ADOPT A BUSHLAND

YEAR FOUR TO SEVEN TEACHERS GUIDE

BUSHLAND ACTIVITIES

Field work is a very important component of any science program. This document provides a variety of ideas of activities for bushland areas. Take care not to trample vegetation or disturb animal homes by overturning rocks or logs. Please do not remove material from the bushland - take photographs instead.

Science

Year	Content Description	Elaborations	Teaching Points
Four	**Science Inquiry Skills/ Processing and Analysing Data and Information** Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends. **ACSIS068**	• Identifying and discussing numerical and visual patterns in data collected from students' investigations and from other sources. • Using provided graphic organisers to sort and represent information. • Discussing with teacher guidance which graphic organisers will be most useful in sorting or organising data arising from investigations.	• Column and bar graphs: · use pencil; · use ruler; and title, axis labelled, scale intervals are equal. • Provide examples of graphic organisers. • Accurate measurement - reading a tape measure, starting at zero (not end of tape). • Accurate and detailed observations which are factual not emotive.
	Science Inquiry Skills/ Communicating Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports. **ACSIS071**	• Communicating with other students carrying out similar investigations to share experiences and improve investigation skills. • Using simple explanations and arguments, reports or graphical representations to communicate ideas to other students.	

Biological Sciences

Year	Content Description	Elaborations	Teaching Points
Four	**Science as a Human Endeavour/Use and Influence of Science** Science knowledge helps people to understand the effect of their actions. **ACSHE062**	• Considering methods of waste management and how they can affect the environment. • Exploring how science has contributed to a discussion about an issue such as loss of habitat for living things or how human activity has changed the local environment.	Same as previous
Five	**Science Inquiry Skills/ Processing and Analysing Data and Information** Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate. **ACSIS090** **Science Inquiry Skills/ Communicating** Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts. **ACSIS093**	• Constructing tables, graphs and other graphic organisers to show trends in data. • Identifying patterns in data and developing explanations that fit these patterns. • Discussing how models represent scientific ideas and constructing physical models to demonstrate an aspect of scientific understanding. • Constructing multi-modal texts to communicate science ideas. • Using labelled diagrams, including cross-sectional representations, to communicate ideas.	Same as previous plus • Protocols for drawing a scientific table: · use ruler; · use pencil; · title; and · columns / rows labelled. • Protocols for drawing scientific diagrams: · use pencil; · label; and · use of a scale.
Six	**Science Inquiry Skills/ Processing and Analysing Data and Information** Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate. **ACSIS107**	• Using digital technologies to construct representations, including dynamic representations.	Same as previous plus • Use of excel or computer graphics to display data. • Protocols for communicating scientifically: · third person; and · objective (not subjective).

Biological Sciences

Year	Content Description	Elaborations	Teaching Points
Six	**Science Inquiry Skills/ Communicating** Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts. **ACSIS110**	• Discussing the best way to communicate science ideas and what should be considered when planning a text. • Using a variety of communication modes, such as reports, explanations, arguments, debates and procedural accounts, to communicate science ideas. • Using labeled diagrams, including cross-sectional representations, to communicate ideas and processes within multi-modal texts.	Same as previous
Seven	**Science Inquiry Skills/ Processing and Analysing Data and Information** Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships, including using digital technologies as appropriate. **ACSIS129** **Science as a Human Endeavour/Use and Influence of Science** Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations. **ACSHE120**	• Understanding different types of graphical and physical representation and considering their advantages and disadvantages. • Describing the trends shown in collected data. • Considering how human activity in the community can have positive and negative effects on the sustainability of ecosystems.	Same as previous plus • Research the negative effects of rubbish on the ecosystem, could be linked to: · food chains/ webs; and · bioaccumulation/ magnification.

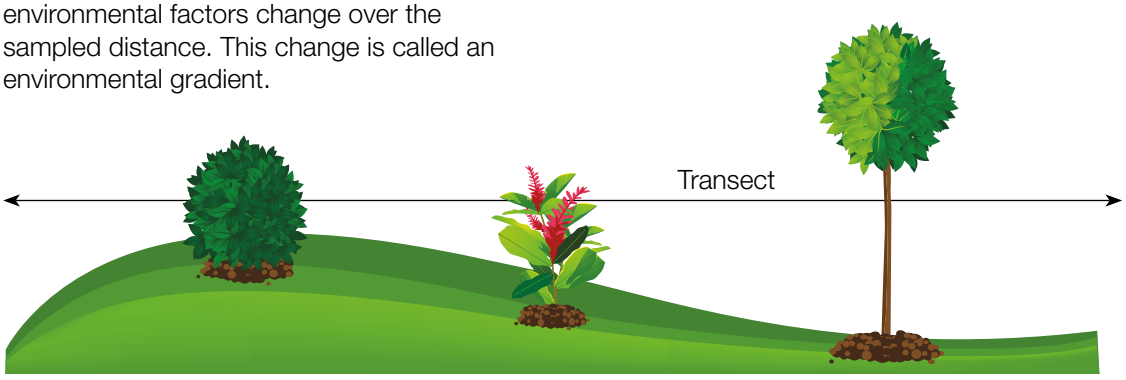
Bushland Activities

- Rubbish inventory
  - Select a length or area of bush (5m, 10m or longer). Students walk from one end to the other making a list of all items of rubbish they come across. Rubbish can also be collected along the way.
    - Graph the data back in the classroom.
    - Older students might like to complete a more structured transect.
- What's hiding in the Leaf Litter?
  - Explore the leaf litter to find invertebrates (see *Exploring Leaf Litte*r worksheet).
- Bird watching
  - Use binoculars and bird field guides to identify birds found in your local bushland. (see *So you want to be a twitcher?* worksheet).
- Photography
  - Take plenty of photographs which can be used back in the classroom.
- Transects
  - Construct a transect. Be careful not to disturb any of the plants.
  - Observations can be recorded on graph paper (already drawn up in class) or on a fabricated worksheet.
- Quadrats
  - Estimate the population of plants or weeds using quadrats (see Quadrat Information section).
- Leaf Classification
  - Collect leaves, preferably from the ground. Group them according to their physical attributes.
    - Students can draw Venn diagrams.
    - Please DO NOT remove leaves from bush. Leaf litter creates habitat for invertebrates and helps to maintain good soil structure. Take a photograph instead.
- Clean Up
  - Complete an Emu Stalk (students walk in a line through the bushland carefully - collecting rubbish as they go) to collect all the rubbish from the bushland. Area needs to have open bushland - not dense scrub.
- In the Classroom
  - Use data and observations to draw graphs, create infographics, PowerPoint or reports.

Transect Information

A transect is a straight line along which observations are made. It can be as simple as a string or rope placed in a line on the ground. The number of organisms or objects are observed and recorded at regular intervals along the transect. Transects can be up to 200m in length. Transects are usually carried out to provide information on the distribution of species in the community. This is of particular value in situations where environmental factors change over the sampled distance. This change is called an environmental gradient.

A transect is constructed by measuring out the set distance. It is suggested to cover at least 20m. A mark is made at set intervals (usually every one metre or 50cm if transect is short). Interval distance depends on the total length of the transect. At each interval the plant species are noted. This type of transect is called point sampling. Another type of transect is continuous belt transect where species found between two parallel lines (one metre apart) are noted.



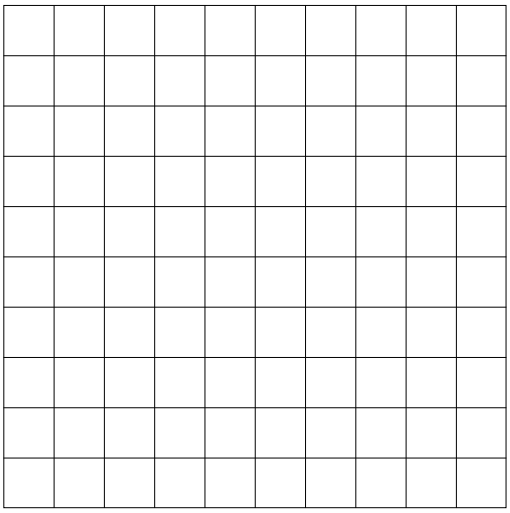
Quadrat Information

A quadrat is a square or rectangular plot of land marked off for the study of plants and animals. Quadrats are usually selected at random to act as samples to indicate the local distribution of plants or animals.

For example you may like to gain an estimate of the amount of weeds in an area.

1. Quadrats are placed randomly in a large area of bushland.
2. The number of weed plants are counted OR the percentage of area covered by weeds estimated in each quadrat.
3. Data from each quadrat can be collated and the totals used to estimate density of the weeds

Each quadrat is 1m by 1m. They can be made out of inflexible material like wood or PVC tubing; however the simplest construction is a 4m length of rope that can be laid on the ground in a square. Your local high school may have quadrats you can loan.



$$\text{Estimated density} = \frac{\text{total number weeds OR percentage area covered by weeds}}{\text{number of quadrats x area of each quadrat}}$$

References

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