



Bushfire science 2: Exploring ecosystems

Components

| | NAME | DESCRIPTION | AUDIENCE |
|--|---|--|----------|
| | <i>Exporing ecosystems</i> teacher guide | This guide describes how students investigate a local ecosystem using sampling techniques, then use an interactive learning object to explore biodiversity in contrasting Western Australian ecosystems. | teachers |
| | <i>Exploring your environment</i> procedure sheet | Students use transects and quadrats to explore a local ecosystem. | students |
| | <i>Exploring Western Australia</i> learning object | Students explore relationships between species in three Western Australian ecosystems: Kimberley savannah; Western Desert; and South West forest. | students |
| | <i>Western Australian ecosystems</i> worksheet | This worksheet accompanies the learning object, <i>Exploring Western Australia</i> . Students create and analyse food webs, compare ecosystems and predict potential effects of fire. | students |

Purpose

Students use quadrats to **Explore** a local ecosystem before studying three contrasting regions of Western Australia.

Outcomes

Students:

- understand ecosystems consist of communities of organisms;
- understand species within an ecosystem are interdependent;
- compare and contrast different ecosystems;
- use techniques such as transects and quadrats to sample populations; and
- identify relationships between species in an ecosystem.

Activity summary

| ACTIVITY | POSSIBLE STRATEGY |
|---|-------------------------------|
| Students construct a transect line and analyse quadrats in a local environment, as described in the procedure sheet, <i>Exploring your environment</i> . | whole class then small groups |
| Students analyse their quadrat findings and answer questions from the procedure sheet, <i>Exploring your environment</i> . | individually |
| Students use the learning object, <i>Exploring Western Australia</i> , to explore three regions of Western Australia and answer questions on the accompanying worksheet, <i>Western Australian ecosystems</i> . | individually or small groups |

Teacher notes

Investigation: *Exploring your environment*

Ideally this investigation should be carried out in a natural ecosystem, to enhance students' understanding of nature and the importance of biodiversity. However any outdoor environment, such as a school oval, may be used if necessary.

The activity may be extended by asking students to take photos of species they find and try to identify them back in the classroom.

Learning object: *Exploring Western Australia*

Students use the learning object, Exploring Western Australia, to examine data from virtual transects and quadrats from the Kimberley, Pilbara and South Western regions of Western Australia. The accompanying worksheet, Western Australian ecosystems, helps them to interpret data and predict effects of fire on each ecosystem in preparation for use of a subsequent resource (*Bushfire science 4: Fire in Western Australia*).

Technical requirements

The teacher guide, procedure sheet and worksheet require Adobe Reader (version 5 or later), which is a free download from www.adobe.com. The procedure sheet and worksheet are also available in Microsoft Word format.

The learning object requires a modern browser (eg Internet Explorer 9 or later, Google Chrome, Safari 4.0+, Opera or Firefox). It can be placed on a web or file-server and run either locally or remotely in a web browser.

Acknowledgements

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Image credits

Exploring Western Australia

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- Little kangaroo paw, *Anigozanthos bicolour* subsp. *decrescens*. Photo by P Ollerenshaw. <http://www.anbg.gov.au/cgi-bin/phtml?pc=wae&pn=261>
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Associated SPICE resources

Bushfire science 2: Exploring ecosystems may be used in conjunction with related SPICE resources to teach aspects of biodiversity and oxidation.

| DESCRIPTION | LEARNING PURPOSE |
|---|------------------|
| <i>Bushfires (overview)</i> | |
| <i>Bushfires 1: Fiery failures</i> A lighthearted look at four environmental catastrophes through history brings out common connections with fire and combustion. | Engage |
| <i>Bushfires 2: Exploring ecosystems</i> Students use sampling techniques to investigate a local ecosystem, and an interactive learning object to explore biodiversity in contrasting Western Australian ecosystems. | Explore |
| <i>Bushfires 3: Oxidation</i> Students investigate combustion and other oxidation reactions. | Explore |
| <i>Bushfires 4: Fire in Western Australia</i> Students use an interactive learning object to examine effects of fire on three Western Australian ecosystems. | Explain |
| <i>Bushfires 5: Oxidation and combustion</i> Students use an interactive learning object to visualise oxidation reactions at a molecular level. | Explain |
| <i>Bushfires 6: Fire stories</i> Students read three interactive stories about human use of fire and its consequences in different parts of Western Australia. | Elaborate |