

Linking the Australian Curriculum with NRM Education resources

Biodiversity (Years 3-6)

Big ideas

Life on earth is extraordinarily diverse and complex. Biodiversity is the variety of life in all its forms, and is often considered at three levels:

- genetic diversity is the variety of genetic information contained in all the plants, animals and micro-organisms on earth
- species diversity is the variety of living organisms on earth
- ecosystems diversity relates to the variety of habitats, communities and ecological processes on earth (<http://www.environment.gov.au/sustainability/education/publications/conserving-australias-biological-diversity-teachers-notes>).

With the current population growth and continual expansion of human land use causing destruction to natural environments, biodiversity is threatened daily causing a loss of ecosystems and breaking fragile environmental relationships.

Overview

One of the challenges to biodiversity is the increasing human population, which increases demand for land. Increasing urbanisation and agriculture causes loss of habitat which is wiping out incredible numbers of plants, and threatens the basic needs of many animal species. Australia has a large variety of fragile ecosystems and environments all of which depend on a healthy biodiversity of plants and animals. The following are some of the sustainability biodiversity themes students can learn about and take action on:

- the critical role of ecosystem services (i.e. human impacts)
- the health of biodiversity in the school grounds and local area
- the change in vegetation profile in South Australia as a result of land clearance and land uses
- the increasing pressure on plants, animals and ecosystems, as a result of human land and resource use
- the importance of biodiversity and its interconnected relationships in a range of ecosystems
- improving biodiversity in the school grounds and/or local area (e.g. installing nest boxes, butterfly gardens)
- Australia's unique biodiversity
- the systemic relationships between air, water quality and biodiversity
- plant and habitat assessments of the school grounds (sampling of aquatic macro invertebrates, bird watching)
- the impact of biodiversity loss on indigenous people around the world
- the importance of genetic diversity
- genetic modification and the laws in South Australia
- climate change and biodiversity impacts for South Australia and/or the world



- animal rights
- the rights of rivers and forests e.g. Urewera forest in New Zealand: <http://www.ngaituhoe.iwi.nz/te-urewera-governance>
- humans, and other animals', reliance on biodiversity to provide the basics of life – food, water, shelter, clothing and clean air
- sustainable use within ecological limits
- the role of biodiversity in maintaining a healthy environment – to regulate our climate, decompose organic wastes, stabilise our soils, pollinate plants, and inspire our societies and cultures.

Sustainability in the Australian Curriculum

Education for sustainability develops the knowledge, skills, values and world views necessary for people to act in ways that contribute to more sustainable patterns of living. It enables individuals and communities to reflect on ways of interpreting and engaging with the world. Sustainability education is future-oriented, focusing on protecting environments and creating a more ecologically and socially just world through informed action. Actions that support more sustainable patterns of living require consideration of environmental, social, cultural and economic systems and their interdependence. (Source: The Australian Curriculum v7.2: <http://www.australiancurriculum.edu.au/CrossCurriculumPriorities/Sustainability>)

These are just a few Curriculum links and ideas that connect to NRM Education resources.

You are encouraged to seek further connections when planning learning experiences.

Learning areas	Strands	Learning experience ideas	NRM Education's resources
Digital Technologies Years 3/4	Digital Technologies Processes and Production Skills	After their investigation in the school grounds, each group prepares a report on their results, including the nature of the investigation, the results (including a graph; e.g. bar graph, pictograph) and their opinion of the accuracy of the original hypothesis. <i>Critical and creative thinking, ICT capability, Literacy, Numeracy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
Digital Technologies Years 5/6	Digital Technologies Processes and Production Skills	After their investigation in the school grounds, each group prepares a report on their results, including the nature of the investigation, the results (including a graph; e.g. bar graph, pictograph) and their opinion of the accuracy of the original hypothesis. <i>Critical and creative thinking, ICT capability, Literacy, Numeracy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
English Year 3	Language Language variation and change Text structure and organization	Prepare a report to convince others to improve biodiversity into the future through the creation of persuasive arguments. <i>Critical and creative thinking, Ethical understanding, Literacy, Personal and social capability</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)



	<p>Literacy</p> <p>Texts in context</p> <p>Interpreting, analysing, evaluating</p>		
<p>English</p> <p>Year 4</p>	<p>Language</p> <p>Language variation and change</p> <p>Text structure and organization</p> <p>Literacy</p> <p>Texts in context</p> <p>Interpreting, analysing, evaluating</p>	<p>Prepare a report to convince others to improve biodiversity into the future through the creation of persuasive arguments.</p> <p><i>Critical and creative thinking, Ethical understanding, Literacy, Personal and social capability</i></p>	<p>Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)</p>
<p>Geography</p> <p>Years 3</p>	<p>Geographic Inquiry and Skills</p> <p>Observing, questioning and planning</p> <p>Collecting, recording, evaluating and representing</p>	<p>Conduct a bird survey by allocating groups of students to look at the different parts of the school grounds, make predictions and share results. What do the birds tell us about the health of the biodiversity in the local area?</p> <p><i>Critical and creative thinking, Literacy, Numeracy, Personal and social capability</i></p>	<p>Looking at habitat diversity through birds – a learning sequence (1.08mb pdf)</p> <p>Birds ID Charts for Adelaide Plains/Hills/Coastal/Barossa regions</p>
	<p>Geographic Inquiry and Skills</p> <p>Communicating</p> <p>Reflecting and responding</p>	<p>Summarising bird survey results and looking at preferences for food and habitat types. Identify bird needs and how the environment impacts their survival. Invite students to be part of taking action to improve the diversity of the school grounds.</p> <p><i>Critical and creative thinking, Ethical understanding, Literacy, Numeracy, Personal and social capability</i></p>	<p>Looking at habitat diversity through birds – a learning sequence (1.08mb pdf)</p> <p>Birds ID Charts for Adelaide Plains/Hills/Coastal/Barossa regions</p>
<p>Geography</p> <p>Years 4</p>	<p>Geographic Inquiry and Skills</p> <p>Observing, questioning and planning</p> <p>Collecting, recording, evaluating and representing</p>	<p>Conduct a bird survey by allocating groups of students to look at the different parts of the school grounds, make predictions and share results. What do the birds tell us about the health of the biodiversity in the local area?</p> <p><i>Critical and creative thinking, Literacy, Numeracy, Personal and social capability</i></p>	<p>Looking at habitat diversity through birds – a learning sequence (1.08mb pdf)</p> <p>Birds ID Charts for Adelaide Plains/Hills/Coastal/Barossa regions</p>
	<p>Geographic Inquiry and Skills</p>	<p>Summarising bird survey results and looking at preferences for food and habitat types. Identify bird needs and how the environment impacts their survival. Invite</p>	<p>Looking at habitat diversity through birds – a</p>



	Communicating Reflecting and responding	students to be part of taking action to improve the diversity of the school grounds. <i>Critical and creative thinking, Ethical understanding, Literacy, Numeracy, Personal and social capability</i>	learning sequence (1.08mb pdf) Birds ID Charts for Adelaide Plains/Hills/Coastal/Barossa regions
Geography Years 5	Geographic Inquiry and Skills Observing, questioning and planning Collecting, recording, evaluating and representing	Conduct a bird survey by allocating groups of students to look at the different parts of the school grounds, make predictions and share results. What do the birds tell us about the health of the biodiversity in the local area? <i>Critical and creative thinking, Literacy, Numeracy, Personal and social capability</i>	Looking at habitat diversity through birds – a learning sequence (1.08mb pdf) Birds ID Charts for Adelaide Plains/Hills/Coastal/Barossa regions
	Geographic Inquiry and Skills Communicating Reflecting and responding	Summarising bird survey results and looking at preferences for food and habitat types. Identify bird needs and how the environment impacts their survival. Invite students to be part of taking action to improve the diversity of the school grounds. <i>Critical and creative thinking, Ethical understanding, Literacy, Numeracy, Personal and social capability</i>	Looking at habitat diversity through birds – a learning sequence (1.08mb pdf) Birds ID Charts for Adelaide Plains/Hills/Coastal/Barossa regions
Geography Years 6	Geographic Inquiry and Skills Observing, questioning and planning Collecting, recording, evaluating and representing	Conduct a bird survey by allocating groups of students to look at the different parts of the school grounds, make predictions and share results. What do the birds tell us about the health of the biodiversity in the local area? <i>Critical and creative thinking, Literacy, Numeracy, Personal and social capability</i>	Looking at habitat diversity through birds – a learning sequence (1.08mb pdf) Birds ID Charts for Adelaide Plains/Hills/Coastal/Barossa regions
	Geographic Inquiry and Skills Communicating Reflecting and responding	Summarising bird survey results and looking at preferences for food and habitat types. Identify bird needs and how the environment impacts their survival. Invite students to be part of taking action to improve the diversity of the school grounds. <i>Critical and creative thinking, Ethical understanding, Literacy, Numeracy, Personal and social capability</i>	Looking at habitat diversity through birds – a learning sequence (1.08mb pdf) Birds ID Charts for Adelaide Plains/Hills/Coastal/Barossa regions
Health and Physical Education Years 3/4	Personal, Social and Community Health Contributing to healthy and active communities	Activity 2 – Excursion to a freshwater site to collect and identify macroinvertebrates by using macroinvertebrate nets and kits. What do the macroinvertebrates data tell us about our water sources? How do these water sources impact humans? <i>Ethical understanding, Personal and social capability</i>	An investigation into biodiversity through macroinvertebrates and water quality for Years 2-7 (173kb docx) Teacher Info Pack: Freshwater Water Quality



	Movement and Physical Activity Learning through movement		Monitoring Teacher Information Pack: Macronvertebrates
History Year 3	Historical Knowledge and Understanding Community and remembrance	Reading eye-witness accounts of biodiversity during the 19 th century. The key idea to reinforce is land clearing for housing, roads, other structures and farming has reduced the vegetation and therefore the habitat, leading to extinctions for some and serious problems for other wildlife. <i>Ethical understanding, Literacy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
		Use images and paintings to compare Adelaide environment prior to European settlement to now. Ask them to share their thoughts on how the vegetation and people have changed. <i>Ethical understanding, Literacy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
History Year 5	Historical Knowledge and Understanding The Australian Colonies Historical Skills Chronology, terms and concepts Historical questions and research Analysis and use of sources Perspectives and interpretations	Activity 2 - Reading eye-witness accounts of biodiversity during the 19 th century. The key idea to reinforce is land clearing for housing, roads, other structures and farming has reduced the vegetation and therefore the habitat, leading to extinctions for some and serious problems for other wildlife. <i>Ethical understanding, Literacy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
Mathematics Year 3	Statistics and Probability Data representation and interpretation	Use aerial maps to measure canopy cover both in the past and now. Compare it with the vegetation on the aerial map of the school. Identify the similarities and differences. <i>Critical and creative thinking, Literacy, Numeracy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
	Statistics and Probability Data representation and interpretation	Activity 4 – Use aerial maps to measure canopy cover both in the past and now. Compare it with the vegetation on the aerial map of the school. Identify the similarities and differences. <i>Critical and creative thinking, Literacy, Numeracy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
Mathematics	Statistics and Probability	Use aerial maps to measure canopy cover both in the past and now. Compare it with the vegetation on the aerial map of the school. Identify the similarities and	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future



Year 4	Data representation and interpretation	differences. <i>Critical and creative thinking, Literacy, Numeracy</i>	(1.06mb docx)
	Statistics and Probability Data representation and interpretation	Activity 4 – Use aerial maps to measure canopy cover both in the past and now. Compare it with the vegetation on the aerial map of the school. Identify the similarities and differences. <i>Critical and creative thinking, Literacy, Numeracy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
Science Years 3	Science Inquiry Skills Questioning and predicting Planning and conducting Processing and analysing data and information Evaluating Communicating	Using aerial maps to measure canopy cover both in the past and now. Hypothesise about the health or otherwise of the biodiversity in the school grounds. Explain to students that there is a way to now test the hypothesis and see how healthy the biodiversity of the school grounds really is. <i>Critical and creative thinking, Literacy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
		Students discuss the pictures in groups. Find out what they know about macroinvertebrates, where they might live, how they are connected to each other and any other related information. What do the number of and type of macroinvertebrates tell us about the health of the biodiversity in the local area. <i>Critical and creative thinking, Literacy</i>	An investigation into biodiversity through macroinvertebrates and water quality for Years 2-7 (173kb docx) Teacher Info Pack: Freshwater Water Quality Monitoring Teacher Information Pack: Macrovertebrates
Science Year 5	Science Inquiry Skills Questioning and predicting Planning and conducting Processing and analysing data and information; Evaluating Communicating	Activity 1 – Use images and paintings to compare Adelaide prior to European settlement to now. Ask them to share their thoughts on how the vegetation and people have changed. <i>Ethical understanding, Literacy</i>	Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future (1.06mb docx)
		Activity 4 – Using aerial maps to measure canopy cover both in the past and now. Hypothesise about the health or otherwise of the biodiversity in the school grounds. Explain to students that there is a way to now test the hypothesis and see how healthy the biodiversity of the school grounds really is. <i>Critical and creative thinking, Literacy</i>	An investigation into biodiversity through macroinvertebrates and water quality for Years 2-7 (173kb docx) Teacher Info Pack: Freshwater Water Quality Monitoring Teacher Information Pack: Macrovertebrates
		Engagement Activities: Activity 1 -Students discuss the pictures in groups. Find	An investigation into biodiversity through



		<p>out what they know about macroinvertebrates, where they might live, how they are connected to each other and any other related information.</p> <p><i>Critical and creative thinking, Literacy</i></p>	<p>macroinvertebrates and water quality for Years 2-7 (173kb docx)</p> <p>Teacher Info Pack: Freshwater Water Quality Monitoring</p> <p>Teacher Information Pack: Macrovertebrates</p>
Other resources	Identification charts		
	Teacher information packs		
	Fact sheets		

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