Trees on Farms

Image thanks to Tree Alliance

Forest Education Foundation

The stories behind our trees

Trees on Farms - Primary Teaching Resource

Contents

Image thanks to Tree Alliance

Why *Trees on Farms?*

Agricultural landscapes are constantly changing - as populations increase worldwide, so does demand for food, water and fuel. Alongside this increasing demand is the need to reduce carbon dioxide (CO_2) emissions. One positive action that is helping to meet global demand for resources, while also helping to improve the carbon balance is planting trees and caring for landscapes.

Planting trees on farms provides benefits for the environment, landowners and society as a whole. While some trees are planted to become a long term feature of the landscape, others are planted with the intention of being grown, harvested and replanted - helping to improve the carbon balance in the global system.

As well as planting trees on farms, managing native vegetation communities, including forests, also brings benefits to the overall health of the property. Native vegetation enhances biodiversity values, connects patches of remnant forests and provides future wood resources.

There has never been a better time to plant trees - whether on the farm, at school or in your backyard.

About this Resource

This resource has been produced by the Forest Education Foundation to provide support for teachers wanting to explore *Trees on Farms* in the primary teaching space (Years 4-6). The learning opportunities and guiding questions can be modified to suit the capabilities and interest of the students as necessary. This resource compliments the Department of Education Food and Fibre Production: Planning Guides.

The Forest Education Foundation can support teachers and students with further learning opportunities to explore forest environments through a range of different programs and resources tailored to meet the Australian Curriculum. Contact us to find out more:

Forest Education Foundation
Darcy - 0417 532 058
info@forest-education.com

Forest Literacy

The Suggested Activities in *Trees on Farms* support the *Tasmanian Forest Education Plan*: A Conceptual Framework for educating Tasmania's K–12 students about forests. The plan's goal is to help students become forest-literate, so that they:

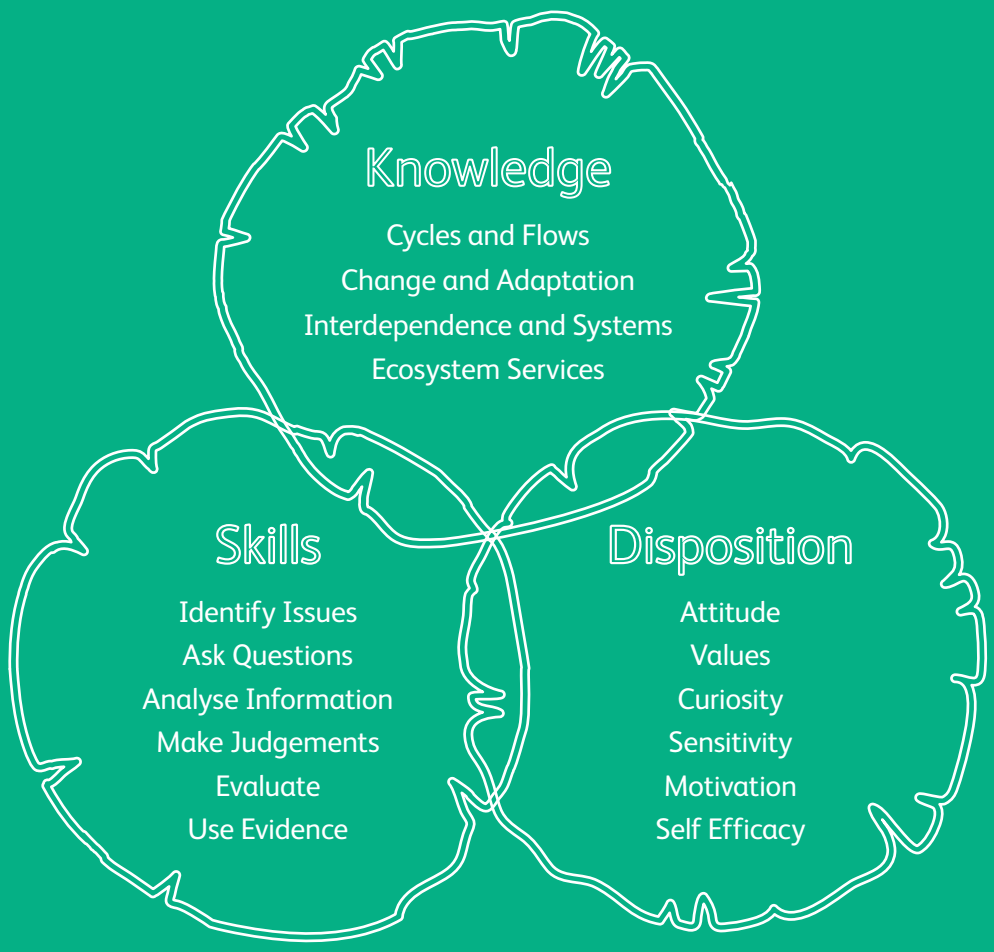
> Appreciate the importance of forests and understand forest systems. A forest literate student can make informed decisions about forests and act for the future of forests – integrating environmental, economic and social/cultural perspectives.

Forest Literacy is multifaceted – it embodies a student's knowledge, skills and disposition.

Forest Literacy enables students to:

- Appreciate our forests and their place in them.
- Understand the ecological web.
- Comprehend the interactions and outcomes of cycles and flows in forest systems.
- Realise their connection and dependence on forests landscapes.
- Recognise the complexities of managing dynamic natural resources for a range of purposes.
- Make informed decisions and act as stewards for the future of forest landscapes and resources.

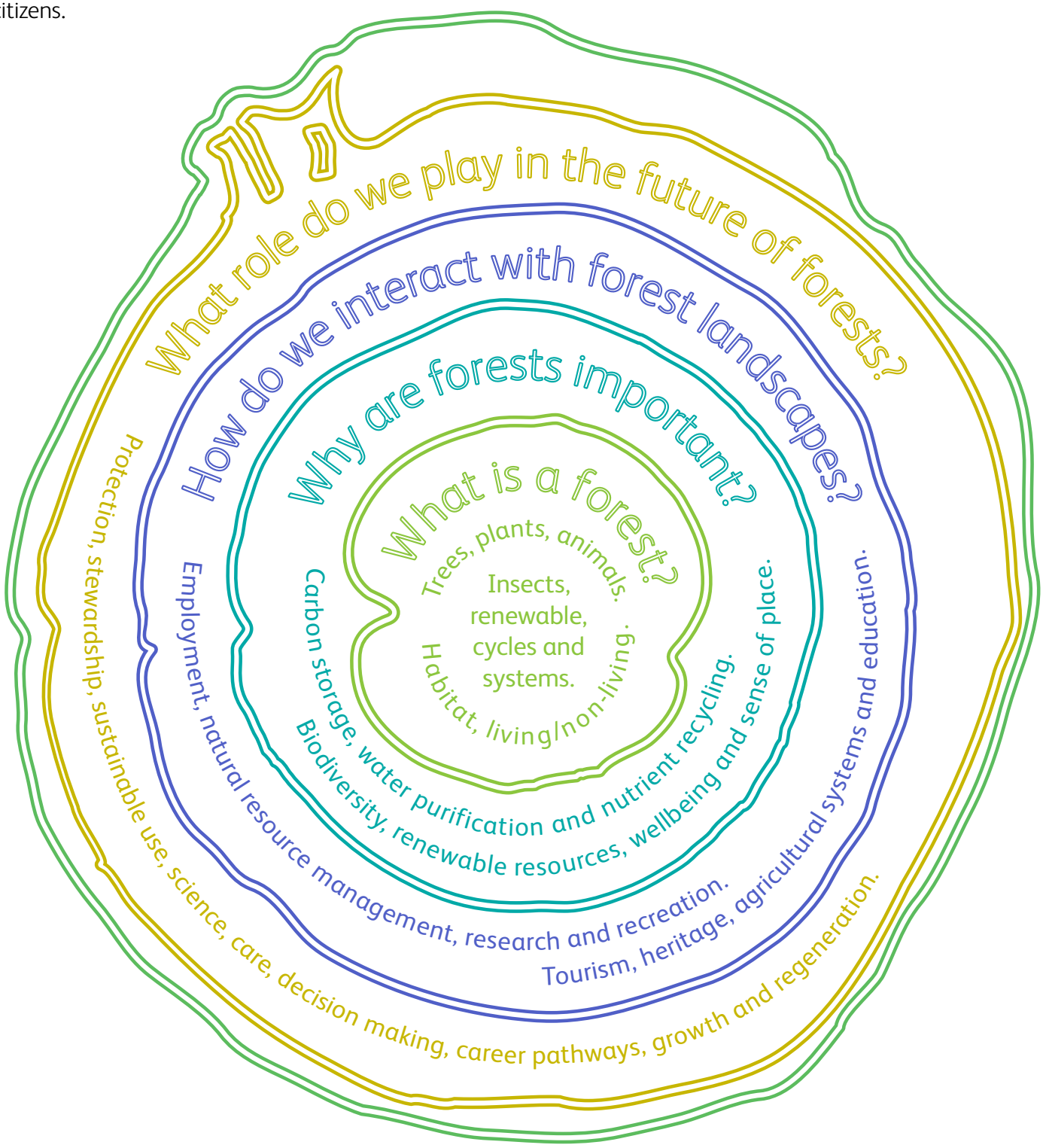
What is Forest Literacy?



Conceptual Framework Questions

Trees on Farms

These questions build upon each other as a scaffolding tool, enabling students to progress from a fundamental awareness to a deeper understanding of forests. Each question supports students to become increasingly more knowledgeable and capable of actively contributing to decision making processes, as forest literate citizens.



Curriculum Links: Years 3-4

Trees on Farms

Curriculum Connections - Key Content			
Technologies	**Design and Technologies**	ACTDEK012	Investigate food and fibre production and food technologies used in modern and traditional societies
		ACTDEK010	Recognise the role of people in design and technologies occupations and explore factors, including sustainability that impact on the design of products, services and environments to meet community needs

Key Interdisciplinary Connections			
Learning Area	**Strand**	**Code**	**Content Descriptors**
Science Understanding	**Biological Sciences**	ACSSU044	Living things can be grouped on the basis of observable features and can be distinguished from non-living things
		ACSSU072	Living things have life cycles
		ACSSU073	Living things depend on each other and the environment to survive
	Chemical Sciences	ACSSU074	Natural and processed materials have a range of physical properties that can influence their use
Science as a Human Endeavour	**Nature and development of science**	ACSHE050/ ACSHE061	Science involves making predictions and describing patterns and relationships
	Use and influence of Science	ACSHE051/ ACSHE062	Science knowledge helps people to understand the effect of their actions
HASS	**Geography**	ACHASSK088	The importance of environments, including natural vegetation, to animals and people
		ACHASSK090	The use and management of natural resources and waste, and the different views on how to do this sustainably

Curriculum Links: Years 5-6

Curriculum Connections - Key Content			
Technologies	**Design and Technologies**	ACTDEK021	Investigate how and why food and fibre are produced in managed environments and prepared to enable people to grow and be healthy
		ACTDEK019	Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use

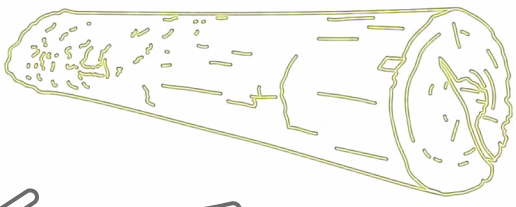
Key Interdisciplinary Connections			
Learning Area	**Strand**	**Code**	**Content Descriptors**
Science Understanding	**Biological Sciences**	ACSSU043	Living things have structural features and adaptations that help them to survive in their environment
		ACSSU094	The growth and survival of living things are affected by physical conditions of their environment
	Use and influence of Science	ACSHE083/ ACSHE100	Scientific knowledge is used to solve problems and inform personal and community decisions
HASS	**Geography**	ACHASSK113	The environmental and human influences on the location and characteristics of a place and the management of spaces within them

Teacher Guide

Contents

What are the Benefits of Trees on Farms?

Improve water use efficiency and water quality



Valuable source of timber and biofuel

Improve the carbon balance

Provide habitat and increase biodiversity

Provide protection for stock and crops

Help to maintain soil health

What are the Benefits of Trees on Farms?

Habitat and Biodiversity

Biodiversity is the variety of all life forms, plants, animals and microorganisms, their genes, and the ecosystems they inhabit.

Planting trees and managing native forest and vegetation on farms can help to provide important habitat for a range of species and has the potential to increase the biodiversity of an area.

The Carbon Balance

Planting trees on farms has the potential to have a positive impact on a global scale. Trees, like other plants, create their own food source through photosynthesis.

- The carbon that the tree absorbs from the atmosphere is stored in the tree, its leaves, branches, bark and wood.
- Carbon is also stored in the wood products produced from planted trees, and managed forests, within the farm landscape.

Timber and Biofuels

Trees on farms can be grown for many values, including the production of timber products. Wood is one of the most useful, natural and renewable resources available.

- Sustainably managed native forests and trees on farms provide other benefits to the productivity and health of the farm over their growth cycle.
- Trees are a source of biofuel - an energy source made from organisms and their products (biomass) such as wood and plant matter, algae, or animal fats.
- Wood pellets, a type of biofuel, are made from recycled wood waste - wood shavings and sawdust, and are held together with the trees natural glue. They can provide energy to domestic, commercial and industrial markets.

What are the Benefits of Trees on Farms?

Stock and Crop Protection

Shelterbelts are rows of trees grown in farm landscapes to provide protection for stock and crops from the elements; wind, sun, rain etc.

- Shelterbelts can be managed for a range of timber products.
- There is more to a shelterbelt than just planting trees in rows. Land owners need to consider: The species, number of rows, spacing between rows and individual trees, prevailing wind direction, topography, as well as opportunities for the future.

Water Quality

When trees are planted alongside other crops, they help reduce the amount of water lost through soil evaporation. This helps to improve water efficiency.

- Trees planted around streams and dams can improve the water quality by reducing run off of chemicals and sediments into water sources and help to stabilise the bank.
- Problems caused by salinity can be addressed by planting trees.
- Trees planted alongside creeks and dams can provide many important benefits to the farm ecosystem.

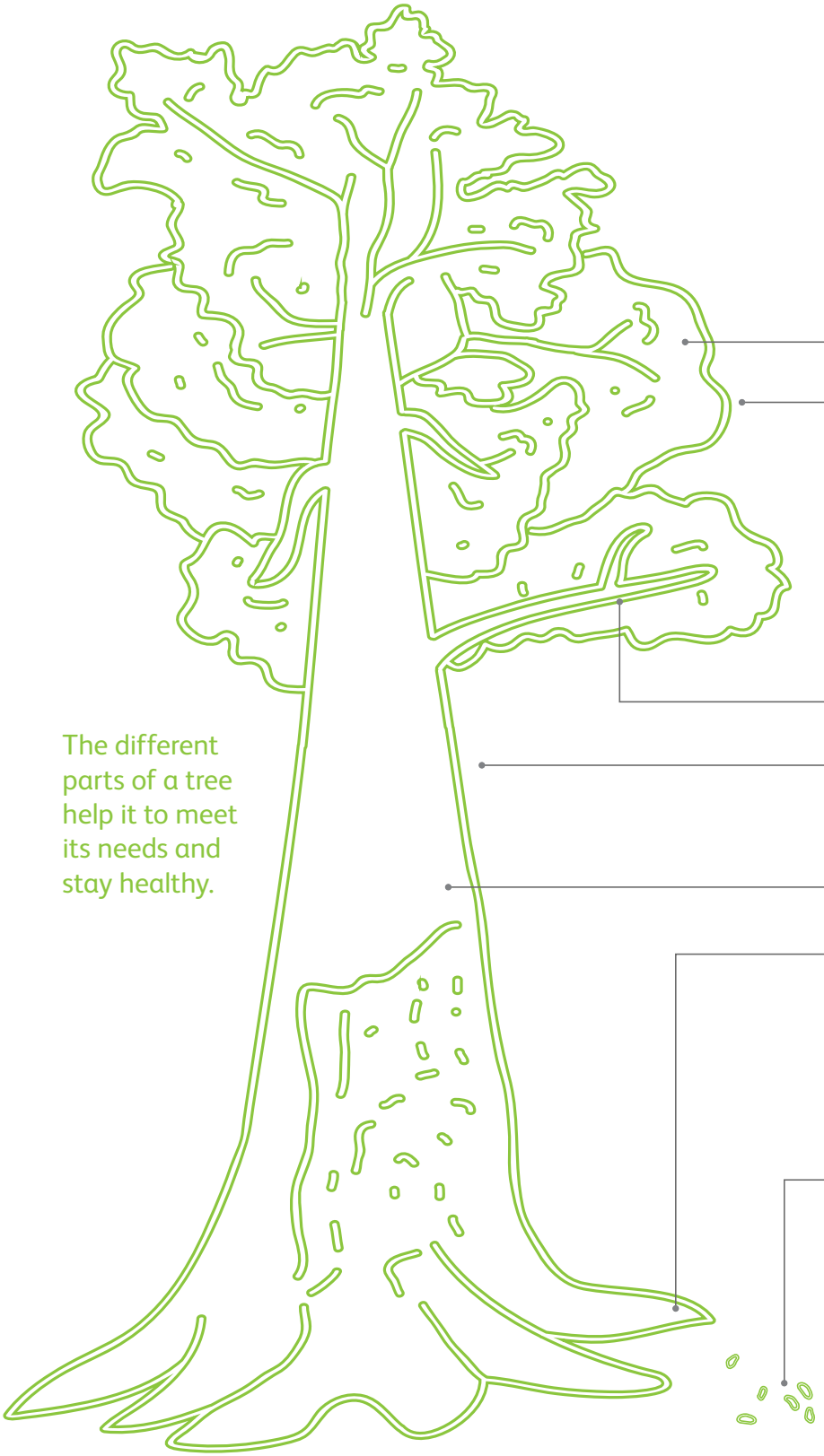
Soil Health

The quality of soil can deteriorate due to erosion from wind and water removing the topsoil. This erosion can significantly impact crop growth and yield. Trees can help to maintain soil health by reducing the exposure to wind and the impact of water washing away the fertile soil. Trees help to hold the soil together and increase soil infiltration (the amount of water soaking into the soil).

- Trees improve soil health by adding organic matter to the soil through decomposition of leaf litter and roots.

Parts of a Tree

The different parts of a tree help it to meet its needs and stay healthy.



Flowers / Fruit

The flowers/fruit help a tree to grow, change and to create new plants. Eucalyptus flowers hold nectar, which is food for insects, birds and small mammals. By feeding on the nectar these living things help pollinate the flower. Pollination is an important part of creating healthy seeds.

Leaves

Plants are able to make their own food, by taking in energy from the sun, through their leaves, to help them grow. Just as a King wears a crown on his head, the top of a tree is called a crown. The crown can tell you a lot about the health of a tree.

Branches

The branches of a tree help the leaves reach out and stretch towards the sun.

Trunk

The trunk of a tree holds it tall and straight.

Bark

The bark of a tree helps to protect the tree, just like our skin protects us! The bark protects the tree from the heat of the sun and drying winds. It also prevents damage from fungi, insects and mammals.

Roots

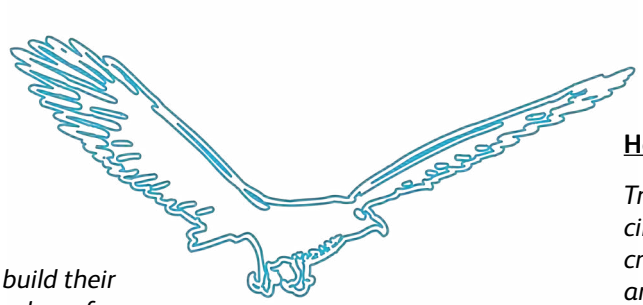
Roots take in water and nutrients from the soil and hold the tree in the ground. While we might not be able to see them the roots of a tree can be as long as the tree itself.

Seed

A tree begins its life as a seed. One tree can drop hundreds or even thousands of seeds. A seed needs food, water, space and sunlight to grow. Not every seed will become a mature tree.

What is a Habitat Tree?

A habitat tree is often a mature to old tree, which contain hollows, cracks and crevices of various sizes that are likely to be used by animals. Habitat trees create nesting sites for many different animals to live, shelter or breed in. They also provide the conditions for other plants and fungi to grow. The best habitat trees can take years to grow and form.

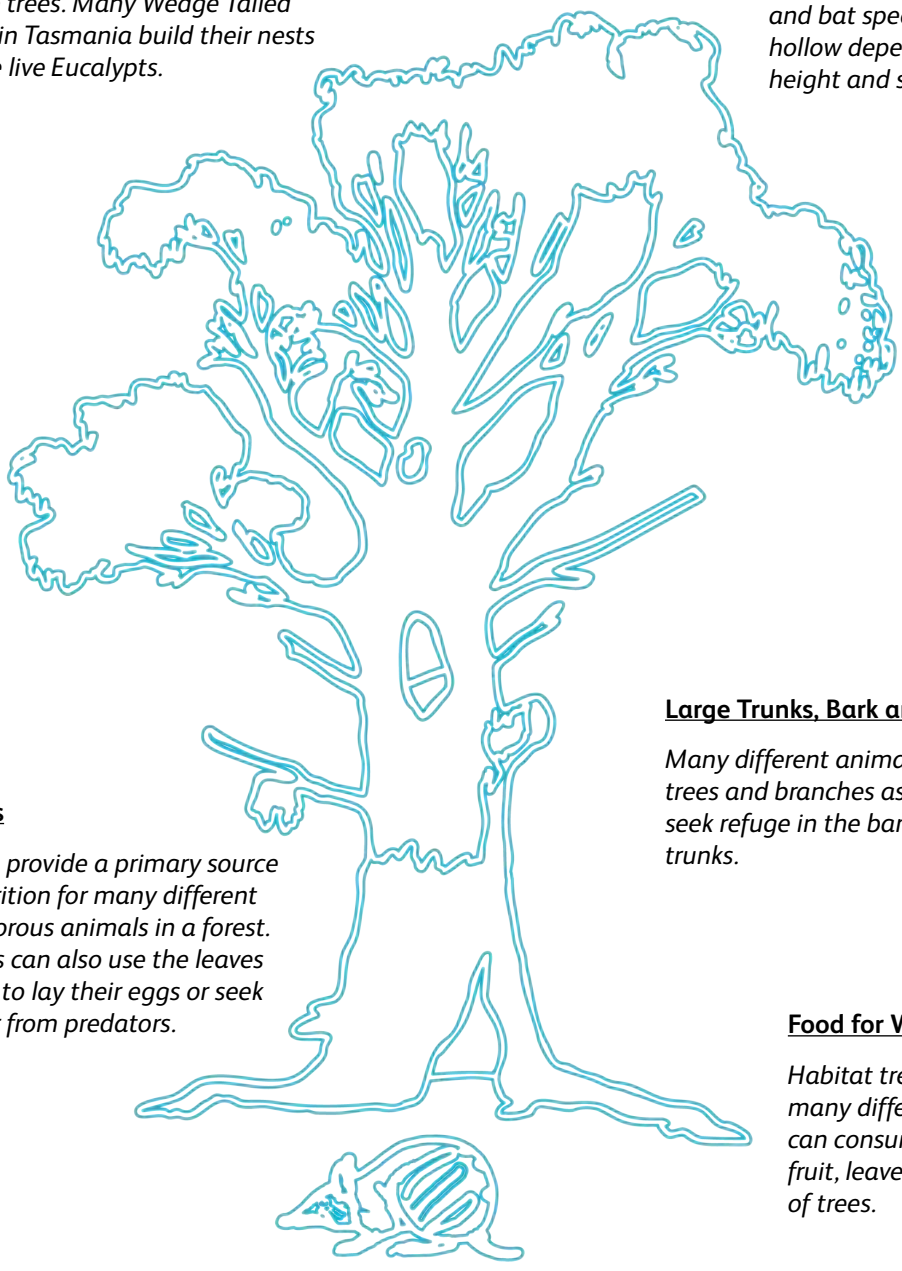


High Branches

Some birds prefer to build their nests in the high branches of mature trees. Many Wedge Tailed Eagles in Tasmania build their nests in large live Eucalypts.

Hollows

Tree hollows come in all shapes and sizes, including, circular openings on the trunk of a tree and a small crack at the base of a branch. In Tasmania there are a number of animals that rely on hollows to survive and reproduce, including, owls, marsupials and bat species. The type of animal that uses a hollow depends on the size of the opening, the height and specific location on the tree.



Dead Branches

Dead branches provide birds with a site for roosting, sunning and preening. It also allows them a lookout site to watch for prey and protect themselves, if suddenly approached by predators.

Large Trunks, Bark and Branches

Many different animals use the trunk of trees and branches as a hunting site, others seek refuge in the bark, or hollowed out trunks.

Leaves

Leaves provide a primary source of nutrition for many different herbivorous animals in a forest. Insects can also use the leaves as site to lay their eggs or seek shelter from predators.

Food for Wildlife

Habitat trees provide food sources for many different living things. Animals can consume the nectar, pollen, sap, fruit, leaves, seed, wood and leaf litter of trees.

Planting Trees on Farms

There is a lot of planning and preparation that goes into planting trees on farms. Often a land owner will start to plan years in advance before even putting the first seedling into the ground. When planting trees on farms, you must consider these important questions:

Why are you planting?

What role will your trees play on the farm? Is it a shelterbelt or biodiversity planting? Do you want to improve the soil or even the appearance of the farm? Do you want to grow the trees for timber?

What other reasons could there be to plant trees on farms?

What will you plant?

The reason you are planting will influence your decision to plant native or exotic species.

Different species of trees require their own set of unique conditions to grow, and can provide a range of benefits to the landscape. Do you want trees that are fast growing? Do you want to attract pollinators to the site?

Where will you plant?

Choosing the right site for your trees is crucial. Important factors that will influence your trees survival and growth include:

- Temperature
- Moisture availability
- Drainage
- Nutrients
- Weeds

What are some other factors?

How will you plant and protect your trees?

Preparing the site for planting helps give the new trees the best chance to grow. What steps will you need to take to prepare the soil and remove weeds? How will you protect your seedlings from browsing mammals? Is there fencing already in place? Is there risk of fire? Will you need to prepare a fire break?

Questions to Explore

- How can trees improve the health of a farm?
- What role do trees play in making a farm sustainable?
- How are plants and animals, on a farm, connected? How might they depend on each other?
- How can trees on a farms impact biodiversity?
- What animal life might trees attract and how can they help a farm?
- How can shelter belts benefit a farm landscape?
- How can trees improve soil health?
- What role do decomposer have on healthy soils?
- What impact do trees have on water quality?
- How can trees influence carbon on a farm?
- What happens to the carbon stored in trees after they are harvested for timber products?
- What types of timber products could a farm landscape produce?
- Why might it be important to source locally produced timber?

Glossary

Biodiversity: The variety of all life forms, plants, animals and microorganisms, their genes, and the ecosystems they inhabit.

Biofuel: An energy source made from organisms and their products (biomass) such as wood and plant matter, algae, or animal fats.

Decomposition: The process whereby living things break down into simpler compounds.

Carbon Emission: The release of carbon into the atmosphere.

Carbon Sequestration: Removal of carbon from the atmosphere and its storage in vegetation, soils or elsewhere.

Connectivity: The vegetation links between patches of forest in a landscape, facilitating species movement.

Erosion: A process whereby geological material (soil, rocks, dissolved material) is transported from one location to another.

Habitat: The environment where living things normally occur.

Plantation: Intensively managed stands of trees, created by regular placement of seedlings or seeds.

Remnant Vegetation: Natural vegetation that stills exists in the landscape with at least 50% of the original canopy, 70% of the original height and is composed of the same species that would exist if the vegetation community were undisturbed.

Renewable Resource: A natural material/energy that can be replenished by natural cycles.

Riparian Zone: The interface between land and a flowing water body such as a stream or river. Vegetation found along watercourses is called riparian vegetation.

Salinity: The measure of salt present in soil or water.

Shelterbelt: Planting of single or multiple rows of vegetation along edges of paddocks to provide shelter from the elements.

Soil Biota: living things found within the soil; microorganisms, fungi, animals and plants.

Water Efficiency: The practices and policies that maximise the benefits gained from every unit of water used.

Water Quality: A property of water associated with the levels of particles, nutrients and chemicals present in the water.

Yield: The amount of agricultural production harvested per unit of land area.

Forest Education Foundation

The stories behind our trees

About The FEF

The Forest Education Foundation Inc. (FEF) is a not-for-profit educational institution staffed by qualified and experienced teachers. The Foundation has been providing learning experiences for teachers and students throughout Tasmania for over 25 years (K–12 and beyond).

For more information on all our programs, visit our website: **www.forest-education.com**