**teachers guide**

**Soil life 1**

**Life in the soil**

# Components

|  |  |  |  |
| --- | --- | --- | --- |
|  | NAME | DESCRIPTION | AUDIENCE |
|  | *Life in the soil*  teachers guide | This guide includes discussion points to engage students’ interest in the world beneath their feet. | teachers |
|  | *Ecosystems*  presentation | This presentation contains images of contrasting environments, including soil, that display a variety of organisms. | students |

Purpose

To **Engage** students’ interest and enable them to build an understanding of the variety and importance of soil fauna.

# Activity summary

Outcomes

Students:

* appreciate that there is an exciting and diverse ecosystem, full of unusual organisms, right beneath their feet; and
* offer their own explanations as to why soil is important.

|  |  |
| --- | --- |
| ACTIVITY | POSSIBLE STRATEGY |
| Teacher shows the presentation, *Ecosystems*. | teacher-led presentation |
| discussion | teacher-led, whole group |

# Information for teachers

The presentation, *Ecosystems*, contains images of familiar Australian ecosystems (rainforest, desert and wetland) and a more unfamiliar ecosystem, soil.

Teachers display the presentation. For each ecosystem, challenge students to suggest what organisms

might live there, before revealing examples. The soil ecosystem is introduced with examples of familiar macrofauna, before including smaller (and less familiar) mesofauna and microorganisms.

Organisms appear in the following order:

# Technical requirements

The guide requires Adobe Reader (version 5 or later), which is a free download from [www.adobe.com.](http://www.adobe.com/) The presentation is provided in two formats: Microsoft PowerPoint and Adobe PDF.

|  |  |
| --- | --- |
| SECTION | CONTENTS |
| rainforest (Daintree) | spider, Boyd’s forest dragon, tree frog, tawny frogmouth, tree snake |
| desert (Alice Springs) | kangaroo, dingo, spinifex hopping mouse, bilby, thorny devil |
| wetland (Herdsman Lake, Perth) | Pacific black duck, western tiger snake, dragonfly, motorbike frog |
| soil macrofauna | earthworm, ant, slater, spider, pie dish beetle, centipede |
| soil mesofauna | springtails, mites, pseudoscorpions, nematodes |
| soil microbes | bacteria, fungi |

Suitable discussion questions and suggested responses:

|  |  |
| --- | --- |
| QUESTION | SUGGESTED RESPONSE |
| What is an ecosystem?  Describe some other examples of ecosystems. | An ecosystem is a system formed by interaction between living things and their non-living surroundings. |
| Is soil an ecosystem? | Soil is an ecosystem as it contains abundant life, has physical features, and interaction between them creates a viable system. |
| In what ways do soils benefit humans? | Soil provides nutrients to plants, that may become food we eat, or provide food for animals we eat.  Components of soil are used in medicine, eg Actinomycetes, a soil bacteria that has been used to produce several antibiotics.  Components of soil are used in art, eg pottery and pigments.  Components of soil are useful in food production, eg camembert and brie cheese are both encased in a cover of Penicillium mould (the white outer layer) that helps it ripen.  Note: Students may come up with responses such as mineral cosmetics, bricks and cement. Whilst these do originate in the earth, they are made from rocks and minerals rather than soil. Soil does contain small quantities of rocks and minerals, however large-scale production requires the use of components beneath soil, rather than soil itself. |
| How is the soil ecosystem important? | Soil is present in all terrestrial ecosystems and plays an important role as:   * a fertile substrate in which plants grow; * a source and store of water; * a source of elements essential for life (eg carbon and nitrogen); * a source and store of heat; * part of matter cycling systems, including a role in waste degradation and water purification; * a habitat for organisms; * a store of gases such as carbon dioxide, oxygen and nitrogen; and * a record of historical events (eg fossils and climate). |

# Image credits

**presentation, *Life in the soil***

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