game is to stop). Make sure you explain to the students that it will not be possible for some utensils to carry certain food items and this is all part of the game. They can swap utensils for another game if there is time.



Activity 3. Webquest

Resources required:

The materials, organisations and websites listed in the resource list will assist student research for this activity.

Focus Question:

What do we know about plants and animals that live in marine environments?

Consider:

Arrange for a class excursion to Indo Pacific Marine, visit an internet site or watch a film, to view the range of plants and animals found in marine environments in the Top End.

Construct a retrieval chart that directs the students to note take of key features of animals or plants (e.g. habitat, diet, lifecycle etc.).

Share retrieval charts as a whole class.

Analysis:

1. Visit the Nakara Primary webquest at **www.schools.nt.edu.au/nakara/webquest/index.htm**.

2. Clarify the requirements of the webquest and negotiate time lines, work sessions, roles and responsibilities within the groups.

3. Negotiate a rubric to make explicit the content and processes of the webquest. Use the rubric as a tool for group and self-assessment.

4. Complete the tasks of the webquest and negotiate how each group will present and share their learning.

5. Use an oral presentation evaluation sheet, such as the one shown overpage, for the presentations.

EXTENSION:

Design an alternative webquest that works towards the focus question.

Main Idea:

There are many different plants and animals that live in marine environments. Each of these have features and needs that are unique to them and the environment in which they live.

Outcomes
Science/Concepts and Contexts/Life and Living
SOSE/Environments/Environmental Awareness and Care
Cross Curricula
Learning Technology
Literacy

WEBQUEST: http://www.schools.nt.edu.au/nakara/webquest/index.htm

Ocean Celebrities-

Who Am I?

A Webquest for Year 3

Are you adventurous ? Do you like having fun in the water? Of course your answer will be Yes! Hop on the back of Tasman the Turtle and dive with us to the depths of the ocean.

As you dive deeper and deeper into the depths of the ocean with Tasman, you notice that your body is transforming into an unknown creature of the sea.

Title:	Your name:

Introduction:	Description:

Habitat:	Life Cycle:

Diet:

Interesting Facts:

Oral Presentation Evaluation Sheet

Name of presenter: _____

Name of person evaluating: _____

	Very good	Good	Needs work
Preparation			
Props/materials			
Speaking			

(please tick)

I Liked _____

I would change/improve_____

Oral Presentation Evaluation Sheet

Name of presenter: _____

Name of person evaluating: _____

	Very good	Good	Needs work
Preparation			
Props/materials			
Speaking			

(please tick)

I Liked _____

I would change/improve_____

Activity 4. Connections in Marine Environments

Resources required:

• *The Treacherous Travels of Tasman Turtle* by Simon McLean

• Poem, *The Disappearance of the Seahorses,* by G. Base.

Focus Question:

What do we know about the connections that exist in marine environments in the Top End?

Consider:

1. Brainstorm the elements of marine environments in the Top End, such as coral, sand, fish.

2. Create a list for future reference.

3. Construct a diagram with labels to represent a local marine environment.

4. Use a rubric to identify and assess the components of the diagram.

Analysis:

1. Refer to *The Treacherous Travels of Tasman Turtle* and brainstorm the language features of the text, such as repetition or rhyming patterns.

2. Ask the students to think of their own rhyming words to describe the animals in the story.

3. Write their ideas on the board.

4. Read and discuss the message of G. Base's poem *The Disappearance of the Seahorses.*

5. Deconstruct the language and structural features of the poem e.g. use of adjectives, grammar, rhyming patterns, phrasing etc.

6. Highlight how Base has woven factual information into the poem.

7. Model writing a stanza about a Top End marine environment using Base's structure.

The following example is based on the young Hawksbill turtle's first swim.

Beneath the grey green waters, tiny and careless,

Through reflected shafts of moonlight, delicate yet fearless,

Struggling against the tide, gliding and lurching,

Hundreds of little movements, blindly searching and swimming.

8. Create stanza in pairs about a connection or series of connections between elements from a Top End marine environment.

Main Idea:

Life in our oceans exists due to the connections between living and non-living things. These connections need to be protected to ensure the continual survival of marine environments.

Outcomes
English/Writing/Language Structures and Features
Science/Concepts and Contexts/Life and Living
SOSE/Environments/Natural Systems
Cross Curricula
Literacy

The Disappearance of the Seahorses

In which a spreading poison comes to the Old Reef and all the Seahorses mysteriously vanish.

Above the ragged reefs they soared, exquisite and serene,
Through slanting shafts of sunlight, tiny jewels of blue and green,
Performing little pirouettes, then sailing side by side:
An everchanging ballet danced upon the turning tide.

Beneath a sweeping canopy of undulating hue,
From wells of limpid turquoise to the deepest midnight blue,
The Seahorse ballet rose and fell - a silent symphony,
Played out against the backdrop of a vast and fragile sea.

Then came a day the sea went dark, the reef began to change,
The coral gardens lost their glow, the seaweed tasted strange.
The shifting ocean currents brought a slowly spreading blight,
And every single Seahorse simply vanished overnight.

(from “Sign of the Seahorse” by G.Base)

Word Explanations

hue: variety of colours

blight: destruction, ruin

Activity 5. The Food Web Game

Resources required:

• 1 Bucket, 2 small hoops, 2 larger hoops

• 20 Seagrass cards, 10 Small fish life cards (Herrings, Anchovies, Prawns)

• 15 Larger fish life cards (Barramundi, Snapper, Trevally).

Focus Question:

What is a food web and how does it work?

Consider:

Construct or view a diagram of a food web. Discuss with the students how this information promotes understanding of marine ecology.

Analysis:

Explore the interactions within an ecosystem through playing the food web game.

1. Set up some boundaries for the students as in the diagram and description opposite.

2. At the end of each game discuss what happened and what messages the games may have conveyed.

The game helps to demonstrate the interactions between species and the need for species to reproduce to sustain populations. By putting humans into the picture students can see how unregulated fish catches by fishers can endanger populations.

Questions might include;

• Why doesn't the fisherman need to rescue any life cards?

Because he has no predators

• What happens when the fisher's catch increases with a new boat?

The fish will die out quicker, which represents how unregulated catches can reduce populations significantly

• What does the fisherman do when all the big fish are gone?

He moves onto the little fish.

• Why doesn't the seagrass need to catch any food?

Because it's food comes from the water and the sun. Note that the seagrass needs to reproduce as it is eaten, that is why it needs to collect life cards.

Main Idea:

Ecology is the study of how organisms interact with one another and their surrounding environment. Scientists and aquatic resource managers use this knowledge to devise ways of managing and sustaining marine environments.

Outcomes
Science/Working Scientifically/ Investigating
SOSE/Environments/Natural Systems
Cross Curricula
Literacy - L/S
Science - Concepts and Contexts
Vocational Learning

The Food Web Game

PREPARATION:

1. Mark out the play area with a chalk line. You will need a large circle of about 6m in diameter.

2. Arrange the inside playing field by placing a bucket of seagrass cards in the centre of the circle, two small hoops around the middle of the playing area and the two larger hoops just inside the boundary of the playing area. See diagram below.

3. Place the small fish life cards in the smaller hoops, and place the large fish life cards in the larger hoops.

Allocate roles to each student:

• one student is to become the seagrass and starts the game next to the bucket

• one student is to become the fisher and starts the game on the outside of the boundary

• approximately 2 students to each small hoop, to become the small fish

• approximately 2 students to each large hoop, to become the larger fish

If there are more than 10 students try to spread them around evenly between fish, seagrass and fishers (numbers will be adjusted as you look at new concepts for each new game).

RULES:

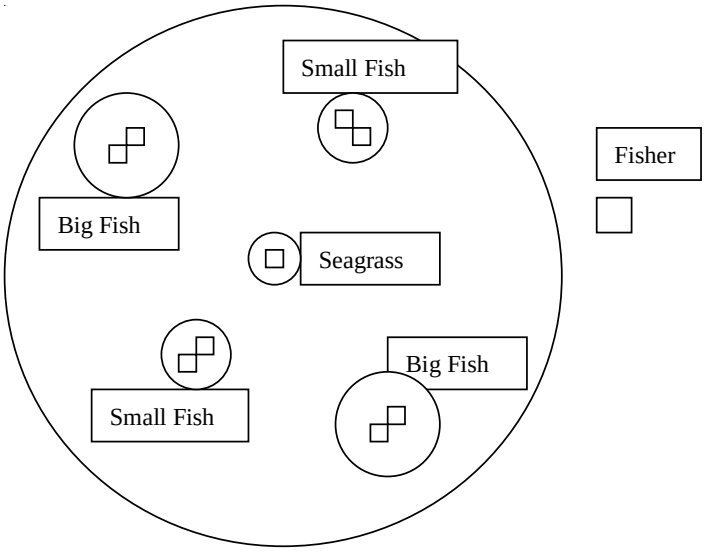
1. The aim of the game is for the small fish to take as much seagrass back to their circle as they can (one at a time) while also ensuring they always have a least one life card in their circle. To do this they need to continue retrieving their life cards from the homes of the big fish but can only carry one card at a time.

2. The larger fish need to do the same but they collect the small fish cards for food and rescue their life cards from the fishers area just outside the boundary line.

3. The fisher collects the large fish cards and places them on the outside of the boundary area. The fisher does not have any life cards to rescue, he just fishes for big fish. However to illustrate how fishers are slowed down by needing to look for fish, make these players run around the outside of the circle once each time they catch a big fish.

4. The seagrass does not need to catch anything to eat but they need to keep rescuing their life cards so that the fish have something to eat.

5. Blow a whistle to start the game. Stop the game every few minutes to discuss the concepts. At the end of each game add a new fishing boat to illustrate what happens when there are too many fishers.



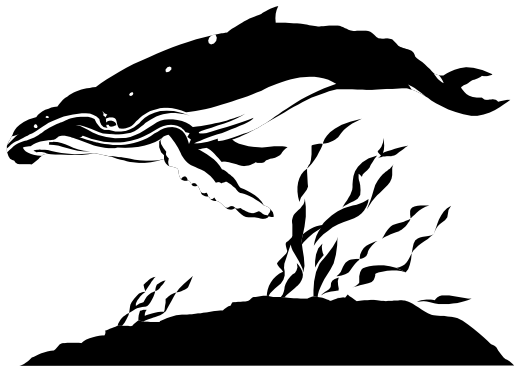
Activity 6. Communicating Under Water

Resources required:

• Musical instruments such as bells, recorder, soft drum, maracas, ocean music tape

• A large space

•Video that shows examples of communication under water such as those listed in the resource list at the back of this module.



Focus Question:

How do living things in marine environments communicate?

Consider:

View the video and use a retrieval chart to record notes about the communication methods of living things in marine environments.

Analysis:

1. Form small groups and allocate one person in each group to play the instruments while the others complete the movement sequence.

2. Ask each group to choose a marine animal or plant on which they will base their sound and movement performance.

3. Allow the students a few minutes to brainstorm ideas for sounds and movements.

4. Share performances with the class.

5. Encourage positive feedback and comment on each group's performance.

6. Combine groups performances to create an ensemble of sound and music.

Main Idea:

Many animals communicate with each other through sound, colour and movement. Communication is a fundamental means of interaction. It is essential for species survival.

Outcomes
SOSE/Environments/Natural Systems
Science/Concepts and Contexts/Life and Living
Cross Curricula
The Arts
HPE - Movement

ANIMAL	SOUND (tick box)	COLOUR CHANGE (tick box)	MOVEMENT (tick box)	OTHER (write down type here)	NOTES
Whale	✓				
Cuttlefish		✓			

Activity 7. "The Hidden Forest".

Resources required:

• *The Hidden Forest* by Jeannie Baker

• *Looking for Crabs* by Bruce Whatley

Focus Question:

How does the behavioral of humans impact on waterways and the marine environment?

Consider:

1. Small group reading of the recommended texts.

2. Use a rotating grouping strategy to stimulate discussion about:

• What happened in each story?

• How science was used to inform responsible and environmentally friendly behaviour?

• What theme or message each author was trying to convey?

Analysis:

1. View a wide range of posters conveying environmentally friendly messages.

2. Deconstruct the structure and language features of the posters.

3. Negotiate a rubric that details essential features that a poster must have, such as catchy slogans, diagrams/illustrations, text, labelling etc.

4. Identify appropriate audiences/venues for display of the posters, such as the Fisheries office, local shopping centre.

5. Design posters to communicate marine friendly behavior using a combination of computer software and handdrawn techniques.

Main Idea:

Marine ecosystems are fragile. Humans need to understand and monitor how their behaviours can impact on the future survival of marine systems. To ensure sustainability of marine ecosystems people need to be informed.

Outcomes
Science/Working Scientifically/Acting Responsibly
SOSE/Environments/Environmental Awareness and Care
Cross Curricula
Literacy
Numeracy
Learning Technology
Vocational Learning
Technology and Design
The Arts

POSTER EXAMPLE

Keeping marine pests out of the NT

In March 1999 the black striped mussel was found in plague proportions in Darwin marinas. The threat to commercial and recreational fishing, aquaculture, tourism and port industries of northern Australian resulted in $2.2 million being spent to kill the mussel.

Marine Pest Problems

When introduced, marine pests can take over, changing our marine systems. The changes may mean fewer fish to catch and an unsightly looking Harbour and marinas.

Marine pests foul the hulls and seawater systems of boats. When attached to the hulls of boats they reduce speed and increase fuel use. Marine pests can also clog cooling water intakes resulting in overheating and damage to boat motors.

How do marine pests get here?

Marine pests are great hitchhikers. They can be spread not only on boat hulls, but also in any seawater system on a boat, including inside pipes, in ballast water and bilge water.

What are we doing to stop them?

- International boats wishing to enter Darwin marinas must pass a hull inspection and undergo treatment of the seawater systems.
- The Marine Pest Program is also on the lookout for marine pests in the marinas and Harbour using settlement traps and underwater photography.

What Can You Do To Help ?

- ✓ Regularly clean and check seawater systems on your boat
- ✓ Keep clean and antifoul the hull of your boat every year
- ✓ When out fishing, diving or boating, keep a look out for any unusual marine growth or marine life in unnaturally high numbers

Report any sightings to the
Marine Pest Program
1800 720 002
(free from mobile phones)
fax: 8999 2065

Northern Territory Government
Department of Business, Industry & Resource Development

Activity 8. Take Only What you Need

Resources required:

• Ball of string or soft elastic.

• Name cards with pictures of living and non-living things necessary for life e.g. water, plants, sun, aquatic animals including birds.

Focus Question:

What do humans need to consider when interacting with marine environments?

Consider:

1. Plan a field trip to a local beach

2. Assign areas of the beach to small groups

3. Present each group with a table to record evidence of human behavior or interaction with the beach environment.

4. Collate results of the field trip

5. Compile a class negotiated letter to the relevant local council to outline the results of the field trip. Include recommendations for reducing negative impacts of the humans who interact with this environment.

Analysis:

Explore how an imbalance in the water will affect all creatures by playing a food web game.

1. Pass around name tags for each student and arrange the group in a circle.

2. Inform students they now represent whatever is depicted on their name tag.

3. Glance around the group to get a mental picture of what is necessary for your existence *e.g. A gudgeon may decide they need snags to hide in or lay their eggs, smaller fish to feed upon, water plants for oxygen, etc.*

4. Start with any student and encourage them to hold one end of the string tight and then gently throw the ball of string to a student who represents a living or non-living thing that they will require to survive.

If the ball is passed from a large fish, to a smaller fish, then to a plant, you have a food chain. If the ball is passed through numerous animals, plants and resources, such as a shark to a penguin to an adult pilchard, etc and becomes increasingly tangled and complex, you have a food web.

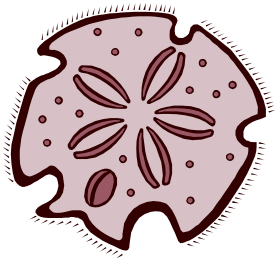
5. Now introduce an imbalance in the food chain or web by role playing the following scenarios:

• Groups of fishers take more of one fish than they need for bait. Who is affected?

• A fisher doesn't throw back a fish that is inedible to humans (e.g. puffer fish), but is enjoyed by seals. Who is affected?

• A fisher takes more than they need of a fish that has no bag limit. Who is affected?

Ask students to come up with their own scenarios. As each scenario is enacted the student who is affected first pulls on the string/ elastic. The next organism down the chain or web should feel the pull and realise they too may become affected by someone or something upsetting the natural balance by taking more than they need.



6. Compile a list of do's and don'ts for responsible behavior while fishing.

7. Publish the list as a brochure and send to the Amateur Fishermen's Association of the NT (AFANT). It is recommended that the teacher contacts AFANT by phone or mail before posting any letters

8. Invite feedback from the association.

Main Idea:

All human behaviors impact on marine environments. Sustainability involves behaving in ways that reduce or eliminate negative effects.

Outcomes:

Science/Working Scientifically/ Investigating

SOSE/Environments/Environmental Awareness and Care

Cross Curricula

Literacy

Numeracy

Learning Technology

The Arts - Media

Field Trip Record

Evidence	Where	Impact positive (+) or negative (-)	If negative, why?
Footprints	In sand	+	+
Plastic bag	In rocks	-	Plastic bags can choke or entangle animals

Activity 9. *The Eagle and the Gull*

Resources required:

• *The Eagle and Gull* story.

Both the story text and an example poster are provided in the kit but a large size poster (A1) is also available for loan from the Education and Training Library.

Focus Question:

What does the Eagle and Gull story teach us about utilizing and sharing resources?

Consider:

Revisit the Eagle and Gull story from Module 1 of *Into the Blue* and discuss why the Bardi people would have told this story. These questions can aid the discussion.

1. Who is the wise animal in the story?

2. Which animal in the story misbehaves and how?

3. Why does this animal have to spend the rest of time eating scraps?

4. Does the class think that the animals in the story are similar to people and in what way?

5. What does the class think the story is about?

6. What does the eagle represents?

7. Who does the gull represent?

Analysis:

Explore the interactions between humans and the marine environment with your own story telling.

1. Brainstorm ideas for human uses of the marine environment.

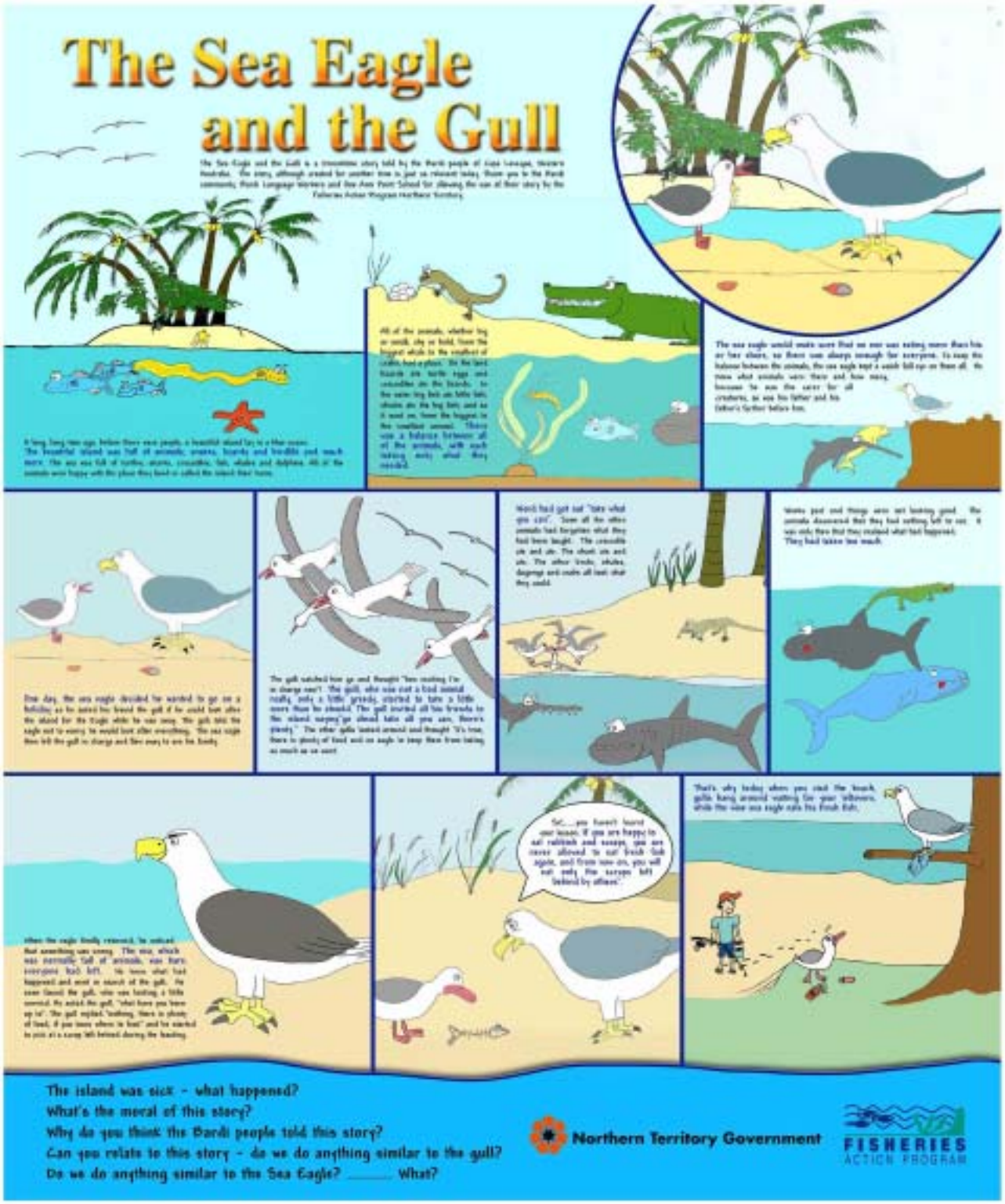
2. Ask students to consider what would happen if they did the wrong thing when using the marine environment. What would be the consequences and what could they do to avoid this consequence?

3. Use the comic strip model of the Eagle and Gull story poster to create your own story about using the marine environment wisely.

Main Idea:

Resources in a marine environment include living and nonliving things. All the living elements need to share the resources to ensure their survival.

Outcome:
Science/Concepts and Contexts/Life and Living
SOSE/Environments/Natural systems
Cross Curricula Perspectives
[Lit] [Ind]


The Sea Eagle and the Gull
The island was sick - what happened?
What's the moral of this story?
Why do you think the Bardi people told this story?
Can you relate to this story - do we do anything similar to the gull?
Do we do anything similar to the Sea Eagle? _____ What?
Northern Territory Government
FISHERIES
ACTION PROGRAM

Activity 10. Valuing our Ocean

Resources required:

• *My Island Home* by the Warumpi Band (written by Neil Murray)

(Sing 2000 ABC Song Books)

• Guest local indigenous person to discuss Indigenous use of the marine environment

The Aboriginal Liaison Officer for Fisheries in Darwin can be contacted on 8999 2164 for a booking to visit the school. The Aboriginal Liaison Officer can also assist in putting the school in contact with a relevant person in your area.

Focus Question:

How do indigenous cultures from the NT value marine resources and how does this impact on the way they use resources.

Consider:

1. Listen to the song *My Island Home.*

2. Discuss the message of the song and why the author would have been inspired to write this song.

3. Brainstorm the Indigenous perspective of value for country and sea that this song attempts to explain.

4. Use a class KWL chart to record students knowledge.

Analysis:

1. Assign small groups to each question from the 'W' section of the KWL chart.

2. Devise a strategy for researching each question.

For example

Question	Who can we talk to?	How will we do this (eg letter)?	When?

3. Assign group roles and responsibilities.

4. Negotiate a rubric that specifies essential criteria for the group research.

5. Create a class book 'Indigenous Perspectives of Marine Environments' that includes a page for each groups' questions and the record of their research.

Main Idea:

Indigenous peoples' value for marine environments is imbedded in their culture. They demonstrate this through lore, dance, song, painting, story telling and ceremony. These media provide Indigenous people with ways of governing their connections and interactions with marine environments.

Outcomes
SOSE/Social Systems and Structures/ Indigenous Studies
ILC/Cultural Content/Country and Land, Natural Environment
Cross Curricula
Indigenous Perspectives
Literacy
Science - Working Scientifically/Acting Responsibly

Topic:

I **K**now	**What I W**ant to know (Questions)	**What I have L**earnt (Previous Learnings)
	• How do Aboriginal people learn about the aquatic environment? • Does this knowledge include placing values on specific animals or plants? • How do these values affect they way resources are managed?	

Thoughts On the Unit

Resources required:

• Large and small sheets of paper and cardboard.

• Drawing and craft materials such as pencils and glue.

If you go to the beach for an excursion (or the children go to the beach in their own time) ask them to collect some shells, cuttlefish bones, sand and dead coral (ensure that the materials are not holding living things and discourage students from collecting too many).

The addition of these objects will add an extra dimension to the posters.

Focus Question:

What have you learned over the last couple of weeks about life in the marine environment?

Consider:

Discuss what the students thought of the activities about the marine environment with questions such as:

• What did you enjoy most about this unit overall?

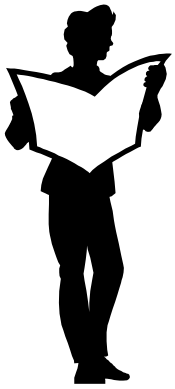
• Will you change any of your actions as a result of this unit?

• Would you like to study the aquatic environment further?

Turn the classroom into a seascape by asking students to draw posters and create models of their favourite element of the module such as an animal or underwater scene. Place these around the classroom to make a seascape in your room.

Analysis:

Write a letter to family members and friends inviting them to visit the seascape at the school.



Main Idea:

By informing others what we know about taking care of the environment we can help the aquatic environment be sustained for future generations.

Outcome:
SOSE/Environments/Env2.2
Learning area link:
Science/Concepts and Contexts/CC2.2
Cross Curricula Perspectives
Arts

Concluding Game - 20 questions

Resources required:

Photocopied animal cut outs stapled to head bands/scarf.

Instructions

Explain to the students that we are going to play 'Celebrity Animal' as a fun concluding game to the module.

This game is an adaptation of the popular game celebrity heads which allows the students to have fun while testing their knowledge of the animals and plants they have recently learned.

1. Photocopy some animal pictures and attach the photocopied animal pictures to a headband or headscarf.

2. Select four students to come to the front of the room and sit facing the class.

3. Place the headband on the student's heads, allowing their classmates a clear view of the picture.

4. The chosen students must then ask the rest of the class questions to help them guess which animal they are.

5. One student at a time asks the class a question. If the answer to the question is yes (eg Am I an animal? - yes) they are allowed to ask another question. When they get a 'no' answer to a question the next person gets to ask their questions, and so on. Continue until all students have successfully guessed which animal they are.

6. Pick another group of students to replace the first four and continue the game until all students have had a go.

Alternative: If you feel the students are not confident enough to sit in front of the class like this or might like to play something different, an alternative way to play the game is to:

1. Stick the picture of the animal onto the students' backs, without them seeing what it is. Have at least two of the pictures duplicated so that there is a matching pair among the students.

2. Ask the students to walk around the room trying to find their partner by asking yes and no questions to the other students. If you want to make the activity really different you can ask students to do this with movement only, no sound, and a thumbs up, or thumbs down for correct answers.

RESOURCE LIST

Books

All listed books and videos can be ordered from the Education and Training Library at Winnelie

Their website, if you want to check on availability yourself, is

www.ntlib.nt.gov.au/glis/educ

1. Baker, J. (2000). The Hidden Forest, Walker Books Ltd.

2. Baker, J. (1991). Window, Random Century Group Ltd.

3. Carle, E. (1987). A House for Hermit Crab, Hodder and Stoughton Ltd.

4. McLean, S. (date unknown). The Treacherous Travels of Tasman Turtle, Steve Parish Children's Publishing.

5. Whatley, B. (1992). Looking for Crabs, Harper Collins Publishers.

6. Bolten, F. and Cullen, E. (1987). Animal Shelters, Martin Educational.

7. Dunbier, S. (2000). Sea Turtles, Thomas C. Lothian Pty Ltd.

8. Morris, R. (1983). Mysteries and Marvels of Ocean Life, Usborne Publishing Ltd.

9. Perkins, L. (1980). Shells of Northern Australia, Northern Territory Department of Education.

10. Keyt, T., Sansom, McClish, B. and Glenie, S. (1994). Arts and the Environment, Gould League of Victoria Inc.

11. Beisert, H.H. (1982) The Fish, Nord-Sud Verlag, Switzerland.

Videos

1. Fish, shellfish and other underwater life [videorecording] / produced and directed by Leonard Bendell ; screenwriter, Rima Firrone ; Penguin Productions.

2. Where the fish are friendly [videorecording]. Publisher BBC, [London] : c1980.

3. Coral reef community [videorecording] Publisher South Melbourne, Vic. : Educational Media Australia, assisted by the Victorian Film Corporation, [1988?]

4. Animal adaptations [slide] : coral reef community / by Tom Collis. Publisher Winnellie, N.T. : Dept. of Education, 1981.

Websites

Northern Territory Department of Business, Industry and Resource Development, Fisheries Group, **www.dbird.nt.gov.au**

Enchanted Learning, **http://www.enchantedlearning.com/Home.html**

Oceans Alive, **http://www.abc.net.au/oceans/alive.htm**

Sea World, **http://seaworld.org/**

Gulf of Marine Aquarium-all about turtles, **http://octopus.gma.org/turtles/index.html**

The Great White Shark, **http://www.ucmp.berkeley.edu/vertebrates/Doug/shark.html**

Ocean Oasis Field Guide, **http://www.oceanoasis.org/fieldguide/hipp-ing.html**

Kingdom of the Seahorse, **http://www.pbs.org/wgbh/nova/seahorse/basics.html**

National Aquarium in Baltimore's Department of Education, **http://www.aqua.org/animals/species/preel.html**

Animation Factory, **http://www.animfactory.com/index.html**

Junior Code of Practice

Commonwealth of Australia (2000) *Get Hooked It's fun to fish; National Junior Fishing Codes Education Kit.*

Available at the Victorian Department of Primary Industries and the Department of Sustainability & Environment website at **http://www.nre.vic.gov.au**

or for a direct link to the education kit go to;

http://www.nre.vic.gov.au/web/root/domino/cm_da/nrenfaq.nsf/frameset/NRE+Fishing+and+Aquaculture?OpenDocument