

# Science and Technology: Wetland Adaptations

**Stage 3**

**Duration: 10 weeks**

## Unit context

Students will inform attitudes towards wetlands and the wildlife that inhabit a wetland. Students investigate and describe changes in the environment caused by storm water and the impacts stormwater has on the environment. Students use prior knowledge to adapt and design the ideal wetland bird. Students will be required to explain and justify their designs.

## Target outcomes

**ST3-4WS** investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations

**ST3-5WT** plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints

**ST3-10LW** describes how structural features and other adaptations of living things help them to survive in their environment

**ST3-11LW** describes some physical conditions of the environment and how these affect the growth and survival of living things

## Unit overview

Students will investigate types of adaptation and they will use this information to design their own wetland bird. They will extend their understanding of observable features, change and growth of birds living in local wetlands. Students are reintroduced to the design process, prior to developing and evaluating their bird adaptation. They will also investigate the human impacts on wetlands.



Content – Skills (Working Scientifically and Working Technologically)	Content – Knowledge and Understanding	Suggested teaching, learning and assessment experiences (include evidence of learning)
<p><b>Working Scientifically</b> <b>ST3-4WS</b> investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations</p> <p><b>Working Technologically</b> <b>ST3-5WT</b> plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints</p>	<p><b>ST3-9ES</b> explains rapid change at the Earth’s surface caused by natural events, using evidence provided by advances in technology and scientific understanding</p> <p><b>ST3-10LW</b> describes how structural features and other adaptations of living things help them to survive in their environment</p> <p><b>ST3-11LW</b> describes some physical conditions of the environment and how these affect the growth and survival of living things</p>	<p><b>Teacher Background</b></p> <p><i>This unit builds on work done in previous stages to allow students to undertake a guided investigation. However, it could also be a stand-alone activity. Teachers need to be aware of the background knowledge that students have – and ensure that gaps in knowledge are addressed.</i></p> <p><b>Essential background knowledge and understanding:</b></p> <p><b>Inquiry 1:</b> What is a Wetland?  <b>Inquiry 2:</b> What lives in a wetland?  <b>Inquiry 3:</b> What eats what in a wetland?  <b>Inquiry 4:</b> In what ways do plants and animals adapt to living in wetlands?</p> <p>Use the information and activities in Central Coast Council’s Wetlands Multi-Touch Book available on the iBookstore.</p>
<p><b>Working Scientifically</b> <b>ST3-4WS</b> investigates by posing</p>	<p><b>ST3-9ES</b> explains rapid change at the Earth’s surface caused by natural events, using evidence</p>	<p><b>Inquiry about Birds and Adaptations:</b></p> <ol style="list-style-type: none"> <li>1. Students investigate adaptations of wetland birds including beaks, feet, feathers, size, colour, diet, movement e.g. Cormorants, Spoonbills, Curlews etc.</li> <li>2. Design task – Groups to create a bird that meets given criteria (selected random criteria – e.g. Eats worms, be</li> </ol>



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<p>questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations</p> <p><b>Working Technologically</b> <b>ST3-5WT</b></p> <p>plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints</p>	<p>provided by advances in technology and scientific understanding</p> <p><b>ST3-10LW</b></p> <p>describes how structural features and other adaptations of living things help them to survive in their environment</p>	<p>able to walk in mud, can fly etc.)</p> <ol style="list-style-type: none"> <li>See resource “Bird Beak Investigation” at <a href="http://loveourlivinglakes.com.au/learn/resources/">http://loveourlivinglakes.com.au/learn/resources/</a> to guide students.</li> <li>Students then build a model of their bird and provide an information report including positives / negatives and describing the habitat</li> <li>As a result of the investigation, they then design their ideal wetland bird using the activity in Central Coast Council’s Early Childhood Edition of the Wetlands Multi-Touch Book available on the iBookstore</li> </ol> <p><b>Resources</b></p> <p>Book: The Best Beak in Boonaroo Bay <a href="http://www.birdsinbackyards.net/finder">http://www.birdsinbackyards.net/finder</a></p>
<p><b>Working Scientifically</b> <b>ST3-4WS</b></p> <p>investigates by posing questions, including testable questions,</p>	<p><b>ST3-11LW</b></p> <p>describes some physical conditions of the environment and how these affect the growth and survival of</p>	<p><b>Fieldwork Investigation: Human impacts on Wetlands (Porters Creek/Avoca Lagoon)</b></p> <p>Activities will focus on changes to physical conditions of a Wetland environment (Porters Creek or Avoca lagoon) and impacts on living things – e.g., identification of storm water outlet, monitoring of water quality- upstream and downstream of an outlet, identifying where change has occurred (dead trees, weed infestation), suggesting reasons for this change and proposing solutions.</p>



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<p>making predictions and gathering data to draw evidence-based conclusions and develop explanations</p> <p><b>Working Technologically</b> <b>ST3-5WT</b></p> <p>plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints</p>	<p>living things</p>	<p><b>Inquiry 1:</b> What is stormwater? See Central Coast Council's Primary Edition of the Wetlands Multi-Touch Book.</p> <p><b>Inquiry 2:</b> How does stormwater enter wetlands?</p> <p><b>Inquiry 3:</b> What is the impact of stormwater on living things in Wetlands? (Water quality and changes to the water flow regime- water quantity)</p> <p><b>Inquiry 4:</b> Identify ways to address these changes to propose a solution.</p> <p><a href="http://www.environment.nsw.gov.au/resources/waterwatch/SnrTeachGuide/20090500SeniorTeachersGuide.pdf">http://www.environment.nsw.gov.au/resources/waterwatch/SnrTeachGuide/20090500SeniorTeachersGuide.pdf</a> (see section 8 for water quality recording sheets and other post visit activities)</p>

