

Science and Technology: Environmental Changes

Stage 2

Duration: 10 weeks

Unit context

Students will develop their knowledge and understanding of Wetlands and how changes in the environment caused by humans may affect the survival of living things in a Wetland. They develop their knowledge and understanding of the life cycles of living things and the ways that changes in the environment can affect life cycles.

Target outcomes

A student:

- ST2-1VA** shows interest in and enthusiasm for science and technology, responding to their curiosity, questions and perceived needs, wants and opportunities
- ST2-4WS** investigates their questions and predictions by analysing collected data, suggesting explanations for their findings, and communicating and reflecting on the processes undertaken
- ST2-5WT** applies a design process and uses a range of tools, equipment, materials and techniques to produce solutions that address specific design criteria
- ST2-10LW** describes that living things have life cycles, can be distinguished from non-living things and grouped, based on their observable features
- ST2-11LW** describes ways that science knowledge helps people understand the effect of their actions on the environment and on the survival of living things
- ST2-15I** describes ways that information solutions are designed and produced, and factors to consider when people use and interact with information sources and technologies

Unit overview

Students will extend their understanding of observable features, change and growth of living things in a local wetland. They will investigate food chains and the consumers within these food chains. Students will develop their understanding to make the connection between food, wetland plants and habitats.



Content – Skills (Working Scientifically and Working Technologically)	Content – Knowledge and Understanding	Suggested teaching, learning and assessment experiences (include evidence of learning)
<p>Working Scientifically ST2-4WS investigates their questions and predictions by analysing collected data, suggesting explanations for their findings, and communicating and reflecting on the processes undertaken</p> <p>Working Technologically ST2-5WT applies a design process and uses a range of tools, equipment, materials and techniques to produce solutions that address specific design criteria</p>	<p>ST2-8ES describes some observable changes over time on the Earth's surface that result from natural processes and human activity</p> <p>ST2-9ES describes how relationships between the sun and the Earth cause regular changes</p> <p>ST2-10LW describes that living things have life cycles, can be distinguished from non-living things and grouped, based on their observable features</p> <p>ST2-11LW describes ways that science knowledge helps people understand the effect of their actions on the environment and on the survival of living things</p>	<p>Food Chains / Food webs Measurement Tides Differences between living / non-living Classification – simple key</p> <p>Teacher Background <i>This unit builds on work done in S1 that included life cycles and features of living things. Teachers should revisit these elements and introduce the concepts of habitats, food chains, food webs, classification and human impacts.</i></p> <p>Activity To measure non-living features (abiotic factors) that influence habitats. Record rainfall, temperature, wind (Google search Beaufort scale images), clouds once per week – then graph data at end of term. Talk about scientific method (e.g. measuring at same time each day)</p> <p>Inquiry 1 – Habitats Students will develop an understanding of the importance of different types of habitats.</p> <p>Engage Question: What is a habitat? Create a Mind Map. Use the Mind Map activity for iPads in Central Coast Council's Wetlands Multi-Touch Book available on the iBookstore.</p> <p>Explore: Identify some different natural habitats from photographs or websites. Select two habitats and</p>



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		<p>create a table that depicts each habitat and its wildlife.</p> <p>Explain</p> <p>In pairs, students develop an explanation on why the wildlife is dependent on the selected habitat. Students then present their explanation as an oral presentation.</p> <p>Elaborate</p> <p>What are the features of a healthy habitat? (use the Field of Mars Habitat Multi-Touch Book - http://fieldofmarseec.nsw.edu.au/digital-learning/multitouch-books/)</p> <p>Students will identify and discuss the impacts humans have on wildlife habitats. Watch the short film “Where Does Your Rubbish Go?” in Central Coast Council’s Wetlands Multi-Touch Book available on the iBookstore.</p> <p>Evaluate</p> <p>Students reflect on what they have learnt by recording 1-3 things that they have learnt or found interesting.</p>
		<p>Inquiry 2 – What is a wetland?</p> <p>Students develop their understanding about the connection between wetland plants, animals and their habitats.</p> <p>Engage</p> <p>Question:</p> <p>What is a wetland? Students suggest definitions. As a class, decide on your definition of a wetland. Show images of different types of wetland e.g. floodplain wetland, estuary, alpine wetland, coastal lagoon.</p> <p>Explore:</p> <p>Use an activity that demonstrates the features of wetlands such as a sorting activity or matching game. E.g. the vegetation layers activity in Central Coast Council’s Wetlands Multi-Touch Book.</p>



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		<p>Explain</p> <p>Explain the interconnection between wetland plants and animals and their habitat (producers, consumers, decomposers).</p> <p>Elaborate</p> <p>Students develop a wetland food chain and/or food web that contains at least two consumers. Use the food web activity for iPads in Central Coast Council's Wetlands Multi-Touch Book.</p> <p>Evaluate</p> <p>Students write an explanation about the connection between wetland plants, animals and their habitats.</p>
		<p>Inquiry 3 – Wetland plants</p> <p><i>Ideally this inquiry should be conducted as part of a fieldwork trip to a natural or constructed wetland, lake edge or river. (Contact Rumbalara EEC or Central Coast Council for guidance).</i></p> <p><i>E.g.:</i></p> <ul style="list-style-type: none"> • <i>Tuggerah Parade, The Entrance;</i> • <i>Wamberal Lagoon Nature Reserve;</i> • <i>Costa Avenue, San Remo</i> <p>Students create an annotated photograph of a wetland plant using Central Coast Council's Wetlands Multi-Touch Book for iPads.</p> <p>Engage</p> <p>Question:</p> <p>What is a wetland? Are there different types of wetlands?</p> <p>Explore:</p> <p>What types of plants can survive in wetlands? E.g. Reeds, algae, paperbark trees. Investigate</p>



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		<p>and collect images of wetland plants and categorise the plants identified.</p> <p>Explain</p> <p>What conditions do different plants need in a wetland? Example, always wet, sometimes dry. Choose two or three plants.</p> <p>Elaborate</p> <p>Why are these plants important? For example habitat, food, oxygen.</p> <p>Evaluate</p> <p>Students create an annotated photograph showing the plants features, needs and importance.</p>
		<p>Suggested fieldwork activities:</p> <ul style="list-style-type: none"> • Water testing using a Waterwatch kit. • Plant identification using the activity in Central Coast Council’s Wetlands Multi-Touch Book for iPads. • Freshwater waterbug survey using identification charts in Central Coast Council’s Wetlands Multi-Touch Book for iPads.



Resources	Assessment overview
<p>Materials and equipment</p> <ul style="list-style-type: none"> • Specimens, pictures, digital images to show stages in life cycles • Materials required for observation of plant and animal life cycles, eg: <ul style="list-style-type: none"> – silkworms – mulberry leaves, cardboard boxes – broad beans – containers, stakes, garden bed or containers/potting mix • Existing information products related to animals or plants • Scaffold for evaluating an information product <p>Websites</p> <p>Life Cycles – Fast Facts www.kidskonnnect.com/subject-index/15-science/87-life-cycles.html</p> <p>Mealworm Life Cycle www.superteacherworksheets.com/mealworms.htm</p> <p>Life Cycle of a Silkworm www.youtube.com/watch?v=NS2tGT6zVyg</p> <p>Bean Seed Life Cycle for Kids www.ehow.com/about_6553715_bean-seed-life-cycle-kids.html</p> <p>Life Cycle of Butterflies and Moths www.kidsbutterfly.org/life-cycle</p> <p>Amazing Cicada Life Cycle – Sir David Attenborough's <i>Life in the Undergrowth</i> – BBC wildlife www.youtube.com/watch?v=tjLiWy2nT7U</p> <p>SWOT – State of the World's Sea Turtles – interactive life cycle diagram http://seaturtlestatus.org/learn/lifecycle?qclid=CPiC-cqKqrMCFQoxpgod5UEAIA</p> <p>Online file sharing: Google Docs, SkyDrive, School Portal</p> <p>Presentation applications: PowerPoint, SMART Notebook, Storybird</p> <p>Word-processing/Publishing: Word, Publisher, Pages</p> <p>Resources on safety and animal welfare</p> <p>Print resource: NSW Department of Education and Training, <i>Chemical Safety in Schools Kit</i>, Vol 2, NSWDET, 2000</p> <p>Animals in Schools: The purpose of this website is to assist schools in satisfying the requirements of the <i>Animal Research Act 1985</i> (NSW) and the Australian code of practice for the care and use of animals for scientific purposes.</p>	<p>Assessment opportunities could include:</p> <ul style="list-style-type: none"> • visual and digital representations of a life cycle • peer feedback on life cycle representations • student records in journal, including planning the investigation, posing questions, research from secondary sources, making observations and recording data and information • student self-assessment of learning using a teacher-provided evaluation sheet • use of digital applications • completion by the team of a suitable information product using listed criteria • student reflection on the design process and their own learning.



Resources	Assessment overview
www.schools.nsw.edu.au/animalsinschools/	

