Endangered species

Marine turtles

Year 4

Learning area: Science

Science Understanding (sub-strand):   
Biological sciences

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Endangered species – marine turtles – Year 4

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# Unit overview

| Unit title | Endangered species – marine turtles |
| --- | --- |
| Learning Area | Science |
| Science Understanding  (sub-strand) | Biological sciences |
| Year level | 4 |
| Duration | Approximately seven weeks\*  *\*based on two lessons of science per week for Year 4 (50 minutes per lesson). More time may be required for the research-based lessons.* |
| Unit description | In this unit, students will investigate marine turtles and their life cycles. They will explore the relationship between the survival needs of marine turtles and the habitats they live in, including interactions with other living things. By considering changes to the habitats, such as coastal development and climate change, students will predict the effect of these changes on marine turtles, including the impact on the survival of the species. Students will recognise how science knowledge helps people understand the effect of their actions. |

# Teacher information

## Safety and risk management

You will need to identify safety issues and conduct your own curriculum activity risk assessments for all activities and excursions in this unit.

For advice and documents, please refer to the Department of Education and Training Curriculum Activity Risk Assessment Guidelines*:* <http://education.qld.gov.au/health/safety/hazards/curriculum-activities.html>

The actual risk level for activities in this unit will vary according to the specific circumstances of the activity and your school and classroom context. You must consider all specific circumstances when you complete a risk assessment. Examples of considerations include, but are not limited to:

* Is the activity occurring within, or outside school grounds e.g. an excursion?
* How will students be supervised during the activity?
* What will students do during the activity?
* Are there any special student considerations e.g. medical, behavioural or special needs?
* What hazards do you need to take into account e.g. hazardous substances, tools or equipment?

## Unit details

The Great Barrier Reef Marine Park Authority (GBRMPA) Endangered species – marine turtles unit is a Year 4 Science unit of work. The content descriptions for this unit are from the Australian Curriculum: Science (Version 7.4 dated 30th March 2015 <http://www.australiancurriculum.edu.au>).

The unit follows the inquiry-based 5Es approach to teaching science. The inquiry questions that underpin the unit are:

What are the survival needs of marine turtles?

What is the life cycle of marine turtles?

Why are marine turtles (found on the Great Barrier Reef) threatened?

What can we do to conserve marine turtles and their habitats?

## Time allocation

The unit is based on two lessons of science per week for Year 4 students. Each lesson is approximately 50 minutes long, with some lessons requiring more time to allow further depth of study e.g. internet research, or time for excursions.

The overall unit, or the individual lessons, can be extended or shortened to cater for individual classes as deemed necessary by the class teacher, for example, you could extend the unit by:

exploring and comparing the life cycle of other plants and animals and considering factors that affect these life cycles

investigating other endangered species to highlight how science knowledge contributes to people understanding their actions.

## Unit aims

The lessons in this unit are structured to build students’ knowledge of endangered species. The unit focuses on marine turtles, of which there are six different species found within the Great Barrier Reef Marine Park. All six species are threatened. (For more information on marine turtles and the Great Barrier Reef see the section ‘Background information – marine turtles and also <http://www.gbrmpa.gov.au>).

Building students’ knowledge of marine turtles, why they are threatened and what can be done to protect them, will allow students to then make links with other endangered species. All marine animals are important to the overall health of the Great Barrier Reef ecosystem.

Having the knowledge and understanding to apply to protecting species will enable students to make ethical decisions when interacting within the ecosystem of the endangered species. Teaching students about endangered species will build their environmental knowledge and encourage their understanding of sustainability and stewardship.

Key threats to the Reef

GBRMPA encourages teachers, students and communities to follow the main aim of Reef Guardians – to be custodians of their local ecosystems and stewards of the Reef. In the Great Barrier Reef Outlook Report 2014, the key threats to the Reef are identified as climate change; land-based run-off; coastal development; and other direct impacts such as unsustainable fishing activities and marine debris. (See [http://www.gbrmpa.gov.au](http://www.gbrmpa.gov.au/) for more information on the Outlook Report 2014).

In this unit, students will explore the threats of climate change, coastal development and marine debris to marine turtle survival.

## Stewardship

The Reef Guardian Schools Program encourages responsible use and protection of the Great Barrier Reef ecosystems. Schools are encouraged to take ownership of conservation activities and on-ground projects that involve students, teachers and their local communities. These environmental actions foster a greater appreciation and understanding of the Great Barrier Reef and empower students to become lifelong stewards.

The following are examples of stewardship activities that relate to the learning experiences of this unit:

* Identify localised threats e.g. goannas and other predators, or lighting issues that are minimising hatching of turtles on local beaches. Write a letter to your local council to encourage action, or provide resources to address the problem. For more information on the effects of artificial lighting view: <http://www.npsr.qld.gov.au/parks/mon-repos/cut-the-glow.html>.
* Organise and participate in a clean-up of local litter hotspots. Support and promote source reduction initiatives within the school environment e.g. waste-free lunches, single use plastic bottles etc.
* Investigate the devastating effects of discarded fishing line on turtles and dugongs and communicate your findings with others.

## Citizen science participation

Citizen science is scientific research conducted by non-professionals – in this case by students, teachers and communities. Schools can participate in the collection and submission of scientific data to local management authorities including GBRMPA, local councils and local Natural Resource Management agencies where the data can be used to inform sustainable ecosystem management decisions.

Examples of citizen science participation are provided in the lesson plans of this unit found in the ‘Teaching sequence’ section.

## Building partnerships

Delivery of this unit can be enhanced by building partnerships within the school and wider community.

Partner organisations could include the following:

* local council
* Local Marine Advisory Committees (LMAC)
* your nearest natural resource management organisation (NRM): <http://www.nrm.gov.au/regional/regional-nrm-organisations>
* conservation groups
* other schools
* Australian Marine Debris Initiative: <http://www.tangaroablue.org/>
* Eco Barge Clean Seas Inc. <http://www.ecobargecleanseas.org.au/>
* guest speaker from the Sea Turtle Foundation: <http://www.seaturtlefoundation.org/>
* Reef HQ turtle hospital

Background information – marine turtles

### What species of marine turtle are found in the Great Barrier Reef Marine Park?

Six of the world’s seven marine turtles are found in the Great Barrier Reef Marine Park:

loggerhead turtle

olive ridley turtle

leatherback turtle

hawksbill turtle

flatback turtle

green turtle

### Are they protected?

All six species of marine turtle are protected. This means it is defined as a species that is protected by international, national or state laws, and/or under the Great Barrier Reef Marine Park Regulations 1983. Protected species need special management because of recognised threats to their populations.

For the conservation status of each marine turtle species visit:   
<http://www.gbrmpa.gov.au/about-the-reef/animals/marine-turtles>

### What are the threats to marine turtles?

Marine wildlife has always been affected by natural factors such as predators, cyclones and disease. However, over the last 150 years a new threat has emerged – humans. Human related threats have reduced the abundance and range of many marine species including marine turtles. The greatest concern is that this could lead to population extinctions.

Human-related threats to protected species include:

habitat degradation and loss from coastal development

incidental catch in fishing gear, shark control nets and drum lines at popular beaches

boat strike

coastal development meaning that there is more artificial light near to nesting beaches

ingestion of marine debris and entanglement (especially plastics and lost/discarded fishing gear)

harvesting: commercial and Indigenous, and illegal take especially by foreign vessels

depredation on nests by introduced predators (especially pigs and foxes)

declining water quality

climate change.

### What is being done to reduce the risks to marine turtles?

Ascertaining which species are under threat or at risk

Identifying any threats to the survival of the species

Developing and implementing management actions to mitigate threats.

Working with industry and management to encourage and refine sustainable fishing practices and the use of bycatch reduction devices such as the Turtle Exclusion Device (TED)

Encouraging and educating Marine Park users to minimise their impact upon the Great Barrier Reef

Educating and encouraging residents and businesses in the catchment to minimise their impact upon the Great Barrier Reef

## Useful websites

ReefVid – a resource of free coral reef video clips:  
[http://www.reefvid.org](http://www.reefvid.org/)

Arkive – lots of video clips of marine turtles and other endangered animals:  
<http://www.arkive.org>

Eco Kids:  
<http://www.ecokids.ca>

Great Barrier Reef Marine Park Authority:  
<http://www.gbrmpa.gov.au>

Middle School Science:  
<http://www.middleschoolscience.com>

The Biology Corner:  
<http://www.biologycorner.com>

Sea Turtle Foundation – good information about marine turtles and getting involved in turtle conservation activities locally:  
<http://www.seaturtlefoundation.org>

The Animals Save the Planet – Romancing the Bag – a great clip about plastic bag pollution:  
<http://www.youtube.com/watch?v=VzsQwwnqSGo>

Department of Environment and Heritage Protection A-Z of animals web pages:  
<http://www.ehp.qld.gov.au/wildlife/animals-az/index.html> (look for various turtle species).

## Useful books

Downloadthe book *Myrtle’s Battle Against Climate Change*, Mariana Fuentes available free online by selecting the second link at: <http://rrrc.org.au/publications/books_chapters-html/>

This book could be used in conjunction with the unit as a Walking Talking Text.

*Chelonia Green – Champion of Turtles,* Cristobel Mattingley

*The Smallest Turtle,* Lynley Dodd

*One Tiny Turtle*, Nicola Davies (also on DVD)

*Into the Sea*, Brenda Z. Guiberson

*The treacherous travels of Tasman Turtle*, Simon McLean

*I'll Follow the Moon*, Stephanie Lisa Tara

Dugong and Marine Turtle: Teaching Resource and Information Package 2010, Torres

Strait Regional Authority's Land and Sea Management Alliance. Select the PDF ‘Teaching Resources: Dugong and Marine Turtle: Teaching Resource and Information Package’ at the bottom of the web page: <http://www.nailsma.org.au/hub/resources/publication/dugong-and-marine-turtle-teaching-resource-and-information-package-2010>

# Curriculum intent

## Australian Curriculum: Science

## Year 4 Level Description

The *Science Inquiry Skills* and *Science as a Human Endeavour* strands are described across a two-year band. In their planning, schools and teachers refer to the expectations outlined in the achievement standard and also to the content of the *Science Understanding* strand for the relevant year level to ensure that these two strands are addressed over the two-year period. The three strands of the curriculum are interrelated and their content is taught in an integrated way. The order and detail in which the content descriptions are organised into teaching/learning programs are decisions to be made by the teacher.

Over Years 3 to 6, students develop their understanding of a range of systems operating at different time and geographic scales. In Year 4, students broaden their understanding of classification and form and function through an exploration of the properties of natural and processed materials. They learn that forces include non-contact forces and begin to appreciate that some interactions result from phenomena that can’t be seen with the naked eye. They begin to appreciate that current systems, such as Earth’s surface, have characteristics that have resulted from past changes and that living things form part of systems. They understand that some systems change in predictable ways, such as through cycles. They apply their knowledge to make predictions based on interactions within systems, including those involving the actions of humans.

Content descriptions

This unit provides opportunities for students to engage in the following Australian Curriculum Content descriptions:

| Science Understanding (SU) | Science as a Human Endeavour (SHE) | Science Inquiry Skills (SIS) |
| --- | --- | --- |
| Biological sciences   * Living things have life cycles [(ACSSU072)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU072) * Living things, including plants and animals, depend on each other and the environment to survive [(ACSSU073)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU073) | Use and influence of science   * Science knowledge helps people to understand the effect of their actions [(ACSHE062)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSHE062) | Planning and conducting   * Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate [(ACSIS066)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSIS066)   Processing and analysing data and information   * Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends [(ACSIS068)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSIS068)   Communicating   * Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports [(ACSIS071)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSIS071) |

## Year 4 achievement standard

By the end of Year 4, students apply the observable properties of materials to explain how objects and materials can be used. They use contact and non-contact forces to describe interactions between objects. They discuss how natural and human processes cause changes to the Earth’s surface. They describe relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal. They identify when science is used to ask questions and make predictions. They describe situations where science understanding can influence their own and others’ actions.

Students follow instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations. They discuss ways to conduct investigations and safely use equipment to make and record observations. They use tables and simple column graphs to organise their data and identify patterns in data. Students suggest explanations for observations and compare their findings with their predictions. They suggest reasons why their methods were fair or not. They complete simple reports to communicate their methods and findings.

## General capabilities

This unit provides opportunities to address the following organising elements of the general capabilities:

| Literacy   * Comprehending texts through listening, reading and viewing * Composing texts through speaking, writing and creating * Text knowledge * Grammar knowledge * Word knowledge * Visual knowledge | ICT capability   * Applying social and ethical protocols and practices when using ICT * Investigating with ICT * Managing and operating ICT |
| --- | --- |
| Numeracy   * Estimating and calculating with whole numbers * Recognising and using patterns and relationships * Using measurement | Critical and creative thinking   * Inquiring – identifying, exploring and organising information and ideas * Generating ideas, possibilities and actions * Reflecting on thinking and processes * Analysing, synthesising and evaluating reasoning and procedures |
| Personal and social competence   * Self-awareness * Self-management * Social awareness * Social management | Ethical understanding   * Reasoning in decision making and actions * Exploring values, rights and responsibilities |
| Intercultural understanding   * Recognising culture and developing respect | |

Cross-curriculum priorities

This unit provides opportunities for students to address aspects of the following cross-curriculum priorities:

| Sustainability  Students will:   * propose a balanced approach to the way humans interact with the environment * focus on protecting environments through informed action that recognises the interdependence of healthy social, economic and ecological systems. | Aboriginal and Torres Strait Islanders  Students will:   * access Aboriginal peoples' and Torres Strait Islander peoples' knowledge about endangered species such as various marine turtle species |
| --- | --- |

Relevant prior curriculum

Students require prior experience from Year 3 with:

### Science Understanding

#### Biological sciences

* Living things can be grouped on the basis of observable features and can be distinguished from non-living things [(ACSSU044)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU044)

### Science as a Human Endeavour

#### Use and influence of science

* Science knowledge helps people to understand the effect of their actions [(ACSHE051)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSHE051)

Curriculum working towards

The teaching and learning in this unit works towards the following in Year 5:

### Science Understanding

#### Biological sciences

* Living things have structural features and adaptations that help them to survive in their environment [(ACSSU043)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU043)

### Science as a Human Endeavour

#### Use and influence of science

* Scientific knowledge is used to inform personal and community decisions [(ACSHE217)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSHE217)

# Feedback

Supportive learning environment

| Differentiation  Consider the individual needs of your students including gifted and talented, ESL and students requiring additional support.  For information, refer to the Australian Curriculum, Assessment and Reporting Authority (ACARA) web pages on student diversity:  <http://www.australiancurriculum.edu.au/studentdiversity/student-diversity-advice>  Further information for Queensland state schools can be found as part of the P-12 curriculum, assessment and reporting framework and associated resources:  <http://education.qld.gov.au/curriculum/framework/p-12/> | Feedback to students  Teachers:   * plan opportunities for conversations to provide ongoing feedback (spoken and written) and encouragement to students on their strengths and areas for improvement * reflect on and review learning opportunities to individualise learning experiences required * provide multiple opportunities for students to experience, practise and improve knowledge, processes and skills.   Students:   * identify what they can do well and what they need to improve * provide feedback to a peer on interaction skills and suggest some strategies for improvement (written and spoken feedback). |
| --- | --- |
| Reflection on the unit plan  At the conclusion of the unit, teachers can reflect on it for future planning by answering the following questions:   * What worked well in this unit? * What was a stumbling block? * How would you refine it? * What trends and gaps in learning have you identified? * How will you build on these learning experiences next term and beyond? | |

# Assessment

Assessment is the purposeful, systematic and ongoing collection of information as evidence for use in making judgements about student learning and to support improving student learning.

Monitoring student learning

Student learning should be monitored throughout the unit. Each lesson in this unit provides opportunities for monitoring learning and for gathering evidence of student progress. For examples of ways to monitor learning, refer to each of the lesson plans under the section ‘Teaching sequence’.

## Assessing student learning

| Summative assessment task: | Endangered species – information report (Lesson 11–13) |
| --- | --- |
| Description: | Students will provide an information report on an endangered marine species. Students may choose a marine turtle or another endangered marine species to research. The report will aim to inform and influence the audience about the endangered species and reasons for action. |
| This assessment task provides opportunities to gather evidence of student learning in: | Science Understanding Biological sciences  * Living things have life cycles [(ACSSU072)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU072) * Living things, including plants and animals, depend on each other and the environment to survive [(ACSSU073)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU073)   Science as a Human Endeavour Use and influence of science  * Science knowledge helps people to understand the effect of their actions [(ACSHE062)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSHE062)   Science Inquiry Skills Communicating  * Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports [(ACSIS071)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSIS071) |

**See Resource section: Resource 7 for the Student task sheet and the Guide for making judgements for the assessment task: Endangered species – information report.**

# Sequencing teaching and learning

A suggested learning sequence for this unit is summarised below. For detailed information for each lesson in this sequence, go to the section ‘Teaching Sequence’.

| Inquiry phase | Lesson | Purpose |
| --- | --- | --- |
| Engage | **Lesson 1:** Marine turtles | To capture interest and discover what students think they know and want to know about marine turtles. |
| Explore | **Lesson 2:** What do we know about marine turtles? | To explore in detail what students already know about marine turtles. |
| **Lesson 3 - 4:** What are the physical features and survival needs of marine turtles? | To explore the features and survival needs of marine turtles in the habitats they live in including their interactions with other living things. |
| Explain | **Lesson 5:** What is the life cycle of marine turtles? | To investigate and represent marine turtle life cycles. To identify threats to marine turtle survival at different life cycle stages. |
| **Lesson 6 - 7:** Why are marine turtles found on the Great Barrier Reef threatened? | To investigate the key threats to marine turtle survival on the Great Barrier Reef. |
| Elaborate | **Lesson 8:** How can bycatch affect marine turtle populations? | To build on student understanding about marine turtle survival through an investigation into bycatch. |
| **Lesson 9 - 10:** What can we do to conserve marine turtles and their habitats? | To use cause-and-effect charts to build on student understanding about threats to marine turtles and to identify possible solutions. Students will recognise how science knowledge helps people understand the effect of their actions. |
| Evaluate | **Lesson 11 - 13:** Reflections and assessment task | To review and reflect on learning and introduce and complete the assessment task. |

**TOTAL: 13 Lessons *(50 minute per lesson)***

# Making judgements

## Achievement standard

In this unit, assessment of student learning aligns to the following components of the Year 4 achievement standard.

By the end of Year 4, students apply the observable properties of materials to explain how objects and materials can be used. They use contact and non-contact forces to describe interactions between objects. They discuss how natural and human processes cause changes to the Earth’s surface. They describe relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal. They identify when science is used to ask questions and make predictions. They describe situations where science understanding can influence their own and others’ actions.

Students follow instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations. They discuss ways to conduct investigations and safely use equipment to make and record observations. They use provided tables and simple column graphs to organise their data and identify patterns in data. Students suggest explanations for observations and compare their findings with their predictions. They suggest reasons why their methods were fair or not. They complete simple reports to communicate their methods and findings.

## Guide for making judgements

**See Resource section: Resource 7 for the Student task sheet and the Guide for making judgements for the assessment task: Endangered species – information report.**

# Teaching sequence

Engage

Explore

Explain

Elaborate

Evaluate

**Lesson 1:** Marine turtles

**Duration:** 50 minutes

**Lesson objectives**Students will:

identify and communicate what they already know about marine turtles.

Suggested learning sequence

Introduction - Book reading

1. Choose a book from the library, either fiction or non-fiction, about marine turtles. Read this to the students and discuss the story line (if fiction) or some of the facts (if non-fiction).
2. Ask students to share any experiences they have had with marine turtles. If most students have a story to share, students could write about the experience and illustrate their story to create a display in the classroom.

**Activity** - TWLH chart

1. Discuss with the students what they think they already know about marine turtles. Ask students if there is anything they would like to know about marine turtles. Record students’ responses in a class and/or an individual TWLH chart. (See Resource 1 – TWLH chart for individual charts).

| **T**  What we think we know about marine turtles | **W**  What we want to learn about marine turtles | **L**  What we learned about marine turtles | **H**  How we know (scientific understanding) |
| --- | --- | --- | --- |
|  |  |  |  |

1. Read the GBRMPA Great Barrier Reef Marine Turtle Identification Sheet (available at [http://www.gbrmpa.gov.au](http://www.gbrmpa.gov.au/)). Discuss how this information is important to scientists.
2. View YouTube clips or other internet clips showing marine turtles in their natural clean habitat. Draw students’ attention to the different types of marine turtles they are viewing, how they move and/or how they breathe. Allow students to comment on and discuss what they view in the clips.
3. Start a word wall with students to continuously add to throughout the unit. (See Resource 2 – Word bank for examples of vocabulary).This should be displayed in a place where students can always add to it each lesson. It may be done in alphabetical order or on moveable cards so that students can interact with the words and sort them into categories as they progress throughout the unit.
4. Start a science journal with the students to record their learning and reflections after each science lesson. (See Resource 3 – Student reflections for examples of sentence starters you can use to guide student reflections).

 Science Journal

A science journal is a record of observations, experiences and reflections. It contains a series of dated, chronological entries. It may include written text, drawings, labelled diagrams, photographs, tables and graphs. The science journal can be used as a part of student assessment.

Opportunities to monitor student learning

**Diagnostic assessment opportunities:**

Use individual TWLH charts and discussions to determine students' current knowledge of marine turtles.

Resources

Useful web links

GBRMPA Great Barrier Reef Marine Turtle Identification Sheet at: <http://elibrary.gbrmpa.gov.au/jspui/handle/11017/659>

YouTube clips of marine turtles moving, breathing, and feeding in their natural environment. (Suggested search terms in YouTube: ‘marine turtles’ ‘marine turtles breathing’ ‘marine turtles feeding’). Examples include:

* The amazing sea turtle: <https://www.youtube.com/watch?v=x12W8_lKn8M>
* Sea turtles return to the sea:  
  <https://www.youtube.com/watch?v=HvKGLlMa5ec>

**Hint:** Access and pre-load YouTube clips before the lesson so that you can play them immediately for students when required.

Printable resources

*Resource 1 – TWLH chart*

*Resource 2 – Word bank*

*Resource 3 – Student reflections*

Engage

Explore

Explain

Elaborate

Evaluate

**Lesson 2:** What do we know about marine turtles?

**Duration:** 50 minutes

**Lesson objectives**Students will:

describe what they know about marine turtles.

Suggested learning sequence

**Introduction** -Footage of marine turtles

1. Show students more YouTube or other internet clips and/or images of marine turtles. Show marine turtles in ‘bad’ situations such as stuck in fishing nets, eating plastic or strangled by fishing line.
2. Discuss with students what they see, what they think, what they feel after viewing the clips and images.

**Activity** - Hot potato

1. Explain to students they are going to participate in a hot potato activity.

* Each group gets a large sheet of paper and must answer the question on it as best they can (be creative and imaginative) before the time limit is up.
* The teacher is to set the time limit according to the needs of the class.
* When the time limit is up, groups rotate the papers around so that each group gets a turn at answering each question.

1. Divide students into groups of three or four.
2. Provide each group with a large sheet of paper with one of the questions below. You may change these questions, add more, or take some away according to number of groups and to suit the needs of the class. Read the following questions and explain any difficult words, but do not discuss the questions.

* What would happen if marine turtles couldn’t swim?
* What would happen if marine turtles couldn’t dive down?
* What would happen if marine turtles didn’t have a shell?
* What do marine turtles eat?
* Where do marine turtles eat?
* What eats marine turtles?
* Why are we learning about marine turtles?

1. When all groups have had an opportunity to answer each question, display each sheet and read though some of the answers. Discuss some of the answers and ask students to explain some of their answers.
2. Add any questions students may have about marine turtles to the W of the TWLH chart.
3. Add new words to the word wall. (See *Resource 2 – Word bank* for examples of vocabulary).
4. Students add their learning and reflections to their science journal. (See *Resource 3 – Student reflections* for examples of sentence starters you can use to guide student reflections).

Opportunities to monitor student learning

**Formative assessment opportunities:**

Use students’ participation and responses during activities to assess their ability to apply knowledge to different situations.

Resources

Useful web links

View YouTube or other clips of marine turtles in their natural environment, including marine turtles in threatening situations such as stuck in nets, eating plastic or strangled by fishing line. (Suggested search terms in YouTube: ‘marine turtle net’ ‘marine turtle plastic bag’ and ‘marine turtle fishing line’). E.g.:

* 300 pieces of plastic kills turtle  
  <http://www.abc.net.au/local/videos/2011/06/30/3257970.htm>

**Hint:** Access and pre-load YouTube clips before the lesson so that you can play them immediately for students when required.

Great Barrier Reef Outlook Report 2014

Access the report at: <http://elibrary.gbrmpa.gov.au/jspui/handle/11017/2855>

Useful information for this lesson can be found on:

Page 29 – 30: Current condition and trends – marine turtles

Page 36: Current assessments – marine turtles

Page 234: Loggerhead turtles.

Other resources

Large pieces of paper for the hot potato activity

Pens

Printable resources

*Resource 2 – Word bank*

*Resource 3 – Student reflections*

Engage

Explore

Explain

Elaborate

Evaluate

**Lessons 3 and 4:** What are the physical features and   
 survival needs of marine turtles?

**Duration:** 1 hour 40 minutes

**Lesson objectives**Students will:

understand what symbiotic relationships are

conduct research and record information about marine turtle features, survival needs, habitats and interactions with other living things.

Suggested learning sequence

**Introduction** - Footage of marine turtles

1. View video clips from Arkive – <http://www.arkive.org> showing marine turtles at ‘cleaning stations’.
2. Ask and discuss with the students what the term ‘cleaning stations’ might mean.
3. Introduce the term 'symbiotic relationship' to the students. Ask if any of them already know what that means. If not, provide an explanation – when two animals form an association (like a friendship) that benefits both of them.
4. Identify with students what symbiotic relationship is taking place in the video clips. How does the turtle benefit? How do the fish benefit?
5. Ask students if they know of any other symbiotic relationships. Record these on a wall chart to remind students what a symbiotic relationship is.

**Activity** – Exploring turtle habitats

1. Explain to the students they are going to find out more about marine turtles and the habitat they live in. To save time in the students' research, each group is going to research one or two questions and then present their findings to the class. This will be recorded in a class retrieval chart.
2. Break students up into pairs or groups of three. Have a list of questions about marine turtles written on scrap paper and stuck onto a board or wall. Each group can choose one or two questions (depending on how many groups and how many questions the teacher puts up).
3. Read the questions out to clarify unknown words. Below are suggested questions (you could adjust these according to the needs of the class):

Do all species of turtle eat the same thing? Provide examples of what each species of turtle eats.

Where do marine turtles live? Do all species of turtle live in the same places? Where does each species live?

What are the main external features of a turtle? Provide a drawing with labelled body parts.

Are marine turtles predators, prey, or both? Explain your answer.

How many species of marine turtle are found in the ocean? How does a scientist identify each different species?

Are all marine turtles found on the Great Barrier Reef? Which ones are and which ones are not? Where are those that are not found on the Great Barrier Reef found?

Find an Indigenous Australian traditional story about marine turtles.

What Indigenous group does the story belong to? What is the main message in the story?

Explain the day in the life of a turtle. What does it do all day? Does it eat all day? Does it sleep? Does it hide from predators?

How long can marine turtles stay underwater? Is it the same length of time for all turtle species? Can some stay underwater longer than others? How often do marine turtles need to breathe?

What is the largest species of marine turtle? What is the smallest species of marine turtle? Provide two facts about each species.

Which marine turtle has green fat? Why does it have green fat?

Find out four interesting facts about marine turtles.

What are a turtle’s survival needs? Choose one or two species of marine turtle and identify what they need for survival.

1. Groups are then to research their question/s. Provide access to the Internet, books, posters or fact sheets for students to conduct their research.
2. When students have finished their research, collate all the information and create a class retrieval chart for students to refer to throughout the unit.
3. Each group should share their information, answer questions from the class and participate in any discussions that may come from the research.
4. If some students finish earlier than others, they could research a specific turtle species or visit the GBRMPA website to find out more about marine turtles.
5. Add new words to the word wall. (See *Resource 2 – Word bank* for examples of vocabulary).
6. Students add their learning and reflections to their science journal. (See *Resource 3 – Student reflections* for examples of sentence starters you can use to guide student reflections).

Opportunities to monitor student learning

**Formative assessment opportunities:**

Use student research to assess their developing knowledge of how animals interact and behave in their natural environment.

Resources

Useful web links

Video clips of marine turtles at ‘cleaning stations’ from Arkive: <http://www.arkive.org>

Factual information about marine turtles on the Great Barrier Reef: <http://www.gbrmpa.gov.au/about-the-reef/animals/marine-turtles>

Information on different species of sea turtle (includes quizzes at the bottom of the Sea Turtle Conservancy web page): <http://www.conserveturtles.org/seaturtleinformation.php?gclid=CKl8aFdA2pAodrCwJ9g>

What Do Sea Turtles Eat? <http://www.seeturtles.org/sea-turtle-diet>

Information about a human’s potential relationship with the reef – Canisius Ambassadors for Conservation: <http://www.conservenature.org/learn_about_wildlife/great_barrier_reef/humans_and_the_reef.htm>

Great Barrier Reef Outlook Report 2014

Access the report at: <http://elibrary.gbrmpa.gov.au/jspui/handle/11017/2855>.

Useful information for this lesson can be found on:

Page 29 – 30: current condition and trends – marine turtles

Other resources

Books, internet, posters, fact sheets for student research.

Printable resources

*Resource 2 – Word bank*

*Resource 3 – Student reflections*

Engage

Explore

Explain

Elaborate

Evaluate

**Lesson 5:** What is the life cycle of a marine turtle?

**Duration:** 50 minutes

**Lesson objectives**Students will:

identify stages of the life cycle for a marine turtle and complete a life cycle diagram

identify and describe threats to marine turtle survival at different stages of their life cycle.

Suggested learning sequence

**Introduction** - Footage of life cycles

1. Discuss life cycles with students for example, humans and other animals. You could show a diagram of a human life cycle and ask students to identify what stage they are at in the life cycle. What stage are their parents, grandparents, brothers or sisters at?
2. Have students identify different stages of chosen life cycles. For example, using pictures, the internet or books.
3. View YouTube clips of a marine turtle’s life cycle and ask students to take notes. In their notes, students should try to identify the stages of the life cycle and what species of marine turtles are in the clips. They should use their scientific knowledge from previous lessons to identify different species.
4. Ask students to share their notes. Write down notes on a wall chart for reflection in the next activity.

**Activity** – Creating life cycle diagrams

1. From the information gathered, as a class, discuss the life cycle of a marine turtle. Try to come up with a diagram to show the life cycle. If students need more information, have an image ready to show them (many are available off the internet).
2. Once the class has come up with a labelled diagram, discuss each aspect of a turtle’s life and identify the threats marine turtles face in each part of their life. Use the following questions as a guide:

When they first hatch and need to get down to the ocean, what might stop them from reaching the ocean?

If they do reach the ocean, what might stop them from growing up?

If they do grow up, what might stop them from getting back to the beach to breed?

If they do lay eggs, what might stop the eggs from hatching?

1. At each phase in the life cycle diagram, write down the students’ thoughts on what threats they think the marine turtles face.
2. Discuss with students how they think these threats affect the turtle population.
3. Ask students to draw a copy of a turtle’s life cycle in their science book or science journal.
4. Add words to the word wall. (See *Resource 2 – Word bank* for examples of vocabulary).
5. Students add their learning and reflections to their science journal. (See *Resource 3 – Student reflections* for examples of sentence starters you can use to guide student reflections).

### Opportunities to monitor student learning

**Formative assessment opportunities:**

Use students' participation in research and discussion to assess their developing knowledge of life cycles and how animals and humans interact in different ways.

Resources

Useful web links

YouTube clips or video of the marine Turtle Life Cycle e.g. WWF-Australia video clip at:   
<http://www.youtube.com/watch?v=-Rdnd3iZw2g>

**Hint:** Access and pre-load you tube clips before the lesson so that you can play them immediately for students when required.

See examples of images of marine turtle life cycles at the base of the web page:   
<http://www.gbrmpa.gov.au/about-the-reef/animals/marine-turtles>

Great Barrier Reef Outlook Report 2014

Access the report at: <http://elibrary.gbrmpa.gov.au/jspui/handle/11017/2855>

Useful information for this lesson can be found on:

Page 29 – 30: current condition and trends – marine turtles

Printable resources

*Resource 2 – Word bank*

*Resource 3 – Student reflections*

Engage

Explore

Explain

Elaborate

Evaluate

**Lessons 6 and 7:** Why are marine turtles found on the   
 Great Barrier Reef threatened?

**Duration:** 1 hour 40 minutes

**Lesson objectives**Students will:

understand how temperature change can threaten marine turtle survival

investigate and describe the key threats to marine turtle survival on the Great Barrier Reef.

Suggested learning sequence

**Introduction –** Reef Beat poster

1. Read Poster 1 of the Reef Beat 2009 - Climate Change and the Reef and Poster 7 – Sea Turtles (Climate Change – a cold blooded killer and Gender Bender).
2. Ask students to comment on the information or if they need certain words or information clarified.
3. Ask students to reflect on the life cycle chart from the previous lesson. Discuss with students –

How does the information in the Gender Bender paragraph relate to the life cycle?

Where are the warmer and cooler sections of the nest located?

Why would a nest with very high temperature be at risk of failure?

1. Read the next section of Poster 7– Australia’s treasured marine turtles.
2. Ask students to comment on the information or if they need certain words or information clarified.
3. Read the last section of Poster 7 – Why are all turtle species on the Great Barrier Reef threatened?
4. Ask students to define what endangered and extinct means. With students, create a definition of each word and display this in the classroom.
5. Discuss with students if they know of any other animals that are endangered or extinct. Do they know how the animals became extinct or why they are endangered?

**Activity –** Endangered species

1. Explain to students that they are going to investigate what is making marine turtles endangered. Using each of the threats outlined on the Reef Beat Poster 7, they are going to research to find more information.
2. Split the class into 10 groups. Each group chooses one threat from the list on the Reef Beat Poster 7:

Climate change

Coastal development and habitat loss

Hunting and collecting

Fishing activities

Declining water quality

Boat strikes

Pollution and marine debris

Marine dredging and construction

Feral animals destroying nests and eating eggs

Disease

1. Have books, internet, 2009 Reef Beat Posters and fact sheets available for each group to do their research.
2. When each group has found some answers, each group shares their answers with the class. Answers do not need to be long, just a few sentences to explain briefly what the threat is. Some students may even be able to draw on current knowledge to create definitions.
3. Create a class retrieval chart with each topic as a heading and put the information underneath. Students may use this information in their final assessment piece.
4. If a group finishes early, they could choose another topic to research to add more information during sharing time.
5. Ask students to comment on whether the threats are mainly natural or man- made? Do they think something can be done to help the marine turtles increase their population?
6. Add new words to the word wall. (See *Resource 2 – Word bank* for examples of vocabulary).
7. Students add their learning and reflection to their science journal. (See *Resource 3 – Student reflections* for examples of sentence starters you can use to guide student reflections).

Citizen Science participation

Students can report marine strandings (alive or dead) to the hotline number **1300 ANIMAL.** This call will be directed to the RSPCA and the operator will ask for the location and condition of the animal so that help can be obtained.

Join a local turtle watch group or assist in turtle research e.g. at the Mon Repos Turtle centre: <http://www.nprsr.qld.gov.au/parks/mon-repos/turtle-centre.html>

Opportunities to monitor student learning

**Formative assessment opportunities:**

Observe students' ability to interpret information and apply their knowledge to the class discussion.

Use student research to assess their developing knowledge of how living things depend on each other and the environment to survive and how science knowledge can be used to assess human impacts on the living things.

Resources

Useful web links

Reef Beat 2009 Climate Change and the Reef (Poster 1) and Sea Turtles (Poster 7) (<http://www.gbrmpa.gov.au> ).

ABC Catalyst episode: Plastic oceans  
<http://www.abc.net.au/catalyst/stories/3583576.htm>

Australian Marine Debris Initiative: <http://www.tangaroablue.org/>

Eco Barge Clean Seas Inc. Marine debris information: <http://www.ecobargecleanseas.org.au/>

Coastal development and the effect of artificial lighting on turtle nesting and hatchling survival:  
<http://www.nprsr.qld.gov.au/parks/mon-repos/cut-the-glow.html>

Great Barrier Reef Outlook Report 2014

Access the report at: <http://elibrary.gbrmpa.gov.au/jspui/handle/11017/2855>

Useful information for this lesson can be found on:

Page 29 – 30: current condition and trends – marine turtles

Printable resources

*Resource 2 – Word bank*

*Resource 3 – Student reflections*

Other resources

Books, fact sheets, posters, Internet access for research.

Engage

Explore

Explain

Elaborate

Evaluate

**Lesson 8:** How can bycatch affect marine turtle populations?

**Duration:** 50 minutes

**Lesson objectives**Students will:

conduct an experiment into bycatch

explain how bycatch can affect marine turtle populations.

Suggested learning sequence

**Introduction** – turtles in nets

1. Find images on the internet or in books of marine turtles caught in fishing nets and ghost nets.
2. Discuss with students why this is a threat to turtle populations.
3. Explain to students they are going to do their own experiment to see how marine turtles get caught in nets.

**Activity** – Bycatch investigation

1. Define the word "bycatch" for students. Bycatch is when any species of animal caught in fishing nets is not the targeted species. A trawler might be trawling for prawns, but they will also catch marine turtles, sharks, manta rays, stingrays and all sorts of other marine animals. They are all bycatch as the trawler only wanted to catch prawns.
2. Run through the procedure in *Resource 4 – Procedural Text - Bycatch Experiment*.Discuss what the experiment is about and give a demonstration.
3. Students complete the experiment in groups, recording results and answering the questions in *Resource 4 – Procedural Text - Bycatch Experiment*.
4. Discuss the results with students and conclude how the use of fishing nets affects turtle populations.
5. Ask students if they can think of a way to stop marine turtles from getting caught in fishing nets.
6. Show students video footage of a Turtle Exclusion Device (TED). Ask students to explain how the device works.
7. Discuss with students the impact the TED will have on turtle populations.
8. Add new words to the word wall. (See *Resource 2 – Word bank* for examples of vocabulary).
9. Students add their learning and reflection to their science journal. (See *Resource 3 – Student reflections* for examples of sentence starters you can use to guide student reflections).

Extension activity

Have students create their own TED, repeat the bycatch experiment and gather results. Students can compare their results to the results of their initial trawling experiment to see if they have made a difference to marine turtles becoming bycatch.

Opportunities to monitor student learning

**Formative assessment opportunities:**

Discussions can be used to assess students’ ability to use science knowledge to draw conclusions about how humans can affect the living things.

Resources

Useful web links

Footage or images of marine turtles caught in fishing nets. YouTube and Arkive (<http://www.arkive.org>) have clips of marine turtles caught in nets.

Footage/images of a Turtle Exclusion Device (TED). YouTube has clips of TEDs.

**Hint:** Access and pre-load YouTube and other video clips before the lesson so you can play them immediately for students when required.

Great Barrier Reef Outlook Report 2014

Access the report at: <http://elibrary.gbrmpa.gov.au/jspui/handle/11017/2855>

Useful information for this lesson can be found on:

Page 178: impacts of fishing

Printable resources

*Resource 2 – Word bank*

*Resource 3 – Student reflections*

*Resource 4 – Procedural Text – bycatch experiment*

Other resources

Equipment for experiment, see equipment list - *Resource 4*

Engage

Explore

Explain

Elaborate

Evaluate

**Lessons 9 and 10:** What can we do to conserve marine   
 turtles and their habitats?

**Duration:** 1 hour 40 minutes

**Lesson objectives**Students will:

understand the short and longer term effects of threats to marine turtle populations by completing cause-and-effect charts

identify and explain potential solutions to threats to marine turtles including actions that can be taken by humans.

Suggested learning sequence

**Introduction –** footage of threats to turtles

1. View the two YouTube clips *The Animals Save the Planet – Romancing the Bag* and *The Animals Save the Planet – Supermarket Bags*. (See **‘useful web links’** for the links).
2. You could also use images of marine turtles eating plastic bags, or images of plastic that has been found in marine turtles’ stomachs. These are available on various internet sites.
3. Discuss with students what message the animals are trying to teach the audience. Ask students if they understand why plastic bags in the ocean are such a big threat to marine turtles. You could also show YouTube clips of marine turtles eating jellyfish to help make students make the connection.
4. Ask students if they can recall other threats to marine turtles.

**Activity –** Cause-and-effect

1. Play the Turtle Danger Game – *Resource 5 – Turtle Danger Game.*
2. When returning to the classroom, ask students to complete a cause-and-effect chart outlining a threat to marine turtles *(Resource 6 – Cause-and-effect chart 1 and 2).*

Cause-and-effect charts can be done in many different ways (see *Resource 5* for some examples). Adjust these to the needs of the class.

1. If students have not done a cause-and-effect chart before, complete one as a class together. Then ask students to complete one on their own.
2. Link these cause-and-effect charts to why marine turtles are an endangered species. Ask students to consider this when they are completing their chart.
3. When students have completed their own cause-and-effect chart, ask them to identify a solution to the cause they identified including actions that can be taken by humans. Ask students to explain their solution, giving scientific reasons.
4. Ask students to share their charts and solutions with reasons and discuss these ideas as a class. Display charts around the classroom.
5. Add new words to the word wall. (See *Resource 2 – Word bank* for examples of vocabulary).
6. Students can add their learning and reflection to their science journal. (See *Resource 3 – Student reflections* for examples of sentence starters you can use to guide student reflections).

Opportunities to monitor student learning

**Formative assessment opportunities:**

Use cause-and-effect charts to assess students’ knowledge of how animals interact in their environment and how science knowledge can be used to draw conclusions and predict how humans affect the environment.

Resources

Useful web links

Images of marine turtles eating plastic bags for example:   
*No Bag Thanks* - <http://www.abc.net.au/science/features/bags/>

ABC News: Third of dead turtles killed by marine rubbish:  
<http://www.abc.net.au/news/2011-06-07/third-of-dead-turtles-killed-by-marine-rubbish/2749262>

YouTube clips –

The Animals Save the Planet - Romancing the Bag <http://www.youtube.com/watch?v=VzsQwwnqSGo>

The Animals Save the Planet - Supermarket Bags   
<http://www.youtube.com/watch?v=gBZdUA8zxJ0>

**Hint:** Access and pre-load you tube clips before the lesson so that you can play them immediately for students when required.

Great Barrier Reef Outlook Report 2014

Access the report at: <http://elibrary.gbrmpa.gov.au/jspui/handle/11017/2855>

Useful information for this lesson can be found on:

Page 16: impacts of past activities (graphic)

Page 172: pesticides and pollutants

Page 175: marine debris, land-based run-off.

Printable resources

*Resource 2 – Word bank*

*Resource 3 – Student reflections*

*Resource 5 – Turtle Danger Game*

*Resource 6 – Cause-and-Effect Chart 1 and 2*

Engage

Explore

Explain

Elaborate

Evaluate

**Lessons 11 - 13:** Reflections andassessment task

**Duration:** 2 hours 30 minutes –  
3 hours

Suggested learning sequence

**Introduction** – Reflections and task introduction

1. As a class, reflect and record what has been learned in the original TWLH chart.
2. Explain to the students that they are going to begin their final assessment project. Present them with the task sheet and the Guide for making judgements *(Resource 7 – Student task sheet and Guide for making judgements).*
3. Read through the Task Sheet and Guide for making judgements together and identify all the requirements of the task.
4. Discuss available resources (identify all the work done throughout the unit that will help the students complete the task).
5. Set out a plan for time management and resource management.

**Activity** – Prepare reports

1. Allow students time to research and prepare their reports.
2. Students may need scaffolding for different parts of the report writing; this will depend on the need of the class.
3. How much time students are able to spend preparing their reports will depend on the needs of the class and the length of time available in the school term.

### Opportunities to monitor student learning

**Summative assessment opportunities:**

Student reports can be used to assess their knowledge and understanding of science understandings, science as a human endeavour and science inquiry skills.

Resources

Printable resources

*Resource 7 – Student Task Sheet and Guide for making judgements*

Other resources

*Class retrieval charts*

*Factsheets, posters*

*Access to the internet*

Resources

Resource 1 – TWLH chart

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| T  What we THINK we know about marine turtles | W  What we WANT to learn about marine turtles | L  What we LEARNED about marine turtles | H  HOW we know (scientific understandings) |
|  |  |  |  |

Resource 2 – Word bank

| Turtle | Marine | Reef | Swim |
| --- | --- | --- | --- |
| Diet | Shell | Dangers | Species |
| Prey | Ocean | Threats | Risk |
| Extinct | Natural | Habitat | Seabed |
| Beach | Coral | Shrimp | Cleaning stations |
| Nesting | Survival | Rubbish/debris | Coastal |
| Symbiotic relationship | Predators | Hatchlings | Conservation |
| Man-made | Behaviours | Features | Threatened |
| Seagrass | Relationships | Endangered | Life cycle |
| Population | Turtle Exclusion Device (TED) | Pollution | Bycatch |
| Feral animals | Dredging | Trawling | Green fat |

Resource 3 – Student reflections

Consider displaying sentence starters or questions such as below in the classroom. Alternatively they could be turned into laminated thought bubbles that are passed to students directly. Students could choose two or three thoughts to complete in their journal then share their responses with the class.

| End of lesson reflections | | | Guiding students to reflect on their own thinking | | |
| --- | --- | --- | --- | --- | --- |
| Today I discovered….  I want to know more about…  Something new I found out was…  I am excited about…  Something I am finding interesting is…  The most challenging thing was… | | I am most proud of….  I feel confident about …  I am enjoying ……because …  I am confused by…  Today I asked…  A question I have is… | I am starting to think differently about…  I got stuck when …..and I got back on track by …  I figured out that …..  I solved a problem by …  I first thought……but then I realised that …. | This idea is useful for….  Some things I didn’t understand are…To help me understand better I will….  Before I didn’t know ….Now I realise/know….. | |
| Reflecting on stewardship and taking action | | | End of unit reflections – *where I was and where I am now* | | |
| This information can make a difference by…  It is important to know about this because…  Something I will now do as a result of my learning is …  Something I want to do next is…. | Something I will now help others understand is …  I can make a difference by …  An action I/we can take is…  If we don’t …… the consequences could be …  It is important to …because…. | | 1. I used to think… 2. Now I know… 3. This causes me to (re)think/ wonder… | | * **Revisit** your first journal entry, what do you understand now that you didn’t back then? * **Review** your work so far. What has been the biggest discovery/learning/challenge? * **Reconsider** your initial ideas. Have your ideas changed? If so how? |
| 1. I didn’t know how to… 2. Now I can… 3. In the future I will… | |

Resource 4 – Procedural Text – Bycatch Experiment

| Aim |
| --- |
| To find out the effects of bycatch on turtle populations |
| Equipment per group |
| * 1 cup * 1 net e.g. small aquarium net, sieve, tea strainer or homemade simple net using fine mesh or even dishcloth material. * Small objects such as rice grains, dried kidney beans, dried peas (these will be the prawns the trawler is trying to catch). * Larger objects such as dried lima beans, small plastic toys, pen lids (these will be the marine turtles). * Large long container with water in it e.g. a tidy tray, aquarium, plastic storage container (this is the ocean). This container should be deep enough and long enough for you to trawl your net through the water to catch your prawns. |
| Procedure |
| 1. Put your prawns into the ocean (this depends on the size of your tray e.g. three cups full). 2. Decide on how many marine turtles you are going to put into your ocean. Record this number in the results table (see \* for where to add this value). 3. Put your marine turtles into your ocean. 4. Use your net to do the first trawl for prawns. This is trawl 1. Make one pass through the ocean with your net. You should close your eyes when you do this to make the test fair. 5. Record how many prawns and marine turtles you caught in your net. 6. Record the number of marine turtles remaining in the ocean. 7. Do not return your prawns or marine turtles to the water. 8. Repeat this process and continue to trawl for prawns (trawl 2 – 5). Each time, record how many marine turtles and prawns you catch and the number of marine turtles remaining in the ocean. 9. When you have trawled five times, complete the questions provided. |

### Results table

| Trawl Number | Current turtle population (before you trawl) | Number of prawns  caught in the net | Number of marine turtles caught in the net | Number of marine turtles remaining in ocean |
| --- | --- | --- | --- | --- |
| 1 | \* |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |

### Questions:

| 1. What does ‘bycatch’ mean? |
| --- |
|  |
| 2. Explain how marine turtles and other marine animals are caught as bycatch |
|  |

| 3. How can repeated trawling for prawns affect turtle populations? |
| --- |
|  |
| 4. How could trawlers change their nets to stop marine turtles becoming bycatch? Describe or draw a design for a net that the trawler could use to still catch prawns but not catch marine turtles. |
|  |

Resource 5 – Turtle Danger Game

**Turtle Danger Game** – The aim of the game is to assist students in learning that marine turtles face many pressures to survive.

| You will need: |
| --- |
| * a large area to run around * markers to identify the beach, the sea, a safety strip on the beach side and a safety strip on the seaside (see diagram below) * a whistle. |
| How to play |
| * Discuss with students what dangers marine turtles face as they hatch from their eggs and try to get to the sea. Identify five different dangers e.g. wild pigs, people, birds, crabs, cars, lights, rubbish etc. * Choose five students to be one of the dangers. The rest of the students are hatchlings. * The hatchlings start on the safety strip on the beach side. When the whistle blows, they have to get to the safety strip on the other side of the ocean without getting caught by a danger. If tagged, the hatchling has to sit down out of the game. * Turtle Transit Game imageHave a second discussion with the students to identify dangers the marine turtles face in the ocean as they are growing up. Identify five different dangers e.g. sharks, fishing nets, boat propellers, crocodiles or oil pollution. * Now that the marine turtles are mature, they need to get back to the beach safely to lay eggs and start the cycle again. When the whistle blows, the mature marine turtles need to get back to the safety strip on the beach without getting tagged by one of the dangers. If tagged, the mature turtle has to sit down out of the game. * Discuss how many marine turtles survived out of how many were originally hatchlings. * The activity could be adapted by allowing more dangers to see if this affects how many hatchlings or mature marine turtles are caught. This could lead into a discussion about turtle populations on the Great Barrier Reef. |

Resource 6 – Cause-and-effect chart 1

| CAUSE |
| --- |
| What was the event? Who or what caused it? |

| IMMEDIATE EFFECT |
| --- |
| What might happen because of the event? What could be the immediate effect? |

| SHORT AND LONG-TERM EFFECTS |
| --- |
| What might happen next? What could be the short and/or long-term effects? |

Resource 6 – Cause-and-effect chart 2

**SHORT AND LONG TERM EFFECTS**

* What might happen next?
* What could be the short and/or long-term effects?

**IMMEDIATE EFFECT**

* What might happen because of the event?
* What could be the immediate effect?

**CAUSE**

* What was the event?
* Who or what caused it?

Resource 7 – Student Task Sheet and Guide for making judgements

### Endangered species – Year 4 information report

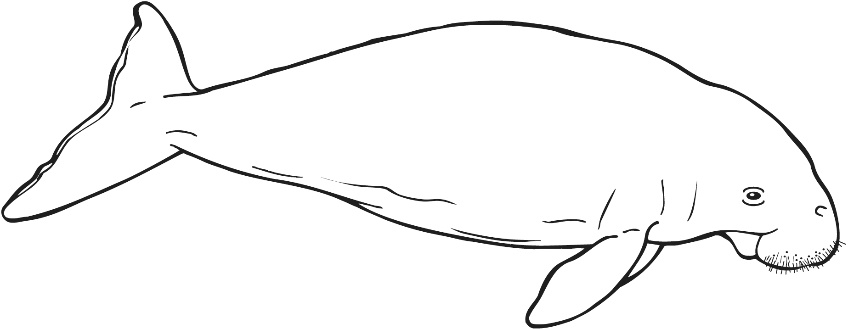
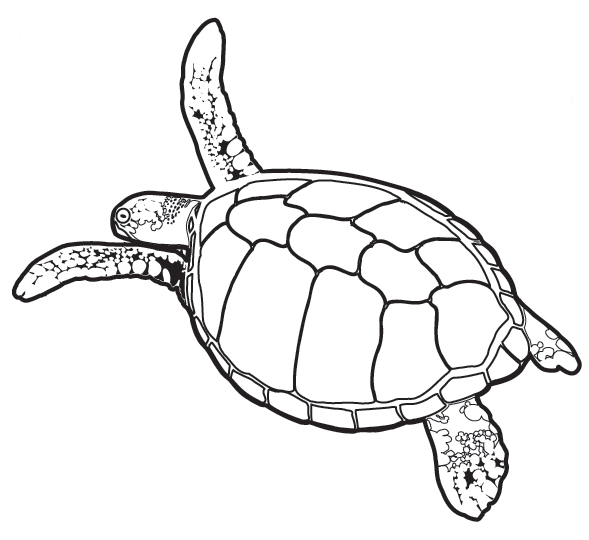
### Your task:

You will write an information report on an endangered marine species. You can choose which endangered species you would like to research and write about.

### In your report you will need to include:

1. an introduction to the animal and the key stages of its life cycle
2. a description of the animal’s survival needs. Describe relationships between the animal and other living things the animal and its environment, and explain how each relationship assists or hinders the animal’s survival
3. a cause-and-effect chart showing a threat to the animal and the immediate and gradual effects of this threat
4. suggestions of human actions that can be taken to help the animal survive, giving scientific reasons for each suggestion
5. a conclusion summarising the main message of why people need to look after the endangered animal and the habitat it lives in.

You can include graphs and diagrams showing the decline of the population or pictures of the endangered species.

|  |  |
| --- | --- |
| Year 4 Science: Endangered species — information report | Name: |

**Purpose:** To sequence the key life cycle stages of an endangered species and describe relationships with other living things and the environment that assist or hinder its survival. To describe human actions that can help the species survive with scientific reasons.

Explains how relationships with other living things and the [environment](http://www.australiancurriculum.edu.au/glossary/popup?a=S&t=Environment) assist or hinder its survival

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Science Understanding | | Science as a Human Endeavour | | Science Inquiry Skills | |  |
| Biological sciences | | Use and influence of science | | Communicating | |
| Sequences the key life cycle stages of an endangered species and describes how its relationships with other living things and the environment assist or hinder its survival | | Describeshuman actions that can help the endangered species survive and the related scientific reasons | | Completes a simple report with diagrams to represent and communicate ideas and findings | |  |
|  | Interconnects relationships to explain how they assist or hinder its survival |  | Explain the scientific reasons behind the human actions that can help the endangered species survive |  | Coherently represents and communicates ideas and findings | A |
| * Explains how relationships with other living things and the environment assist or hinder its survival | * Describes the scientific reasons behind the human actions that can help the endangered species survive | * Uses relevant scientific language throughout | B |
| * Sequences the key life cycle stages of an endangered species and describes relationships with other living things and the environment that assist or hinder its survival | * Describes human actions that can help the endangered species survive and identify the related scientific reasons | * Completes a simple report with diagrams to represent and communicate ideas and findings | C |
| * Partially sequences stages in the life cycle of an endangered species and identifies relationships with other living things and the environment | * Identifies a human action that can help the endangered species survive | * Partially completes a simple report using everyday language | D |
| * Identifies stages in the life cycle of an endangered species | * Identifies a human action in a familiar setting | * Records some information about an endangered species | E |
| Teacher feedback: | | | | | | |