

# Lovely Leaf Litter

Look down! Leaf litter is the organic matter that falls from plants onto the ground. It's not just leaves though – it can also be twigs, bark, gumnuts and seeds. Dead leaves, twigs and other plant parts that have fallen to the ground and make a layer, a bit like a blanket.

Leaf litter is really important as it provides food and shelter from predators for a range of smaller critters like frogs, reptiles and especially a huge number of insects. Some birds use it to build their nests, while other birds such as cockatoos and owls, as well as possums and gliders use leaf litter to make their hollows warmer and more comfortable.

Soil bacteria and fungi help leaf litter to rot down. This helps to form soil and creates nutrients for plants. Leaf litter also stops the soil from drying out and prevents erosion, making it the perfect place for new plants to sprout.

Leaf litter has three layers. Newly fallen leaves and twigs in the fresh layer, partly broken down leaves and twigs in the next layer and the completely rotted humus layer at the bottom. This layer is It's dark, rich, and crumbly.

We are going to estimate the amount of leaf litter in our quadrat. Get down close as well and have a look and see if you can spot anything living in your leaf litter!

## What you will need

Measuring tape (10m)

Rubber mallet

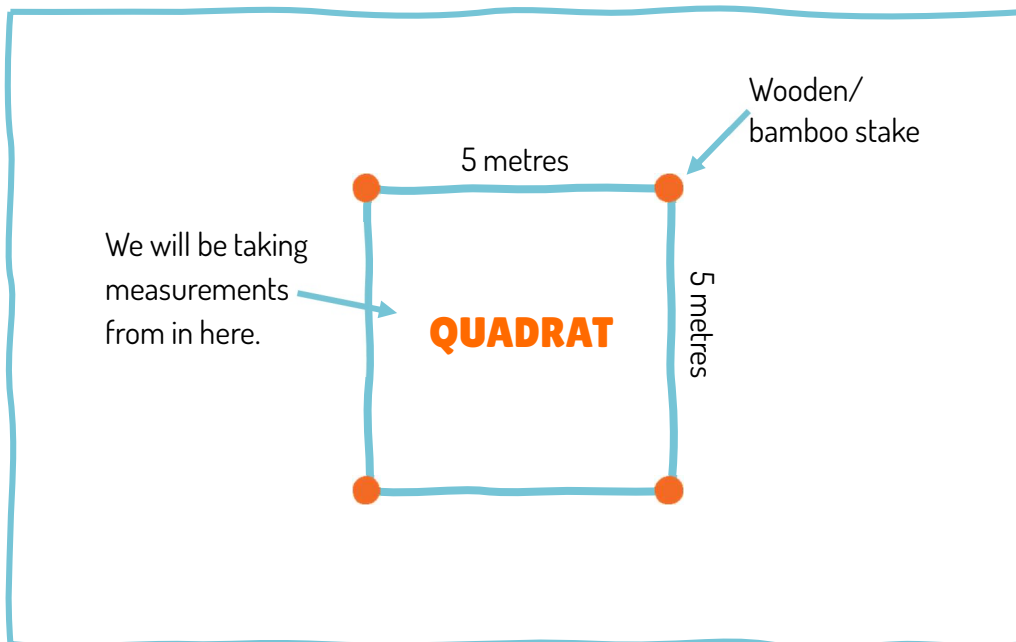
Four wooden or bamboo stakes





## What to do

1. Choose a flat area in your planting site or in a local park. Mark out a 5m x 5m quadrat. Think of a quadrat as a big picture frame that you place on the ground. Everything inside the frame is what you will study. We will use the quadrat to count how much leaf litter is inside the frame.
2. Mark out each corner of your quadrat using a stake. Use the measuring tape to measure the distance between each stake. Mark out three quadrats.
3. Guess the cover of leaf litter in each quadrat. If your quadrat is only leaf litter, then that will be 100% cover. If about half of the quadrat is leaf litter, then we record 50% cover, and so on. Tick the box on the next page when you have an estimate. Remember, it's just a guess!



Did you know? Echidnas will hunt for ants, termites and worms hidden in the leaf litter using their amazing sense of smell and long tongue. An echidna's tongue is 15 cm long - that's half the size of your ruler! Their tongue is super long and sticky, and rolls out and then back into their mouths (a bit like a party blower!)



**QUADRAT 1**

<b>Less than 5%</b>	<b>5–25%</b>	<b>26–50%</b>
<b>50–75%</b>	<b>76–99%</b>	<b>100%</b>

**QUADRAT 2**

<b>Less than 5%</b>	<b>5–25%</b>	<b>26–50%</b>
<b>50–75%</b>	<b>76–99%</b>	<b>100%</b>

**QUADRAT 3**

<b>Less than 5%</b>	<b>5–25%</b>	<b>26–50%</b>
<b>50–75%</b>	<b>76–99%</b>	<b>100%</b>

Where do the most animals live in our natural bushland? Leaf litter! Think of leaf litter like a mini city, teeming with life. It provides food and shelter for insects, worms and other small animals. Leaf litter is also a safe place for spiders, wasps, ants, flies, butterflies and moths to lay their tiny eggs.



## Lovely Leaf Litter – Teacher Resource

Suggested Lesson time – 1 lesson, approximately 50 minutes.

This lesson will help students to understand the role of leaf litter in the ecosystem and identify some of the animals that live there. It can be a standalone lesson or be combined with any other worksheet and lessons in the Habitat Warriors program (for example, linking it to specific habitats with 'What's the Story with Understorey', 'Habitat Level Up' and 'Wildlife Detectives'). Use the 'Minibeast Safari Hunt' worksheet and [Common Pollinator and Beneficial Insects Guide](#) to learn more about the insects that use leaf litter as their home.

At the end of this lesson students will:

- Describe the role of leaf litter in protecting soil and providing habitat for a variety of life forms
- Understand which animals are likely to use leaf litter for food and shelter.
- Explain the importance of leaf litter in recycling nutrients.
- Measure the percentage cover of leaf litter in an area.
- Develop skills in observing and identifying the different animals that live in leaf litter.

This lesson can be made suitable for all primary levels – suggestions on how you could 'level up' the lesson are also given, while links to the Victorian Curriculum can provide additional ideas.

### Basic Lesson Outline

Briefly explain what leaf litter is and why it's important for the natural environment. Highlight that it provides habitat for many small creatures and helps to recycle nutrients, retain moisture and protect the soil from erosion.

- Ask students to what kinds of animals that they think live in the leaf litter, and what benefits leaf litter provides for these animals.
- Ask students to why they think that leaf litter is important for the soil.

Provide students with the 'Lovely Leaf Litter' worksheet

Explain the practical task

- Organise the class into small groups to undertake the monitoring task. Each group can mark out their own quadrat.
- Don't touch any insects that the students find, as the insects may bite or sting.
- Leave plenty of time for the students to complete the practical task.

### Class discussion

- Did you find any mini-beasts or small creatures in the leaf litter? What did they look like?
- What differences did you notice in the leaf litter under different types of trees? How does the amount and composition of leaf litter change throughout the year?
- What roles does leaf litter play in supporting larger animals in our environment?
- What might happen to our native animals if there was no leaf litter on the ground (for example, following bushfire)? What would change?
- How does leaf litter help to recycle nutrients back into the soil?
- How can we protect leaf litter (i.e. retain trees and understorey plants that provide leaves and twigs, don't "clean up" leaf litter)?

### Lesson Level Up

There are multiple ways to extend and expand this lesson to make it more comprehensive and/or introduce more complex topics for older children/year levels. For example:

- Expand the Science component: Explore the role of the food chain in our natural environment, starting with small soil and leaf litter organisms.
- Expand the Science component: Ask students to research a particular animal, fungi or bacteria that uses leaf litter for food and shelter, including the role that this organism plays in the environment.
- Expand the Science component: Explore how the decomposition of leaf litter is crucial to maintaining a healthy environment, and the role that decomposers play in breaking down leaf litter.

The complexity of this section could be adjusted depending on year level.

## Detailed Curriculum Links

Science			
	Foundation – Level 2	Level 3 – Level 4	Level 5 – Level 6
<b>Science Understanding</b>			
<b>Science as a human endeavour</b>	People use science in their daily lives.	Science knowledge helps people to understand the effects of their actions.	Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives.
<b>Biological sciences</b>	Living things have a variety of external features and live in different places where their basic needs, including food, water and shelter, are met.	Living things can be grouped on the basis of observable features and can be distinguished from non-living things.	Living things have structural features and adaptations that help them to survive in their environment
<b>Science Inquiry Skills</b>			
<b>Questioning and Predicting</b>	Respond to and pose questions, and make predictions about familiar objects and events.	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge.	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be based on previous experiences or general rules.

Science			
	Foundation – Level 2	Level 3 – Level 4	Level 5 – Level 6
<b>Planning and conducting</b>	Participate in guided investigations, including making observations using the senses, to explore and answer questions.	Suggest ways to plan and conduct investigations to find answers to questions including consideration of the elements of fair tests.	With guidance, plan appropriate investigation types to answer questions or solve problems and use equipment, technologies and materials safely, identifying potential risks.
		Safely use appropriate materials, tools, equipment and technologies.	
<b>Recording and processing</b>	Use informal measurements in the collection and recording of observations.	Use formal measurements in the collection and recording of observations.	Construct and use a range of representations, including tables and graphs, to record, represent and describe observations, patterns or relationships in data.
	Use a range of methods, including drawings and provided tables, to sort information.	Use a range of methods including tables and column graphs to represent data and to identify patterns and trends.	
<b>Analysing and evaluating</b>	Compare observations and predictions with those of others.	Compare results with predictions, suggesting possible reasons for findings.	Compare data with predictions and use as evidence in developing explanations
			Suggest improvements to the methods used to investigate a question or solve a problem.
<b>Communicating</b>	Represent and communicate observations and ideas about changes in objects and events in a variety of ways.	Represent and communicate observations, ideas and findings to show patterns and relationships using formal and informal scientific language.	Communicate ideas and processes using evidence to develop explanations of events and phenomena and to identify simple cause-and-effect relationships.

<b>Mathematics</b>			
	<b>Foundation – Level 2</b>	<b>Level 3 – Level 4</b>	<b>Level 5 – Level 6</b>
<b>Measurement and Geometry</b>			
<b>Using units of measurement</b>	<p>F: Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language</p> <p>L1: Measure and compare the lengths, masses and capacities of pairs of objects using uniform informal units</p> <p>L2 Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units</p>	<p>L3: Measure, order and compare objects using familiar metric units of length, area, mass and capacity</p> <p>L4: Use scaled instruments to measure and compare lengths, masses, capacities and temperatures</p>	<p>L5: Choose appropriate units of measurement for length, area, volume, capacity and mass</p> <p>L6: Connect decimal representations to the metric system</p>
<b>Statistics and Probability</b>			
<b>Chance</b>			<p>L6: Describe probabilities using fractions, decimals and percentages</p> <p>Compare observed frequencies across experiments with expected frequencies</p>



Statistics and Probability cont.			
	Foundation – Level 2	Level 3 – Level 4	Level 5 – Level 6
<b>Data Representation and Interpretation</b>		<p>L3: Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies</p> <p>Interpret and compare data displays</p>	<p>L5: Pose questions and collect categorical or numerical data by observation or survey</p> <p>Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies</p> <p>Describe and interpret different data sets in context</p>