

# ADOPT A BUSHLAND

## YEAR FOUR TO SIX TEACHERS GUIDE

### ADAPTATIONS

Students will gain an understanding of adaptations. At the completion of this topic they should be able to give examples of Australian plant and animal adaptations, as well as state whether they are structural, behavioural or functional.



## Biological Sciences

Year	Content Description	Elaborations	Teaching Points
<b>Four</b>	<b>Science Understanding /Biological Sciences</b> Living things, including plants and animals, depend on each other and the environment to survive. <b>ACSSU073</b>	<ul style="list-style-type: none"><li>Investigating the roles of living things in a habitat.</li></ul>	<ul style="list-style-type: none"><li>Some organisms produce food and are called Producers e.g. plants.</li><li>Some organisms eat food and are called Consumers e.g. animals or fungus.</li><li>All living things depend on each other for their needs e.g. plants make oxygen which animals need; when animals decay they return nutrients to plants.</li></ul>
<b>Five</b>	<b>Science Understanding /Biological Sciences</b> Living things have structural features and adaptations that help them to survive in their environment. <b>ACSSU043</b>	<ul style="list-style-type: none"><li>Explaining how particular adaptations help survival such as nocturnal behaviour or silvery coloured leaves of dune plants.</li><li>Describing and listing adaptations of living things suited for particular Australian environments.</li><li>Exploring general adaptations for particular environments such as adaptations that aid water conservation in deserts.</li></ul>	<ul style="list-style-type: none"><li>Three types of adaptations:<ul style="list-style-type: none"><li>· structural;</li><li>· behavioural; and</li><li>· functional.</li></ul></li><li>Adaptations are features that help an animal or plant survive.</li><li>Features of the Australian environment e.g. low amounts of water; extremes of temperature.</li></ul>

# Biological Sciences

Year	Content Description	Elaborations	Teaching Points
Six	<p><b>Science Understanding /Biological Sciences</b> The growth and survival of living things are affected by the physical conditions of their environment. <b>ACSSU094</b></p>	<ul style="list-style-type: none"> <li>Investigating how changing the physical conditions for plants impacts on their growth and survival such as salt water or use of fertilizers and soil types.</li> <li>Researching organisms that live in extreme environments such as Antarctica or a desert.</li> </ul>	<p>Same as previous plus</p> <ul style="list-style-type: none"> <li>Conditions required for native Australian seeds to germinate.</li> </ul>

- Science Inquiry Skills: Ideas for Investigations
  - Germination of seeds - investigate the germination of wattle (*Acacia*) seeds versus wheat seeds.
  - Many Australian native seeds need intense heat, such as from a fire, to germinate. This adaptation means the seeds germinate after fire, often burning away plants growing low to the ground. This creates less competition for space and nutrients while the seedlings are growing.
  - The Erin Earth (no date) website describes one method for germinating wattle seeds. It is also recommended to place seeds into a jar of clean sand and shake well. This scratches the surface of the seed and helps water to enter it.
  - Hot water can be used to simulate intense heat. Seeds can be heated by placing them in just boiled water and then allow the seeds and water to stand for 24 hours. Leave seeds to germinate on a bed of cotton wool or a damp kitchen sponge.
  - Both types of seeds should be subject to heating and also non-heating for a comparison.
  - It is important that each group test only ONE variable. This is the **Independent Variable** (the factor being tested - this value determines the value of other variables). In this case heat treatment or no heat treatment is the independent variable.
- Results need to be collected accurately, preferably at the same time each day. The data (amount of seeds germinated) is the **Dependent Variable** (the factor being measured).
- All other factors should be kept the same for each seed. These are the **Controlled Variables**. For example controlled variables include: same volume of water used; same environment (all on the same window sill); same number of seeds; and same set up such as moist cotton wool.
- *Bushland Flora and Fauna Adaptations Worksheet*
  - Use the *Adaptations Teacher Information* as a guide.
  - Before using the worksheet discuss adaptations with students. Use examples from *Adaptations Teacher Information*. Many adaptations of Australian animals and plants are about conserving water. A discussion about the environment will help set the scene.

## References

- UWA, 2012, *Adaptations 4: Surviving extremes* (fact sheet), <http://spice.wa.edu.au/>  
Erin Earth, no date, *Grow Wattles from Seed*, <http://www.erinearth.org.au/grow-wattles-from-seed/>