

LESSON PLAN

Life on a tree



Photo: Ravindra P N

Time required: 40 minutes to an hour

Age group: Primary school students

Budget: No cost

Aim

To teach students about the importance of trees in the natural environment, and the complex network of interactions in life.

This lesson involves working scientifically, and helps to engage students in an exploration of their school habitat while learning about the living world around them.

Outcomes

- Students will be able to understand the local natural environment.
- Students will be able to identify the interactions between living things.
- Students will be able to appreciate the diversity of animals and plants on and around a single tree.
- Students will learn to work scientifically.
- The school will be able to better identify and improve its local habitat to benefit native animals and plants.

Resources required

- Datasheet – attached
- Bug Guide – attached
- Bird Guide – attached
- Invertebrate Guide – attached
- Curiosity
- Optional: Gardening gloves
- Optional: Notebook and pen
- Optional: Colour pencils for drawing

Introduction

Trees provide food and shelter for animals. Their bark and roots are a perfect place for invertebrates (such as insects) to thrive. Their fruits, flowers and even leaves are useful to not just us, but other animals and plants.

However, every tree is different; some are endemic (meaning they are found nowhere else in the world), some are cosmopolitan (meaning they are found everywhere). Every tree in a habitat might be interacting with different animals and plants.

This lesson will teach students about the importance of different trees in their school environment through first-hand observation of the interactions of different plants and animals with the trees.

Setting up (15–20 minutes)

Form students into groups of three, each of which choose a tree for observation. If there are fewer or more trees, adjust the number of students in each group accordingly. Each group observes a different tree and completes a data sheet as shown in the example below.

Activity steps

- 1 Take a look at the guides for identifying common invertebrates and birds.
- 2 List in the data sheet all the types of life you can see on the tree and near its base. First inspect the tree for flying animals like birds, flies, wasps and bees. Then look for other insects, possums, fungi, lichens, plants, etc. Removing a small piece of bark might reveal some invertebrates – but be careful! Watch out for Redback and Funnel-web spiders, wasps and bull ants.
- 3 Then look for insects and plants within half a meter around the base of the tree. Gently move aside any leaf litter using a stick. When moving small stones, pull them towards you so that anything under them can run away from you. And remember not to put your fingers anywhere you cannot see. Wear garden gloves if required. Remember to put everything back as you found it, because it is someone's home and they will need to move back in again.
- 4 For identifying birds and invertebrates, use the guides provided with this lesson plan. Note the number of different types of animals and plants, and also the number of individuals in each group. For example, if you see some ants, approximately how many are there? How many different species do you think there are? Enter the numbers in the datasheet as you go.
- 5 In the same datasheet, note how the animals interact with the tree. Do they nest, forage (search for food) or feed on the tree? What do they feed on? What other ways could they be interacting? How do the different animals interact with each other and with the tree?
- 6 Note the time of day and the month so that you can compare how interactions change over time in the same day and over months.
- 7 Compare the number of different animals that were observed by the different groups on and around the base of each tree.

Additional activities

- Draw the tree and the animals found on or near the tree.
- Make up stories about them.
- Make a small poster of your findings.
- Draw an interaction map showing how different animals on and around the tree are connected through their interactions. For example, ants eat aphid poo, aphids eat the plant/tree sap, beetles eat the aphids, and the ants protect aphids from the beetles.
- Ask questions based on your observations.

Additional questions

- What is the total number of different animals found by all the students?
- Do the number and kind of animals differ between each tree? Why do you think they are different?
- What is biodiversity?

- What is a habitat?
- What is mutualism? (Think of the ant-aphid interaction)
- What is predation? (Think of the beetle-aphid interaction)
- What are some other uses of trees? (For example, providing oxygen, influencing temperature, making paper, used in construction, etc.)
- If you could not find many animals, what might be the reason?

Creating habitat

- Test if adding more plants increases the number of local animals.
- Add a birdbath, nestbox, insect hotel or bird feeder, or even just a pile of small stones or leaf litter.
- Reward students for creating such habitat.



The Habitat Stepping Stones program

www.habitatsteppingstones.org.au

The students' families, and the school itself, can join the Habitat Stepping Stones program and pledge to add three or more habitat elements to their place. They will then receive a colourful plaque to add their front fence, and a bird can be placed on their property on the online map.,

The students can take another survey after adding extra habitat elements.

Questions for scientists?

If you have any questions or comments about this lesson, please email rvndrpn@gmail.com (Ravindra, PhD student, Macquarie University). Your questions can then be directed to scientists at Macquarie University.

Show off your results!

You can also tell Ravindra the results of your lesson.

Example data sheet

Student name: _____

Date: _____

Time: _____

Weather: _____

Tree name or number: _____

Total number of kinds of animals found: _____

Total of all individual animals found: _____

Total number of kinds of plants/fungi/lichens found: _____

Total of all individual plants/mushrooms: _____

	Animal/plant/ fungus	How many species?	How many individuals?	How do they interact with the tree?	Comments/notes
1	E.g. [Animal] Ant	2 (one small black ant, one large sugar ant)	10 black ants, and many sugar ants	Find food on tree, nest under it, interact with aphids on tree	Found some under a stone near tree
2	E.g. [Fungus] Toadstool	1	Many	Grow near the base, live on dried leaves	
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