

# *Animal Adaptations*

## **Year 5 Australian Science Curriculum Focus**

Recognising questions that can be investigated scientifically and investigating them

Students investigate how animals adapt their behaviour and structure to suit their Australian environment.

### **Students develop an understanding of:**

- Behavioural adaptations in animals
- Structural adaptations in animals
- How native animals have adapted to introduced species
- How native animals have adapted to urban development

### **Inquiry questions for the unit:**

- What are adaptations?
- How do animals adapt to the Australian environment?
- What happens when species are introduced?
- What happens when development spreads?
- What could be done to help native species survive?





# Year 5 Unit Overview — Animal Adaptations

School name	Unit title	Duration of unit
	Animal Adaptations	Approximately five weeks (teachers could extend this unit out to a term long unit by allowing students more time to investigate adaptations of specific animals to cement learning and also investigate the adaptations of plants.)

Unit outline
<p>Year 5 Australian Science Curriculum Focus – Recognising questions that can be investigated scientifically and investigating them.</p> <p>Students investigate how animals adapt their behaviour and structure to suit their Australian environment.</p> <p>Students develop an understanding of:</p> <ul style="list-style-type: none"> <li>• Behavioural adaptations in animals</li> <li>• Structural adaptations in animals</li> <li>• How native animals have adapted to introduced species</li> <li>• How native animals have adapted to urban development</li> </ul> <p>Inquiry questions for the unit:</p> <ul style="list-style-type: none"> <li>• What are adaptations?</li> <li>• How do animals adapt to the Australian environment?</li> <li>• What happens when species are introduced?</li> <li>• What happens when development spreads?</li> <li>• What could be done to help native species survive?</li> </ul>

**Year 5 Level Description** – Over Years 3 to 6, students develop their understanding of a range of systems operating at different time and geographic scales. In Year 5, students are introduced to cause and effect relationships that relate to form and function through an exploration of adaptations of living things. They explore observable phenomena associated with light and begin to appreciate that phenomena have sets of characteristic behaviours. They broaden their classification of matter to include gases and begin to see how matter structures the world around them. Students consider Earth as a component within a solar system and use models for investigating systems at astronomical scales. Students begin to identify stable and dynamic aspects of systems, and learn how to look for patterns and relationships between components of systems. They develop explanations for the patterns they observe.

**Year 5 Achievement Standard** – By the end of Year 5 students pose questions relating to investigations, predict what might happen when things are changed, and assist in the planning of methods to test these predictions. When carrying out investigations they use equipment in a way that improves the accuracy of their measurements and observations. They describe patterns in their results, report on their findings and reflect on the methods that they have used.

Students describe how developments in science have improved our understanding of the world and have enabled people to make decisions based on scientific knowledge. They describe the place of Earth in space. They identify cause-and-effect relationships in the natural world and describe physical differences between solids, liquids and gases.

## Teacher Notes:

### • Unit overview

The Great Barrier Reef Marine Park Authority (GBRMPA) Animal Adaptations Investigations Teaching Unit is a science based Year 5 unit of work. The content descriptors for this unit are from the 2011 Australian Science Curriculum ([www.australiancurriculum.edu.au](http://www.australiancurriculum.edu.au)). Following the inquiry based 5Es approach to teaching science, the unit is based on the Australian Curriculum, Assessment and Reporting Authority (ACARA) expectations of a minimum of 1-2 hours per week of science lessons for Year 5 students. Each lesson is of approximately 45 minutes duration, with some lessons requiring more time to allow further depth of study or time for excursions. The nature of science investigations is to follow the line of student inquiry to promote and encourage students to think like scientists. Teachers may find that students will need, or want, to complete investigations other than those suggested in the teaching strategies outlined in this unit. Students are to be encouraged to follow their own line of inquiry, and in the case where students do this, the teaching strategies and resources outlined in this unit may be used as a guide to supplement the student directed investigations. The overall unit or the individual lessons could be extended or shortened to cater for individual classes as deemed necessary by the class teacher. Teachers will need to allow time to prepare for the lessons prior to teaching each lesson.

### • Aim of the unit

The lessons are structured to build students' knowledge of how native Australian animals adapt to survive in the Australian environment. This knowledge is important for students to make links between the needs of animals to survive in the Australian environment and how people can impact both those environments and the survival of the animals. Understanding how animals adapt will enable students to further understand how the ecosystem of the Great Barrier Reef functions (for more information on animal adaptations and the Great Barrier Reef see below in 'Adaptations background information' and also [www.gbrmpa.gov.au](http://www.gbrmpa.gov.au)). Teaching students about adaptations will build their environmental knowledge and encourage their understanding of sustainability and stewardship. The main premise of this unit is coastal development, which is one of the Key Focus Areas of the *Great Barrier Reef Outlook Report 2009* (see [www.gbrmpa.gov.au](http://www.gbrmpa.gov.au) for more information on the *Outlook Report 2009*). GBRMPA encourages teachers to follow the main aim of Reef Guardianship – to be stewards of the environment.

### • Adaptations background information -

#### ○ What are adaptations?

An adaptation is a characteristic of an organism, which helps it to be well suited to the places where it lives and the kind of life it leads. Adaptations are linked to the environmental conditions an animal encounters.

#### ○ How do animals adapt to their environments?

Animals adapt to their environments in different ways. Two broad categories of adaptation are:






- **Structural** – Structure is the internal and external arrangement and types of body parts. For example: the parrot fish has very strong jaws and very large teeth that are used to scratch at coral to scrape off the algae; the barracuda has a very long thin body that is excellent for short bursts of speed when chasing prey; the colour of animals is used for camouflage – a tiger's stripes to blend in with vegetation, a reef fish's bright colours to blend in with the coral; the giraffe has a very long neck to reach high up into the trees for food; a dugong has nostrils near the front of its head enabling it to breathe easily with the majority of its body still under water.
- **Behavioural** – Behaviour is what the animal does in response to certain stimulus. All animals do things, whether they are sleeping, flying, swimming or sitting perfectly still. For example: female turtles always return to the same beach to lay their eggs and always lay their eggs above the high tide mark; fish form 'schools' to avoid predators; whales migrate to find the most suitable places for feeding and breeding; emperor penguins huddle together in the cold to keep warm; some birds in Queensland have learnt to tip cane toads over and eat their flesh from the underside so as to avoid the toad's poisonous glands behind its eyes.

#### ○ What happens when animals don't adapt?

Sometimes native animals find themselves in an environment to which they cannot adapt. This is mainly due to such drastic changes in their environment over which they have no control. This can lead to the devastating consequence of an animal becoming endangered or even extinct. Urban development can change habitats which leaves animals struggling to survive; development can also completely destroy habitats leaving the animals with no place to live. Introducing exotic species to native environments can affect the food webs within an ecosystem, such as the introduction of Tilapia. Tilapias are an introduced species of fish that compete with native fish for food and stir up the muddy bottom of creeks which reduces the amount of light available for aquatic plants to grow. They change the way an ecosystem would naturally operate which means native species do not have as much chance of survival.

## Unit Lessons

<b>Engage</b>	Lesson 1: What are adaptations?
<b>Explore</b>	Lesson 2: Bird Beak Experiment Lesson 3: Fish Adaptations
<b>Explain</b>	Lesson 4: Physical Adaptations Lesson 5: Behavioural Adaptations
<b>Elaborate</b>	Lesson 6: Introduced Species Lesson 7: Adapting to Development
<b>Evaluate</b>	Lesson 11: Project Preparation Lesson 12: Project Preparation Lesson 13: Project Preparation

Identify curriculum			
Content descriptions to be taught			General capabilities and cross-curriculum priorities
Science Understandings	Science as a Human Endeavour	Science Inquiry Skills	
<b>Biological Sciences</b> <ul style="list-style-type: none"> <li>Living things have structural features and adaptations that help them to survive in their environment</li> </ul>	<b>Use and Influence of Science</b> <ul style="list-style-type: none"> <li>Scientific knowledge is used to inform personal and community decisions</li> </ul>	<b>Questioning and Predicting</b> <ul style="list-style-type: none"> <li>With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be</li> </ul> <b>Planning and Conducting</b> <ul style="list-style-type: none"> <li>With guidance, select appropriate investigations methods to answer questions or solve problems</li> <li>Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data using digital technologies as appropriate</li> <li>Use equipment and materials safely, identifying potential risks</li> </ul> <b>Processing and Analysing Data and Information</b> <ul style="list-style-type: none"> <li>Construct and use a range of representations including tables and graphs to represent and describe observations, patterns or relationships in data using digital technologies as appropriate</li> <li>Compare data with predictions and use as evidence in developing explanations</li> </ul> <b>Evaluating</b> <ul style="list-style-type: none"> <li>Suggest improvements to the methods used to investigate a question or solve a problem</li> </ul> <b>Communicating</b> <ul style="list-style-type: none"> <li>Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts</li> </ul>	 <b>Literacy</b> <ul style="list-style-type: none"> <li>Communicate confidently in listening, reading and viewing, writing, speaking and creating print and visual materials</li> </ul>  <b>Critical and Creative Thinking</b> <ul style="list-style-type: none"> <li>Observe, question, make predictions and think creatively to solve problems during investigations</li> </ul>  <b>Ethical Behaviour</b> <ul style="list-style-type: none"> <li>Consider human impacts on the environment and other living organisms and evaluate their own and other people's actions</li> </ul>  <b>Personal and Social Competence</b> <ul style="list-style-type: none"> <li>Follow procedures and work both within a group and independently to share and discuss ideas</li> </ul>  <b>Sustainability</b> <ul style="list-style-type: none"> <li>Investigate human impacts on animals and their habitats and the role we all play in maintaining the health of the habitats for animals' survival</li> </ul>

Relevant prior curriculum	Curriculum working towards
<p>Year 4 of the Australian Science Curriculum outlines that by the end of Year 4 students pose questions about their world and predict possible outcomes from investigations. They describe how they can use science to ask questions and make predictions. They record observations and measurements and identify patterns in data, including cause-and-effect relationships. They describe situations where science understanding can influence their own and others' actions.</p> <p>Students use the properties of materials to explain how objects and materials behave. They identify changes to the observable world and suggest explanations for the motion of objects. They describe how interrelationships are essential for the survival of living things and identify major changes in the life cycle of a plant or animal.</p>	<p>In Year 6, students explore how changes can be classified in different ways. They learn about transfer and transformations of electricity, and continue to develop an understanding of energy flows through systems. They link their experiences of electric circuits as a system at one scale, to generation of electricity from a variety of sources at another scale and begin to see links between these systems. They develop a view of Earth as a dynamic system, in which changes in one aspect of the system impact on other aspects; similarly they see that the growth and survival of living things are dependent on matter and energy flows within a larger system. Students begin to see the role of variables in measuring changes and learn how to look for patterns and relationships between variables. They develop explanations for the patterns they observe, drawing on evidence.</p>
<b>Links to other learning areas</b>	
<p><b>QSA Year 5 Literacy Indicators (2009)</b></p> <p><i>Writing and Designing</i></p> <ul style="list-style-type: none"> <li>• WD5 ii. Write about a familiar subject matter for known audiences using a variety of text types and use structures such as compare-and-contrast, problem-and-solution and cause-and-effect to organise information</li> <li>• WD5 iv. Write paragraphs that maintain the pace or sense of texts and organise texts, using structures including problem-and-solution, cause-and-effect or compare-and-contrast</li> <li>• WD5 x. Select words that add precision, including literary language such as metaphor or simile and some technical terms</li> </ul>	

Assessment		Make judgements
Describe the assessment	Assessment date	
<p>Summative Assessment</p> <p>Students will provide the design for an animal (a drawing or a 3D model) that suits a specified environment along with a report explaining the animal's structural and behavioural adaptations.</p> <p>The animal design (drawing or 3D model) will include:</p> <ul style="list-style-type: none"> <li>all external features the animal needs to survive in the specified environment</li> </ul> <p>The report or persuasive text will include:</p> <ul style="list-style-type: none"> <li>an introduction to the animal - where the animal lives and what it needs to survive (what it eats, where it finds water, where it shelters/hides from predators, where it sleeps/nests)</li> <li>an explanation of the animal's structural adaptations and how they help it to survive in its environment</li> <li>an explanation of the animal's behavioural adaptations and how they help it to survive in its environment</li> <li>a summary outlining how the community living in and around the animal's environment needs to consider their actions to protect the animal and its habitat.</li> </ul>	<p>The summative assessment piece is designed to be produced and presented during the Evaluate stage of the unit when students will have gathered all the knowledge required to successfully address the criteria. This date is to be determined by the class teacher.</p>	<p>Student task sheet, links to QSA Literacy Indicators (2009) and guide to making judgements can be found in the resource section of the unit.</p>



## Useful Websites

Reef Beat 2012 educational series *The Inshore Great Barrier Reef – Bursting with Biodiversity* [www.gbrmpa.gov.au](http://www.gbrmpa.gov.au)

Wet Tropics Management Authority  
<http://www.wettropics.gov.au/-cassowaries>

Queensland Wetlands Program  
[www.wetlandinfo.derm.qld.gov.au](http://www.wetlandinfo.derm.qld.gov.au)

Adaptations Webquest (has good websites and links to activities)  
[chalk.richmond.edu/education/projects/webquests/adaptations/index.html](http://chalk.richmond.edu/education/projects/webquests/adaptations/index.html)

Dirtmeister's Science Reporters Animal Adaptations  
<http://teacher.scholastic.com/dirtrep/animal/invest.htm>

Ecokids Animal Adaptations Game  
[http://www.ecokidsonline.com/pub/eco\\_info/topics/climate/adaptations/index.cfm](http://www.ecokidsonline.com/pub/eco_info/topics/climate/adaptations/index.cfm)

How Animals Meet Their Needs  
<http://www.harcourtschool.com/activity/animalneeds/>

Animal Adaptations at pppst.com (good power points and games to explain adaptations)  
<http://animals.pppst.com/adaptations.html>

Animal and plant adaptation and behaviours:  
[www.bbc.co.uk/nature/adaptations](http://www.bbc.co.uk/nature/adaptations)

Reef Videos  
[www.reefvid.org](http://www.reefvid.org)

Dreamtime Stories – Tiddalik the Frog and other Dreamtime Stories  
[www.dreamtime.auz.net](http://www.dreamtime.auz.net)

Teacher Vision (Adaptation experiments and ideas)  
<http://www.teachervision.fen.com/ecological-adaptation/animals/6989.html>

The Conservation Report (good pictures of camouflage examples)  
<http://conservationreport.com/tag/can-you-see-me-animal-camouflage/>

Websites to build fish online to suit adapted to certain environments  
[http://sea.sheddaquarium.org/sea/interactive\\_module.asp?id=7#](http://sea.sheddaquarium.org/sea/interactive_module.asp?id=7#)  
<http://sv.berkeley.edu/showcase/flash/fish.html>

## Useful Books

*Mister Seahorse*, Eric Carle

*Wet Tropics Management Authority Cassowary Activities* <http://www.wettropics.gov.au/site/user-assets/docs/cassbook.pdf>

*The Snail and the Whale*, Julia Donaldson

*Uno's Garden*, Graeme Base

*Amazing Facts about Australian Marine Life*, Tony Ayling and Steve Parish

*The Cat on the Island*, Gary Crew and Gillian Warden (with teacher notes  
<http://www.harpercollins.com/harperimages/ommoverride/Cat%20on%20the%20Island%20Brochure.pdf>).

*The Evolution of Australia 110 Million Years of Change*, Australian Museum

*The Frog Who Wouldn't Laugh*, Cecilia Egan

*Tiddalick: the Frog Who Caused a Flood*, Robert Roennfeldt

Teaching and learning		Supportive learning environment	
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<p><b>ENGAGE</b> - To capture interest and discover what we think we know</p> <p><b>Lesson 1</b> – What are adaptations?</p> <p><b>Suggested Time</b> – 45 minutes</p> <p><b>Introduction</b> – Observe Animals</p> <ul style="list-style-type: none"> <li>Take students on a quick walk around the school to explain how different animals are suited to survive in their natural environments. Give examples – a fish is suited to the ocean because it can breathe through its gills and has a body suited to swimming; humans are suited to land environments because we have lungs to breathe air. Students are given an opportunity to explore and find their own examples. Students may not actually see many animals around the school yard, but being outside may help them think of animals in their natural environments.</li> <li>As students give examples, introduce the term adaptation. Explain to students that animals are suited to their environments because of adaptations they have that allow them to survive in certain environments. Students then return to class and share their findings.</li> </ul> <p><b>Investigation</b> – Hot Potato</p> <ul style="list-style-type: none"> <li>Back in the classroom, divide the students into groups of three or four. Explain to the students they are going to do a Hot Potato activity. Each group starts with a large piece of paper with one question relating to adaptations on it, see question examples below. Questions need to be written onto the paper by the teacher before the activity starts. Students will have a short amount of time (1-2 minutes) to write answers to the question before rotating the papers around so that each group gets a turn at answering each question. Some questions they may not be sure about the answer, but they just write down what they think. Read out all the questions with the students first to clarify unknown words.</li> <li>Question examples for Hot Potato activity: <ul style="list-style-type: none"> <li>What are physical adaptations?</li> <li>What are behavioural adaptations?</li> <li>How do people adapt to the weather?</li> <li>Give an example of how an animal adapts to a cold environment.</li> <li>Give an example of how an animal adapts to a hot environment.</li> <li>Does your behaviour change when you are at school? How?</li> <li>Give an example of what animals need to do to be able to live on land.</li> <li>Give an example of what animals need to do to be able to live in water.</li> </ul> </li> </ul>	<p><b>Lesson 1</b></p> <p>Diagnostic assessment opportunities:</p> <ul style="list-style-type: none"> <li>observe students prior knowledge of animal adaptations.</li> </ul>	<p>Section 6 of the <i>Disability Standards for Education</i> (The Standards for Curriculum Development, Accreditation and Delivery) states that education providers, including class teachers, must take reasonable steps to ensure a course/program is designed to allow any student to participate and experience success in learning.</p> <p>The <i>Disability Standards for Education 2005</i> (Cwlth) is available from: &lt;<a href="http://www.ag.gov.au">www.ag.gov.au</a>&gt; select Human rights and anti-discrimination &gt; Disability standards for education.</p> <p><b>ESL Considerations</b></p> <p>Teachers should refer to the Learning Place (<a href="http://www.learningplace.com.au">www.learningplace.com.au</a>), 'ESL in the Classroom' for 'Break it Down, Build it Up' resources to help restructure the unit according to the ESL needs of the class.</p> <p><b>Risk Management</b></p> <p>Refer to Department of Education and Training <a href="http://www.education.qld.gov.au">www.education.qld.gov.au</a> for advice and forms</p>	<p><b>Lesson 1</b></p> <p>Large sheets of paper and marker pens for Hot Potato activity.</p>

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<ul style="list-style-type: none"> <li>When all groups have had a chance to respond to each question, choose one person from each group to present the answers to the question their group started with. Students may have questions or wish to discuss some of the answers.</li> <li>Display the questions and answers in the classroom. This could be used later on to reflect on what is true or false information and what has been learnt throughout the unit.</li> <li>Start a word wall with students to continuously add to throughout the unit. 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.</li> <li>Start a science journal for students to record their learning and reflection as they progress through the unit. The science journal could be done in a simple ruled exercise book or a scrap book, or done on a computer in a format suitable to the class. How much time students are given to write in their science journal each lesson will need to be determined by the teacher according to the needs of the students. 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.</li> </ul>		relating to risk. Management during curriculum activities and excursions.	
<p><b>EXPLORE</b> – To have shared hands-on experiences</p> <p><b>Lesson 2</b> – Bird Beak Experiment</p> <p><b>Suggested Time</b> – 45 minutes to 1 hour</p> <p><b>Introduction</b> – Birds</p> <ul style="list-style-type: none"> <li>Look at a range of pictures of birds and discuss the habitats they live in, how they get food and water, what they use for shelter and what may prevent them from surviving in their habitat.</li> </ul> <p><b>Investigation</b> – Bird Beak Experiment</p> <ul style="list-style-type: none"> <li>Explain to the students they are going to do an experiment to investigate how different beak adaptations of birds help them to find food in specific environments.</li> <li>Follow procedural text – Resource 1 – Bird Beak Experiment.</li> <li>Use the investigation planner to record the investigation and results.</li> <li>Discuss the results with students and ask students to reflect on how this affects where birds live.</li> <li>Ask students to use their knowledge of adaptations to explain how some other animals' mouths are adapted to feed in certain environments.</li> </ul>	<p><b>Lesson 2</b></p> <p>Formative assessment opportunities:</p> <ul style="list-style-type: none"> <li>- use investigation planner to assess students' science inquiry skills.</li> </ul>		<p><b>Lesson 2</b></p> <p>Pictures of different types of birds in books, on the Internet, posters, photos.</p> <p>Resource 1 – Bird Beak Experiment.</p> <p>Resource 2 – Investigation Planner.</p> <p>Resource 3 – Predict Observe Explain Poster.</p>

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<p>Teachers could start a chart of examples students give of adaptations to add to throughout the unit and for future activities.</p> <ul style="list-style-type: none"> <li>• Add new words to the word wall.</li> <li>• Students add their learning and reflections to their science journal.</li> </ul> <p><b>Lesson 3 – Fish Adaptations</b>  <b>Suggested Time</b> – 45 minutes  <b>Introduction</b> – How do fish swim?</p> <ul style="list-style-type: none"> <li>• View footage on YouTube or other Internet sites to view different fish swimming. Include footage of fast fish (sharks, barracuda), slower moving fish (sea horses, whale sharks) and examples of different body shapes (trigger fish, butterfly fish) and colours.</li> <li>• Generate a discussion about four different parts of the bodies of fish and how these help the animals to adapt in their environment, for example:             <ul style="list-style-type: none"> <li>○ Mouth shape – whale sharks have very large mouths to open and filter as much water as possible in each gulp. Sharks have very sharp teeth and large mouths to grip and rip the flesh off their prey. Parrot fish have strong beaks like teeth to scrape and bite coral to get the algae off the coral.</li> <li>○ Body shape – sharks have long streamlined bodies are built for speed to catch prey. Slower moving animals like the sea horse have a body shape that helps them blend in and hide in their environment.</li> <li>○ Tail shape – a lot of reef fish have short rounded tails for short bursts of speed to get away from predators. Larger fish like sharks and whale sharks have larger longer tails to swim long distances.</li> <li>○ Colour – brightly coloured reef fish blend in with the reef (camouflage) or bright colours can also be a warning to stay away. Some animals are more dull grey colours so they do not stand out or can be hard to see in water.</li> </ul> </li> </ul> <p><b>Investigation</b> – Creating a fish</p> <ul style="list-style-type: none"> <li>• Explain to the students they are going to draw a fish of their own design and explain their choice of adaptations.</li> <li>• Students will consider four main parts of the fish – mouth shape, body shape, tail shape and colour.</li> <li>• Have pictures for students to view to get ideas of the different types of shapes of the fish. Visit the GBRMPA website for pictures.</li> <li>• Teachers could do one fish first with the class to provide an example.</li> <li>• With their drawing students will need to write an explanation of their choice</li> </ul>	<p><b>Lesson 3</b>            Formative assessment opportunities:            - student designs and explanations can be used to assess the development of their knowledge of adaptations.</p>		<p>Equipment for experiment – see Resource 1 for a list.</p> <p><b>Lesson 3</b>            Pictures or footage of a range of different kinds of fish for discussion.</p> <p>Book: Uno's Garden, Graeme Base, to demonstrate what happens when animal features are combined.</p> <p>Materials for students to draw a fish design.</p> <p>This activity could be done online via the following websites:  <a href="http://sea.sheddaquarium.org/sea/interactive_module.asp?id=7#">http://sea.sheddaquarium.org/sea/interactive_module.asp?id=7#</a>  <a href="http://sv.berkeley.edu/showcase/flash/fish.html">http://sv.berkeley.edu/showcase/flash/fish.html</a></p>

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<p>of each of the four main parts of the fish.</p> <ul style="list-style-type: none"> <li>Ask students to name their fish and share their design with the class.</li> <li>Display the fish designs.</li> <li>Add new words to the word wall.</li> <li>Students add their learning and reflections to their science journal.</li> </ul> <p><b>OPTIONAL EXTRA OR ALTERNATIVE ACTIVITIES -</b></p> <ul style="list-style-type: none"> <li>Visit switheroozoo.com to create unique animals and explain how the external features chosen will help the animal survive in a certain environment.</li> <li>Create 3D models of the students' fish designs to create a class display.</li> </ul>			<p>Create your own animal  <a href="http://www.switchzoo.com/">http://www.switchzoo.com/</a></p>
<p><b>EXPLAIN</b> – To demonstrate what we have learned by exploring</p> <p><b>Lesson 4</b> – Physical Adaptations  <b>Suggested Time</b> – 45 minutes  <b>Introduction</b> – Story and/or song of adaptation</p> <ul style="list-style-type: none"> <li>Read the story Tiddalik the Frog (can be found online or in most libraries).</li> <li>Ask students to identify Tiddalik's physical adaptations to life in the desert.</li> <li>Students could also identify the physical adaptations of the other animals in their story.</li> <li>As an extra or alternative activity, view the YouTube clip – The Camel Song.</li> <li>As students watch the clip ask them to write down each adaptation as they hear it.</li> <li>Start a retrieval chart with students to sort out different types of physical adaptations including: <ul style="list-style-type: none"> <li>Structural – some examples are body design (monkeys moving through trees), mouth and teeth shape (crocodiles), tongue shape (giraffes), tail shape (kangaroos), eye shape (owls), body fat (seals and penguins).</li> <li>Colouring – some examples are camouflage and physical adaptations e.g. stick insects that are both shaped like a stick and coloured like a stick; some reef fish are patterned to blend in with their surroundings; the poison dart frog is brightly coloured to be a warning.</li> </ul> </li> </ul> <p><b>Investigation</b> – Research</p> <ul style="list-style-type: none"> <li>Explain to students they are going to form groups to research <b>physical</b> adaptations in different animals. At the end of the lesson, their group will need to present to the class their findings.</li> </ul>	<p><b>Lesson 4</b>  Formative assessment opportunities:  - use student research to assess their ability to develop and apply their knowledge to their research.</p>		<p><b>Lesson 4</b>  Book: Tiddalik: the Frog Who Caused a Flood, Robert Roennfeldt</p> <p>Book: The Frog Who Wouldn't Laugh, Cecilia Egan</p> <p>YouTube clip – The Camel Song  <a href="http://www.youtube.com/watch?v=YX8VQIJVpTg">www.youtube.com/watch?v=YX8VQIJVpTg</a></p> <p>Book and Internet access for students to conduct research.</p> <p>Hot Potato activity from Lesson 1.</p>

Teaching and learning		Supportive learning environment	
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<ul style="list-style-type: none"> <li>Depending on students needs and resources available, have the Internet and a range of books available for students to research their animal.</li> <li>Allow students to choose from a list of animals. This list should be generated by the teacher to cater for students needs. Choose animals with obvious physical adaptations such as giraffe or kangaroo as this will ensure students are able to find answers for their research.</li> <li>Students will need to answer a list of questions when doing their research. Some suggestions are: <ul style="list-style-type: none"> <li>What is the name of the animal?</li> <li>What country or countries is the animal found in?</li> <li>What is the animal's habitat?</li> <li>What does the animal eat?</li> <li>Is the animal a carnivore, omnivore or herbivore?</li> <li>What physical adaptations does the animal have to help it survive in its environment? Think about what parts of its body it uses to move, eat, see, hunt, stay warm, stay cool, or hide to help you think about the physical adaptations.</li> </ul> </li> <li>When students have finished, ask them to share their findings with the class. As they are doing this, record the animals and their physical adaptations in the physical adaptations retrieval chart.</li> <li>Review the answers from the Hot Potato Activity in Lesson 1. What are physical adaptations? Were some of the answers true? Were some false? Can we answer the question better with our new knowledge?</li> <li>Add new words to the word wall.</li> <li>Students add their learning and reflections to their science journal.</li> </ul> <p><b>Lesson 5 – Behavioural Adaptations</b>  <b>Suggested Time</b> – 45 minutes  <b>Introduction</b> – Different kinds of behaviour</p> <ul style="list-style-type: none"> <li>Explain to students that just like there are different kinds of physical adaptations, there are different kinds of behavioural adaptations. These can be broken up into two main categories - instinctive behaviour and learned behaviour.</li> <li>Explain learned behaviour when an animal, or even a person, learns to behave in a certain way. Reflect back on the Hot Potato activity in Lesson 1. Does your behaviour change when you are at school? How? Discuss how people change their behaviours in certain situations, who taught them to do this? Do animals learn behaviour? Think about training animals, or a mother koala teaching its young which leaves to eat.</li> </ul>	<p><b>Lesson 5</b>  Formative assessment opportunities:  - use student research to assess their ability to develop and apply their knowledge to their research.</p>		<p><b>Lesson 5</b>  Resource 4 – Turtles on the Great Barrier Reef.</p> <p>Book and Internet access for students to conduct research.</p> <p>Hot Potato activity from Lesson 1.</p>

Teaching and learning		Supportive learning environment	
Teaching strategies and learning experiences	Assessment opportunities	Adjustments for needs of learners	Resources
<ul style="list-style-type: none"> <li>Ask students if they can think of examples where animals have learned a specific behaviour. Start an adaptations retrieval chart to record students' answers.</li> <li>Explain instinctive behaviour – when an animal is born with the knowledge to do something in a certain way. Turtles are a very good example. Read Resource 4 – Turtles on the Great Barrier Reef with students and identify the instinctive behavioural adaptations.</li> <li>Add this information to the adaptations retrieval chart.</li> <li>Ask students if they can think of other behavioural adaptations and add their responses to the retrieval chart.</li> </ul> <p><b>Investigation – Research</b></p> <ul style="list-style-type: none"> <li>Explain to students that as in Lesson 4, they are going to research different animals to find their <b>behavioural</b> adaptations and share their findings with the class.</li> <li>Depending on students' needs and resources available, have the Internet and a range of books available for students to research their animal.</li> <li>Students may choose to research the same animal they researched for physical adaptations. Provide a list of animals for students to choose from (choose from a range of categories such as migration, schooling, nocturnal/diurnal, animals that change colour, ambush predators).</li> <li>When students have finished, ask them to share their findings with the class. As they are doing this, record the animals and their behavioural adaptations in the behavioural adaptations retrieval chart.</li> <li>Review the answers from the Hot Potato activity in Lesson 1. What are behavioural adaptations? Were some of the answers true? Were some false? Can we answer the question better with our new knowledge?</li> <li>Add new words to the word wall.</li> <li>Students add their learning and reflections to their science journal.</li> </ul>			
<p><b>ELABORATE</b> – To build understanding through an investigation</p> <p><b>Lesson 6 – Introduced Species</b>  <b>Suggested Time</b> – 45 minutes  <b>Introduction</b> – Review</p> <ul style="list-style-type: none"> <li>View YouTube clips of adaptations, or pictures of animals from around the world.</li> <li>Discuss the clips and/or pictures and ask students to provide any other examples of structural and behavioural adaptations they may have observed or thought of after Lesson 4 and 5. Add these to the retrieval chart.</li> </ul>	<p><b>Lesson 6</b>  Summative assessment opportunities:  - use cause-and-effect chart to assess students knowledge of adaptations and ability to apply that knowledge to inform decisions.</p>		<p><b>Lesson 6</b>  Resource 5 – Cane Toads.    Resource 6 – Cause-and-Effect Charts.</p>



Teaching and learning		Supportive learning environment	
Teaching strategies and learning experiences	Assessment opportunities	Adjustments for needs of learners	Resources
<p><b>Investigation – Introduced Species</b></p> <ul style="list-style-type: none"> <li>• Explain to students that animals often have to change their behaviour when their environment changes. One way their environment may change is when a new type of animal moves in.</li> <li>• A classic Australian example of this is the introduction of the cane toad. Ask students if they know anything about the cane toad, when it was introduced or why.</li> <li>• Read Resource 5 – Cane Toads, and ask students to identify physical and behavioural adaptations of cane toads and any behavioural or physical adaptations that may have happened to native animals because of the introduction of the cane toad, including some native animals not adapting and their population numbers decreasing because of the cane toads.</li> <li>• Ask students if they know of other examples of introduced species impacting on native animals.</li> <li>• Provide more examples if necessary e.g. tilapia, northern pacific sea star, foxes, rabbits or camels.</li> <li>• Ask students to create a cause-and-effect chart. Teachers may need to demonstrate how to do this. How detailed the chart is will depend on the needs of the class (see Resource 6 for examples). Ask students to think about the wide-reaching effects of the introduction of cane toads or other animals on habitats, native animals, the economy, or even tourism. Get them to add their responses to the chart.</li> <li>• With their chart, students should also include some ideas about what might be done to help get rid of the introduced species. Teachers may need to give some examples e.g. a disease was created to eradicate rabbits, events are held to humanely kill as many toads and tilapias in one day as possible to reduce their number and also to raise awareness.</li> <li>• If time allows, teachers could then go on to research more about introduced species and how native animals have had to adapt to them. This information could be used to write reports for newsletters, class books or community awareness pamphlets and/or posters.</li> <li>• Add new words to the word wall.</li> <li>• Students add their learning and reflections to their science journal.</li> </ul>			



Teaching and learning		Supportive learning environment	
Teaching strategies and learning experiences	Assessment opportunities	Adjustments for needs of learners	Resources
<p><b>Lesson 7 – Adapting to Development</b>  <b>Suggested Time</b> – 45 minutes  <b>Introduction</b> – Cassowaries</p> <ul style="list-style-type: none"> <li>This lesson is based on how cassowaries have adapted to coastal development. Teachers may choose to use an example of another animal that has had to adapt to development in context with their local area. This could include housing developments, industrial developments, marine developments or road network developments. The aim is for students to become aware that when developments take place, animals may adapt to those developments in different ways, or they may not adapt and the animals may become endangered. Students are asked to reflect on the fact that these developments need to take place due to the demands of society and population increases, but environmental considerations must also take place. What are some of those environmental considerations and can students think of ideas to resolve some of the issues?</li> <li>View books, pictures, Internet websites and YouTube clips about cassowaries.</li> <li>Ask students to find out what they eat, where they live, are they endangered, why are they endangered, what is so special about cassowaries?</li> <li>Students should also identify cassowaries' behavioural and structural adaptations and how these should be considered when planning development.</li> <li>Record the information in a retrieval chart.</li> </ul> <p><b>Investigation</b> – How have cassowaries adapted to development?</p> <ul style="list-style-type: none"> <li>Read Resource 7 – Cassowaries Adapting to Development. Discuss the questions on Resource 7 and record students' responses in a retrieval chart.</li> <li>Ask students to create a cause-and-effect chart relating to coastal development and cassowaries.</li> <li>Explain to students that people still need houses to live in which raises the question – what is a solution? In pairs or individually, ask students to respond to this question. They will need to consider what cassowaries need to survive, so will need to draw on their knowledge of cassowaries. They will also need to draw on their knowledge of what people need and want when they build a house or a community. Students will need to explain their answer.</li> <li>Add new words to the word wall.</li> <li>Students add their learning and reflections to their science journal.</li> </ul>	<p><b>Lesson 7</b>  Summative assessment opportunities:</p> <ul style="list-style-type: none"> <li>use students cause-and-effect chart and response to find solutions to issues of development to assess students' ability to apply knowledge to inform decisions.</li> </ul>		<p><b>Lesson 7</b>  Photos, books, YouTube clips of cassowaries.</p> <p>Pen and large paper for retrieval chart.</p> <p>Resource 7 – Cassowaries Adapting to Development.</p>

Teaching and learning		Supportive learning environment	
Teaching strategies and learning experiences	Assessment opportunities	Adjustments for needs of learners	Resources
<p><b>EVALUATE</b> – To review and reflect on learning</p> <p><b>Lesson 8</b> – Assessment preparation</p> <p><b>Suggested time</b> – 45 minutes</p> <p><b>Introduction</b> – Reflection and Begin Task</p> <ul style="list-style-type: none"> <li>As a class, reflect on what has been learned throughout the lessons.</li> <li>Explain to the students that they are going to begin their final assessment project. Present them with a task sheet (Resource 8).</li> <li>Read through the task sheet together and identify all the requirements of the task.</li> <li>Discuss available resources (identify all the work done throughout the unit that will help the students complete the task).</li> <li>Set out a plan for time management and resource management.</li> </ul> <p><b>Investigation</b> – Start preparing projects</p> <ul style="list-style-type: none"> <li>Allow students time to research and prepare their projects.</li> <li>Students may need scaffolding for different parts of the project; this will depend on the need of the class.</li> </ul> <p><b>Lesson 9 and Lesson 10</b> – Continue assessment preparation</p> <p><b>Suggested time</b> – how much time students are able to spend preparing their projects will depend on the needs of the class and the length of time available in the school term.</p>	<p><b>Lesson 8 – 10</b></p> <p>Summative assessment opportunities:</p> <ul style="list-style-type: none"> <li>students' final assessment pieces can be used to assess their knowledge development and ability to apply that knowledge using skills developed.</li> </ul>		<p><b>Lesson 8</b></p> <p>Resource 8 – Task Sheet.</p>

**Use feedback** (these are some suggestions, teachers will need to vary this according to the needs of their class)

**Ways to monitor learning and assessment**

Year 5 teacher:

- Initially plan the teaching, learning and assessment needs of all learners and make adjustments to the unit plan as necessary
- Use diagnostic, formative and summative assessment opportunities throughout the unit to plan for students learning and assess student knowledge development
- Mark presentations and moderate with colleagues to achieve consensus and consistency of teacher judgment

**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 the unit 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?

## Resource 1 – Procedural Text – *Bird Beak Experiment*

Aim	
	To investigate how birds' beaks are adapted to suit their habitats.
Materials	
	<p>For 'beaks' – eyedroppers, pliers, chopsticks, tweezers, straws, slotted spoons, strainers, tongs, skewers (teachers could choose other 'beaks' as is necessary according to resources available).</p> <p>For 'food' – coloured water in a long narrow container, worm or snake lollies, sunflower seeds, styrofoam cubes, popped popcorn, rice, marshmallows, loose tea (teachers could choose other 'food' as necessary according to resources available).</p> <p>Other – trays to put food on, cups to represent stomach, data tables, stop watches or clocks.</p>
Procedure	
	<ol style="list-style-type: none"> <li>Discuss all the range of 'beaks' and 'food'. <ol style="list-style-type: none"> <li>What do you think will be the best beak for each food?</li> <li>Why?</li> </ol> </li> <li>Divide students into groups of four.</li> <li>Assign 'beaks' and 'food' to each group. All groups may do the same or each group could choose four different 'beaks' and four different 'foods' to investigate.</li> <li>Fill in the investigation planner and set up the 'beaks' and 'food' for each group.</li> <li>Students will need to fill in the headings for their data table according to what 'food' and what 'beaks' their group has got.</li> <li>In each group, two at a time take turns to use a 'beak' to get some food while the other two time using a stop watch or count using a clock.</li> <li>The students using a 'beak' have 20 seconds to collect as much 'food' as possible.</li> <li>Record how many pieces of 'food' are collected for each 'beak' in the data table.</li> <li>Compare results – what beak works best for what food? Record and explain your results in the investigation planner.</li> </ol>

Record how much many pieces of 'food' were collected using each 'beak'. Draw your own table or change the headings in the table below.

BEAKS	FOOD				
		sunflower seeds	marshmallows	tea leaves	worm lollies
	slotted spoon				
	tweezers				
	chop sticks				
	skewers				

## Resource 2 – Investigation Planner

### Investigation Planner

**Name:** ..... **Date:** .....

<b>Investigation Question</b>	<b>Hypothesis</b> What do you think will happen? Explain why.
-------------------------------	---------------------------------------------------------------

To make the test fair what are you going to:

Change?	Measure?	Keep the Same?
<b>Independent Variable</b>	<b>Dependent Variable</b>	<b>Control Variable</b>
<b>Labelled Diagram</b>	<b>Equipment</b>	<b>Procedure</b> How will you complete the investigation?

# Resource 2 – Investigation Planner (cont.)

## Explaining Results

When you changed the _____ what happened?	
Why did this happen?	Was your hypothesis accurate?
What challenges did you have in doing this investigation?	How could you improve this investigation? What would you investigate next?  Fairness? Accuracy?

Teacher Comments: .....

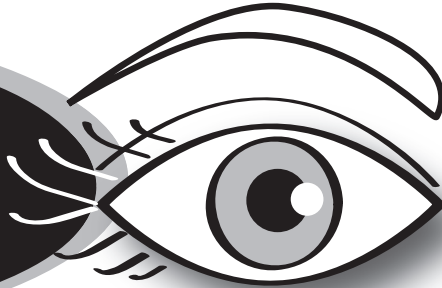
.....

### Resource 3 – Predict Observe Explain Poster

# Predict



# Observe



# Explain

[illegible]

## Resource 4 – Turtles on the Great Barrier Reef

All information is from the Great Barrier Reef Marine Park Authority – [www.gbrmpa.gov.au](http://www.gbrmpa.gov.au)

The highlight of a visit to the Great Barrier Reef may well be spotting a marine turtle. Of the seven species of marine turtles, six are found in Queensland's shallow coastal waters. Green, hawksbill and loggerhead turtles are the most frequently sighted but flatback, leatherback and olive ridley turtles are also occasionally seen. All year round in the protected, shallow reef waters, divers and snorkelers can see juvenile and adult turtles swimming about or feeding on plants and small animals.

### Where turtles breed

Turtles breed mostly in the northern and southern regions of the Great Barrier Reef. In the southern rookeries, marine turtles nest only in the summer months, but in the northern rookeries some nesting takes place all year round, with a summer peak.

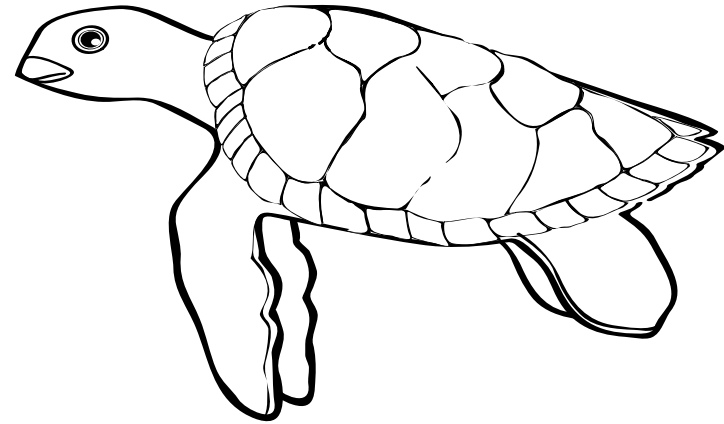
### Nesting

When female turtles go ashore to nest, they usually go ashore at night when the tide is high. They drag themselves high up the beach and dig a nest for their eggs. Loggerhead and green turtles lay about 100 round, white eggs about the size of ping-pong balls, and flatback turtles lay larger eggs in clutches of about fifty. No marine turtle species stays with or cares for its young.

Each female lays several clutches of eggs in the one season. This takes place about every two weeks during the breeding season and usually on the same beach. Two to eight years pass before a female turtle is ready to breed again. Each turtle returns to breed in the region where it was born even though it might swim as far away as Papua New Guinea, Solomon Islands, New Caledonia or Indonesia to find food.

When a turtle comes ashore to nest, the weight of her body and the action of her flippers and tail carve out tell-tale tracks in the sand. The tracks resemble one-metre wide tractor tracks. One-way tracks suggest that a turtle is in the process of egg-laying somewhere near the top of the beach.

Egg laying takes 1-3 hours from start to finish. First the turtle digs strongly with her front flippers, sending the loose sand flying everywhere. Then she positions her tail over the shallow nest and, very slowly and methodically, she uses her two hind flippers to carve out a vertical pear-shaped egg chamber. Shielding the hole with these flippers, she then lays her leathery-shelled eggs inside the warm, moist

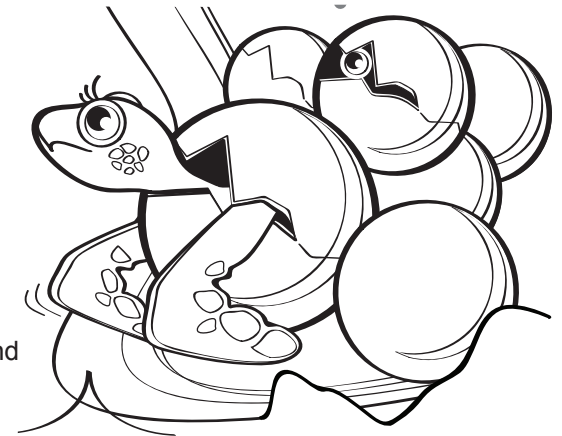


chamber. The hind flippers are used to cover the eggs with sand and flatten out the nest. When the work is all done the turtle returns to the sea.

### The early years of life

The eggs incubate in the nest for 7-12 weeks. The temperature of the surrounding sand determines the gender of the offspring. Male hatchlings result from cool nests (25°C), while females are produced from warm nests (31°C). Both genders may occur in nests at intermediate temperatures.

As a group, the hatchlings dig their way up through the 50cm or more of sand to the surface. Then, generally in the early evening, the sand will erupt and the hatchlings will scurry down to the sea. Many hatchlings do not survive the early stages of life. Some are eaten on the beach by ghost crabs, dogs, feral pigs and foxes. Others are taken in the coastal shallows by gulls, fish, sharks and crocodiles.



### Feeding

Different species of turtles feed on different things. Green turtles eat algae and seagrass; loggerhead and olive ridley turtles eat shellfish and crustaceans; hawksbills eat algae and sponges; and flatbacks eat sea pens, sea cucumbers and soft corals. Leatherback turtles feed almost exclusively on jellyfish.



## Resource 5 – Cane Toads

Information from National Geographic ([www.nationalgeographic.com](http://www.nationalgeographic.com)), Australian Museum ([www.australianmuseum.net.au](http://www.australianmuseum.net.au)), Frogs Australia Network ([www.frogsaustralia.net.au](http://www.frogsaustralia.net.au)) and Science Alert ([www.sciencealert.com.au](http://www.sciencealert.com.au))

### The Cane Toad – An Introduced Species

#### Where do cane toads come from?

Cane toads are native to the southern United States, Central America and tropical South America. In their natural environment their numbers are controlled as there are enough natural predators to stop them from becoming a pest.

#### Why were cane toads introduced to Australia?

Cane toads were introduced to Australia in 1935. They were introduced into North Queensland to help control the cane beetles that were destroying the sugar cane crops. The cane toads adapted so well to the Australian environment, that they soon started breeding and spreading throughout Queensland. About 3000 cane toads were released in North Queensland to help control the cane beetles. They now number in their millions and have spread into the Northern Territory, Western Australia and New South Wales and show no signs of stopping.

#### Why did cane toads adapt to the Australian environment so well?

Cane toads immediately adapted well to the Australian environment because:

- They use a wide variety of habitats including sand dunes, rainforest, mangroves, urban areas, grasslands, woodlands and wetlands.
- They eat a lot of different kinds of food including beetles, honey bees, ants, winged termites, crickets, bugs, marine snails, frogs, snakes and small mammals. Toads will eat just about anything they can swallow, including the dog food left behind by your pet dog!
- They breed very quickly. A female cane toad can lay over 8000 eggs twice a year.
- There are not many natural predators in Australia that can eat cane toads.

#### Why are cane toads a problem?

Cane toads are now considered a pest in Australia. There are so many cane toads



in Australia that they are threatening Australian wildlife and ecosystems. They are a threat for a number of reasons:

- They are poisonous. Native animals that try to eat cane toads will most often die because of the poisonous glands that are found over the cane toads' shoulders. Cane toad eggs and tadpoles are also poisonous.
- Cane toads are predators to many native animals.
- Cane toads compete with native frogs for their habitat.

#### How have native animals adapted to cane toads?

Some animals have learnt to adapt to cane toads living in their habitat. Scientists have found that some birds have learnt to flip cane toads over when they catch them. The birds then use their beaks to eat out the guts of the cane toad. Eating the cane toad this way allows the bird to avoid the poisonous glands found over the cane toad's shoulders.

Keelback snakes can eat young toads as they are able to handle low levels of the cane toad's poison. Scientists have also found that wolf spiders, freshwater crayfish, freshwater crocodiles, water rats and giant white-tailed rats can eat cane toads but always run the risk of ingesting too much poison and dying.

However, sometimes native animals do not adapt to the cane toads. Many native animals have died from eating toads. Many native frogs have been pushed out of their native habitats by cane toads as cane toads eat frogs.

#### What can be done about controlling cane toads?

Scientists are still trying to find a way to control the spread of cane toads. Some towns hold "Toad Buster" days to humanely catch and kill as many cane toads as possible to stop them from breeding and spreading further around Australia.

## Resource 6 – Cause-and-effect chart 1

### Flow Chart

CAUSE
<p>What was the event? Who or what caused it?</p>

↓

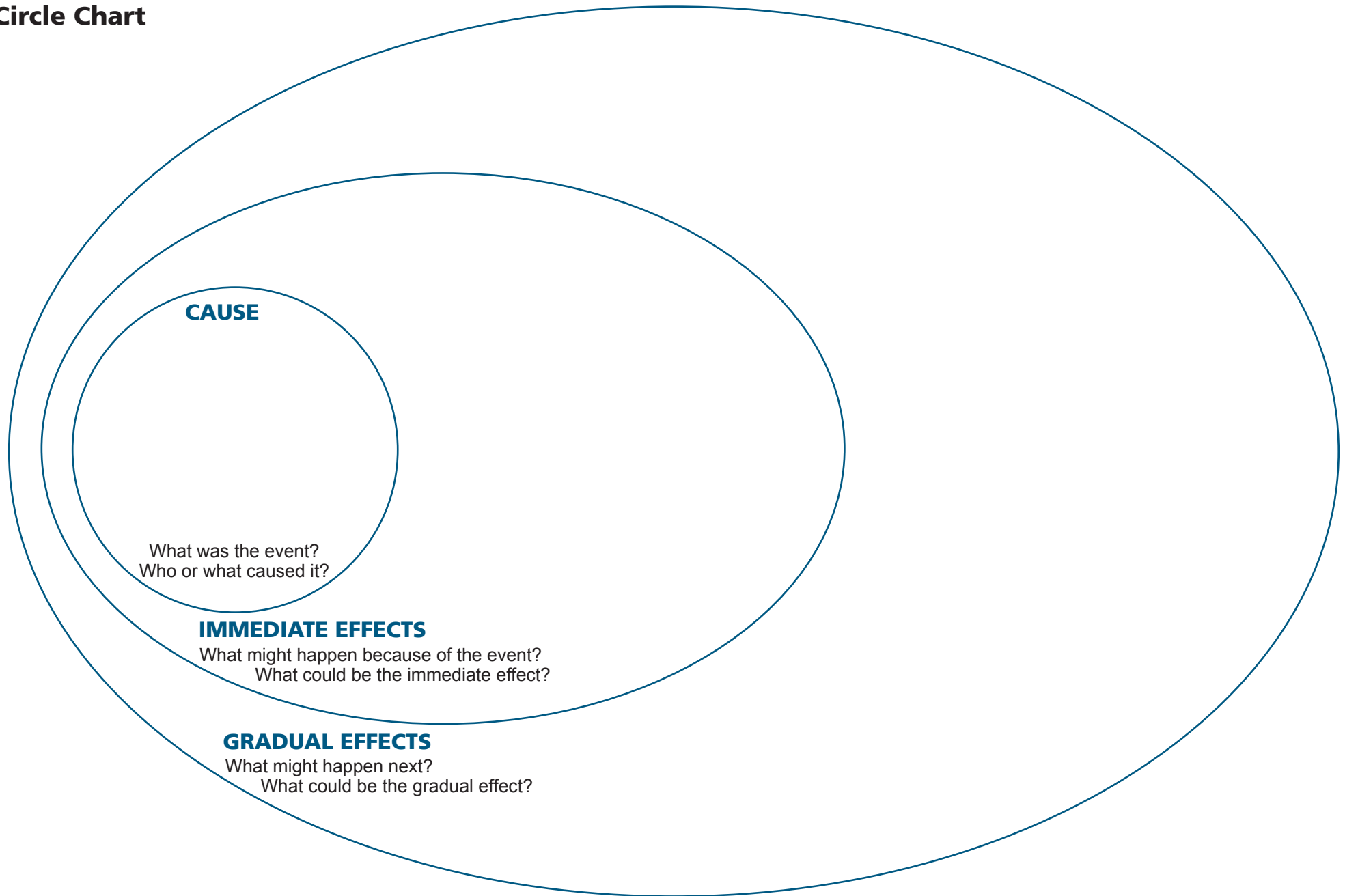
EFFECT
<p>What might happen because of the event? What could be the immediate effect?</p>

↓

EFFECT
<p>What might happen next? What could be the gradual effect?</p>

## Resource 6 – Cause-and-effect chart 2

### Circle Chart



## Resource 7 – Cassowaries Adapting to Development

Photos and information from Mission Beach Bulletin March 2010 No. 153, The Community for Coastal and Cassowary Conservation Inc. (C4) Porter Promenade, Mission Beach Tel. (07)4068 7197, Fax (07)4068 7298 (<http://www.cassowaryconservation.asn.au/C4bulletin.htm>)

The photos below show an area of coastal development at a place called Garner's Beach. Garner's Beach is a special area as it is home to a number of cassowaries. They use the area to find food and shelter, lay their eggs and raise their young and are even known to visit the beach while looking around for food. Cassowaries eat native rainforest fruit found in the rainforest. They spend each day walking through large areas of rainforest looking for fruit to eat.

### Discussion Questions

1. Look at Figure 1. Describe what you can see. How would cassowaries use this as a part of their habitat?
2. Look at Figure 2. How has the habitat changed over the years after cyclone Larry? How would this be affecting the cassowaries?
3. Look at Figure 3. The numbers all represent blocks of land that have been approved to have houses built on them. How will the houses change the cassowaries' habitat?
4. Look at Figure 4. The Environmental Protection Agency (EPA) map shows how the houses and roads will clear the land. What will happen to the cassowaries that use the area to find food and shelter, lay their eggs and raise their young? Will they still safely be able to do all these things in this area? Where will they go? What if the other areas they go to are being developed as well?
5. Describe how cassowaries have had to adapt to development in their habitats. Think about people, roads, cars, dogs, houses and fences.

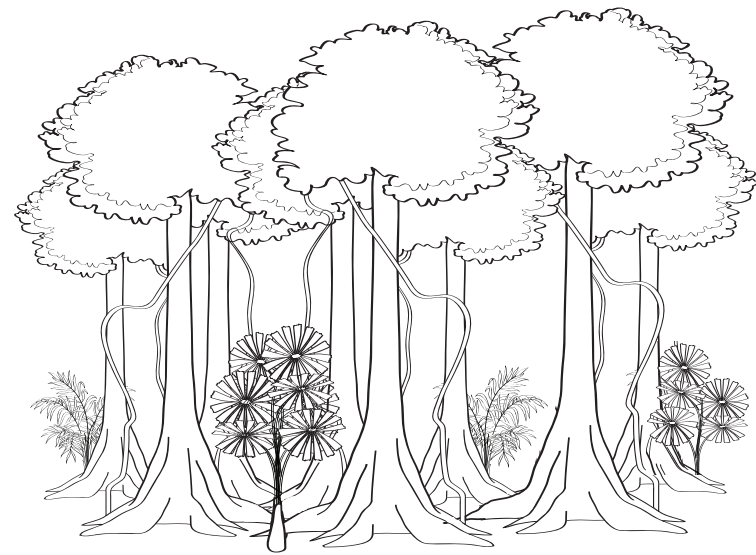


Figure 1. 2005 Pre cyclone Larry



Figure 2. Dwellings 2010



Figure 3. Approved configuration of lots and infrastructure



Figure 4. EPA vegetation mapping showing unprotected area

## Resource 8 – Task Sheet - *Summative Assessment*

### Adaptations - Year 5 Science Investigation

#### Your Task:

**Part A:** Design an animal that suits one of the following environments:

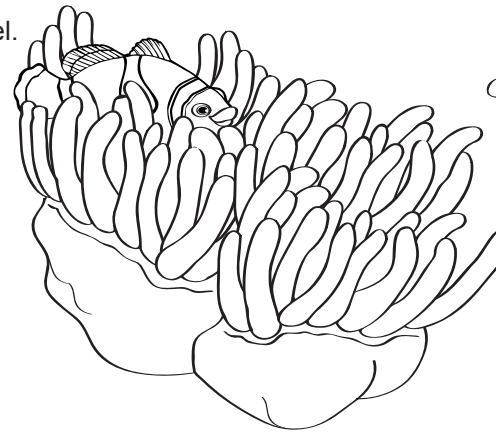
1. Great Barrier Reef
2. Daintree rainforest
3. Mangrove estuary
4. Open ocean
5. Australian desert
6. Antarctica
7. Freshwater wetland

You will need to research your chosen environment to find out the climate, what shelter is available and what food sources are available.

You need to provide a drawing of your animal or you can construct a 3D model.

**Part B:** Provide a report or persuasive text on your animal outlining its external features and why these features help it to adapt to the chosen environment. Your report will need to include the following information:

- Describe the animal's habitat and what it needs to survive
  - what it eats
  - where it finds water
  - where it shelters or hides from predators
  - where it sleeps or nests.
- Describe the animal's structural adaptations (its external features).
- Describe the animal's behavioural adaptations.
- Explain how the animal's structural and behavioural adaptations help it to survive in its habitat.
- Explain how the community living in and around the animal's habitat needs to consider their actions to protect the animal and its habitat.

















# Year 5 Animal Adaptations – Summative Assessment or Persuasive Essay

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

**Purpose of assessment:** Students will design an animal for a specific environment and provide a report on the animal outlining its external features and why these features help it to adapt to the chosen environment.

Knowledge and Understanding		Skills		
Science Understanding	Science as a Human Endeavour	Science Inquiry Skills		
<b>Biological Sciences</b> - The structural (external) features and behavioural adaptations of the animal that helps it to survive in that environment. - A description of the animal's habitat (including climate, available shelter and food sources) and how the animal accesses basic needs such as water, shelter and food.	<b>Use and Influence of Science</b> - Using scientific knowledge considers how the actions of communities living in and around the animal and its natural habitat need to be to protect the animal and its natural habitat.	<b>Questioning and Predicting</b> - Identifies the characteristics of an environment and how animals use structural (external) features and behavioural adaptations to survive in that environment. <b>Planning and Conducting</b> - Plans and conducts investigations into the specific environment, animals that live there and the impacts that humans who live there have on the animals and the environment. <b>Processing and Analysing Data and Information</b> - Uses information gathered to predict scientifically plausible solutions to threats.	<b>Evaluating</b> - Reflects upon learning to identify the connections between animals and their environment and the impacts that humans can have on both. <b>Communicating</b> - Constructs a drawing or 3D model of your animal. - Creates a report explaining the features of the animals that help it to adapt and survive in its chosen environment.	
 The student comprehensively describes and displays detailed features, characteristics and behavioural adaptations that are consistent with an animal in that environment on both the drawing/3D model and in the report. They demonstrate that scientific research has been conducted into the specifics of the animal's chosen habitat (including climate, available shelter and food sources) and provide a comprehensive description of how the animal accesses basic needs such as water, shelter and food.  The student describes and identifies features and behavioural adaptations that are consistent with an animal in that environment on both the drawing/3D model and in the report. They demonstrate that some scientific research has been conducted into the specifics of the animal's chosen habitat and provide a description of how the animal accesses basic needs such as water, shelter and food.  The student states some features and behavioural adaptations of an animal in that environment on both the drawing/3D model and in the report. They state facts about the animal's habitat and how the animal accesses basic needs such as water, shelter and food.	 The student proposes detailed and scientifically robust strategies to protect the animal and its natural environments from communities living in and around the animal. The student utilises scientific information and regionally specific knowledge or examples to make comprehensive recommendations.  The student describes scientifically robust strategies to protect the animal and its natural environments from communities living in and around the animal. They utilise either scientific information or regionally specific examples to make recommendations.  The student proposes some strategies to protect the animal and its natural environments from communities living in and around the animal which has some scientific basis. They utilise some scientific information or regionally specific examples to make a recommendation.	 The student collects a very high level of relevant and detailed scientific information gathered and recorded during investigations to explain and how animals use structural (external) features and behavioural adaptations to survive in a specific environment. They display a very high ability to draw conclusions about the impacts that communities can have on animals and their natural environment and propose at least three scientifically sound strategies to reduce these impacts.  The student provides some relevant and detailed scientific information gathered and recorded during investigations to plausibly explain how animals use structural (external) features and behavioural adaptations to survive in a specific environment. They describe the impacts that communities can have on animals and their natural environments and propose at least two scientifically sound strategies to reduce these impacts.  The student states scientific facts gathered and recorded during investigations to explain how animals use structural (external) features or behavioural adaptations to survive in a specific environment. They occasionally display an ability to draw conclusions about the impacts that communities can have on animals and their natural environment and provide at least one scientifically sound strategy to reduce these impacts.	 The student accurately analyses and identifies patterns and relationships between animals and their environment and the impacts that humans can have on both. They present information and ideas in a clear and concise manner clearly linked to scientific knowledge. They represent their animals and its external features through a relevant and accurate drawing or 3D model.  The student describes some patterns and relationships between animals and their environment and the impacts that humans can have on both. They present information and ideas clearly which link to scientific knowledge. They represent their animals and its external features through an accurate drawing or 3D model.  The student identifies a connection between animals and their environment and the impact that humans can have on both. Some information and ideas displayed are linked to scientific knowledge. They represent their animal and its external features through a simple drawing or 3D model.	A
				B
				C
				D
				E

QSA Literacy indicators (2009)		✓
Writing and Designing		
WD5 ii.	Write about familiar subject matter for known audiences using a variety of text types and use structures such as compare-and contrast, problem-and-solution and cause-and-effect to organise information	
WD5 vi	Write paragraphs that maintain the pace or sense of texts and organise texts, using structures including problem-and-solution, cause-and-effect or compare-and-contrast	
WD5 x	Select words that add precision, including literary language such as metaphor or simile and some technical terms	

Feedback:

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