

Linking the Australian Curriculum with NRM Education resources

Biodiversity (Years F-2)

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.

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>)

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.

The table below lists just a few curriculum links and ideas that connect to NRM Education resources. You are encouraged to seek further connections when planning learning.

| Curriculum links and ideas that connect to NRM Education resources | | | |
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| Learning areas | Strands | Learning experience ideas | NRM Education resources |
| English Foundation | Language Expressing and developing ideas Literature Responding to literature | View the pictures in the book <i>Window</i> ; <ul style="list-style-type: none"> • Discuss the changes that occur in each picture • Explore why these changes are occurring • What is the message of the book and why might it be important?  | Window by Jeannie Baker (book) |
| | | Read the book <i>Where the Forest Meets the Sea</i> ; <ul style="list-style-type: none"> • What senses did the boy use to explore and investigate the forest? • What did the boy <i>observe</i> in the forest? • Discuss the ways the book depicted the past, present and future of the forest • What is the message of the book and why might it be important?  | Where the Forest Meets the Sea by Jeannie Baker (book) |
| English Year 2 | Literature Literature and context | Read the book <i>You and Me, Murrabee</i> <ul style="list-style-type: none"> • What are the differences between the two girls in regards to; clothes, food, shelter, entertainment, language, chores and art? | You and Me, Murrabee by Kerri Hashmi, Felicity Marshall (book) |

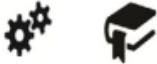


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| | <p>Language Expressing and developing ideas</p> | <ul style="list-style-type: none"> Discuss how our cultural behaviours and beliefs influence how we interpret and use the environment. Discuss how the River Murray has been affected over time and why.  | |
| | <p>Literature Responding to literature</p> <p>Literacy Interpreting, analysing, evaluating</p> | <p>Using <i>Activity 2</i>: Research Adelaide's Aboriginal groups and their dreaming stories that relate to animals and the land. How does indigenous language differ from the English language? How do indigenous dreaming stories differ from western stories?</p>  | <p>Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future.</p> |
| <p>Geography Year 1</p> | <p>Geographical Knowledge and Understanding</p> | <p>Use the <i>Woodland Wildlife Activity sheet</i> to identify the types of animals that live in woodlands and their shelter type.</p> <ul style="list-style-type: none"> Visit your local woodland, what kind of habitat can you identify? What habitat existed in your local area before the area was settled? Listen to the song <i>House on Fire</i> and discuss its message for collecting firewood. Using the <i>Lizard Lounge Activity Sheet</i> discuss why lizards need rocks, logs and hollows to survive. Construct a lizard lounge.  | <p>House on fire - logs have life inside (CDROM)</p> |
| <p>Geography Year 2</p> | <p>Geographical Knowledge and Understanding</p> | <p>Read the book <i>You and Me, Murrawee</i></p> <ul style="list-style-type: none"> What are the differences between the two girls in regards to; clothes, food, shelter, entertainment, language, chores and art? Discuss how our cultural habits influence how we interpret and use the environment. Discuss how the River Murray has been affected over time and why.  | <p>You and Me, Murrawee by Kerri Hashmi, Felicity Marshall (book)</p> |
| <p>History Foundation</p> | <p>Historical Skills Chronology, terms and concepts</p> | <p>Read the book <i>Where the Forest Meets the Sea</i>;</p> <ul style="list-style-type: none"> What senses did the boy use to explore and investigate the forest? What did the boy <i>observe</i> in the forest? Discuss the ways the book depicted the past, present and future of the forest What is the message of the book and why might it be important? | <p>Where the Forest Meets the Sea by Jeannie Baker (book)</p> |



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| History Year 2 | Historical Knowledge and Understanding Past and the present | <p>Read the book <i>You and Me, Murrawee</i></p> <ul style="list-style-type: none"> • Discuss how our cultural habits influence how we interpret and use the environment. • Discuss how the River Murray has been affected over time and why.  | You and Me, Murrawee by Kerri Hashmi, Felicity Marshall (book) |
| | Historical Knowledge and Understanding Past and the present | <p>Using <i>Activity 1: How has the Adelaide environment changed since European settlement?</i>, show the images and/or choose one of the texts and read it to the class. Identify how Adelaide has changed through discussing similarities and differences between then and now.</p> <p>Using <i>Activity 2: How much have Adelaide's landscapes and vegetation changed and how have these changes impacted on animals?</i> ask students how and why they think these changes have impacted on animals. Ask students to consider what could live (or be living) in their backyard and list some biodiversity improvements they can make to their backyard. Research Adelaide's Aboriginal groups and their dreaming stories that relate to animals and the land.</p>  | Improving biodiversity: Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future. |
| Science Foundation | Science as a Human Endeavour Nature and development of science | <p>Read the book <i>Where the Forest Meets the Sea</i>;</p> <ul style="list-style-type: none"> • What senses did the boy use to explore and investigate the forest? • What did the boy <i>observe</i> in the forest? • Discuss the ways the book depicted the past, present and future of the forest • What is the message of the book and why might it be important?  | Where the Forest Meets the Sea by Jeannie Baker (book) |
| | Science Understanding Biological sciences | <p>Use nets to collect and observe the macroinvertebrates living in the freshwater environment. Describe their habitat. What should we put in a "home" for these creatures if we wanted to keep some in our classroom for a while? How would we look after them?</p>  | Macroinvertebrates kit |



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| Science Year 1 | Science Inquiry Skills Evaluating Science Understanding Biological sciences | Using <i>Worksheet 2: Why is Biodiversity Important?</i> (pg 11) Ask students to survey an environment or schoolyard and identify all living and non-living things they observe. Discuss their results and introduce biodiversity and ecosystem concepts. Why are these important?  | Terrestrial habitat information pack (4.49mb pdf) |
| | Science Understanding Biological sciences | Look for macroinvertebrates in different places, e.g. river bank and in the shallows. Where did you find them? (e.g. under rocks, on the reeds, in the water) How are the habitats different? How do they move? Do they have legs? Draw some of the different creatures you find, taking care to notice and record their external features. Compare drawings to the actual macroinvertebrate.  | Macroinvertebrates kit |
| | Science Understanding Biological sciences | Use the <i>Woodland Wildlife Activity sheet</i> to identify the types of animals that live in woodlands and their shelter type. <ul style="list-style-type: none"> • Visit your local woodland, what kind of habitat can you identify? • What habitat existed in your local area before the area was settled? • Listen to the song <i>House on Fire</i> and discuss its message for collecting firewood. • Using the <i>Lizard Lounge Activity Sheet</i> discuss why lizards need rocks, logs and hollows to survive. • Construct a lizard lounge.  | House on fire - logs have life inside (CDROM) |
| Science Year 2 | Science Inquiry Skills Processing and analysing data and information | Using <i>Activity 1: Learning about macroinvertebrates</i> , explore the meanings of biodiversity, catchment, ecosystem, habitat, and macroinvertebrates. Distribute one A4 picture of macroinvertebrates to each student and discuss similarities and differences and group students according to similarities. Use the Habitat Zone Series of posters for students to identify the habitat of their macroinvertebrate.  | Improving biodiversity: An investigation into biodiversity through macroinvertebrates and water quality for Years 2-7. |
| | Science Understanding Living things grow, change and have offspring similar to themselves. | Identify some of the macroinvertebrates caught and find out about their life cycles. Describe it pictorially. Keep and care for some of the macroinvertebrates (e.g. baby yabbies) as class pets, observing how they grow and change.  | Macroinvertebrates kit |



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| | <p>Science Understanding</p> <p>Biological sciences</p> | <p>Using <i>Activity 1: How has the Adelaide environment changed since European settlement?</i> Show the images and/or choose one of the texts and read it to the class. Identify how Adelaide has changed through discussing similarities and differences between then and now.</p> <p>Using <i>Activity 2: How much have Adelaide's landscapes and vegetation changed and how have these changes impacted on animals?</i> ask students how and why they think these changes have impacted on animals. Ask students to consider what could live (or be living) in their backyard and list some biodiversity improvements they can make to their backyard. Research Adelaide's Aboriginal groups and their dreaming stories that relate to animals and the land.</p>  | <p>Improving biodiversity:</p> <p>Look at us! A Primary Years' investigation into Adelaide's biodiversity: past, present and future.</p> |
| | <p>Science as a Human Endeavour</p> <p>Nature and development of science</p> <p>Planning and conducting</p> <p>Science Understanding</p> <p>Biological sciences</p> | <p>Provide students with a bird ID chart between two and let them discuss briefly with each other what birds they recognise. Discuss: have you seen many birds around our school? Think about where they might live and what they need to survive here. If you were a bird at school, what would you need to survive, where would you get it from?</p> <p>As a class or with buddy students, students to conduct a bird survey across different areas in the school and record their results. Tell them to look for signs other than sounds and movement, such as feathers, nests, or droppings.</p>  | <p>Looking at habitat diversity through birds – a learning sequence</p> |
| <p>Other resources</p> | <p>Identification charts</p> | | |
| | <p>Teacher information packs</p> | | |
| | <p>Fact sheets</p> | | |

