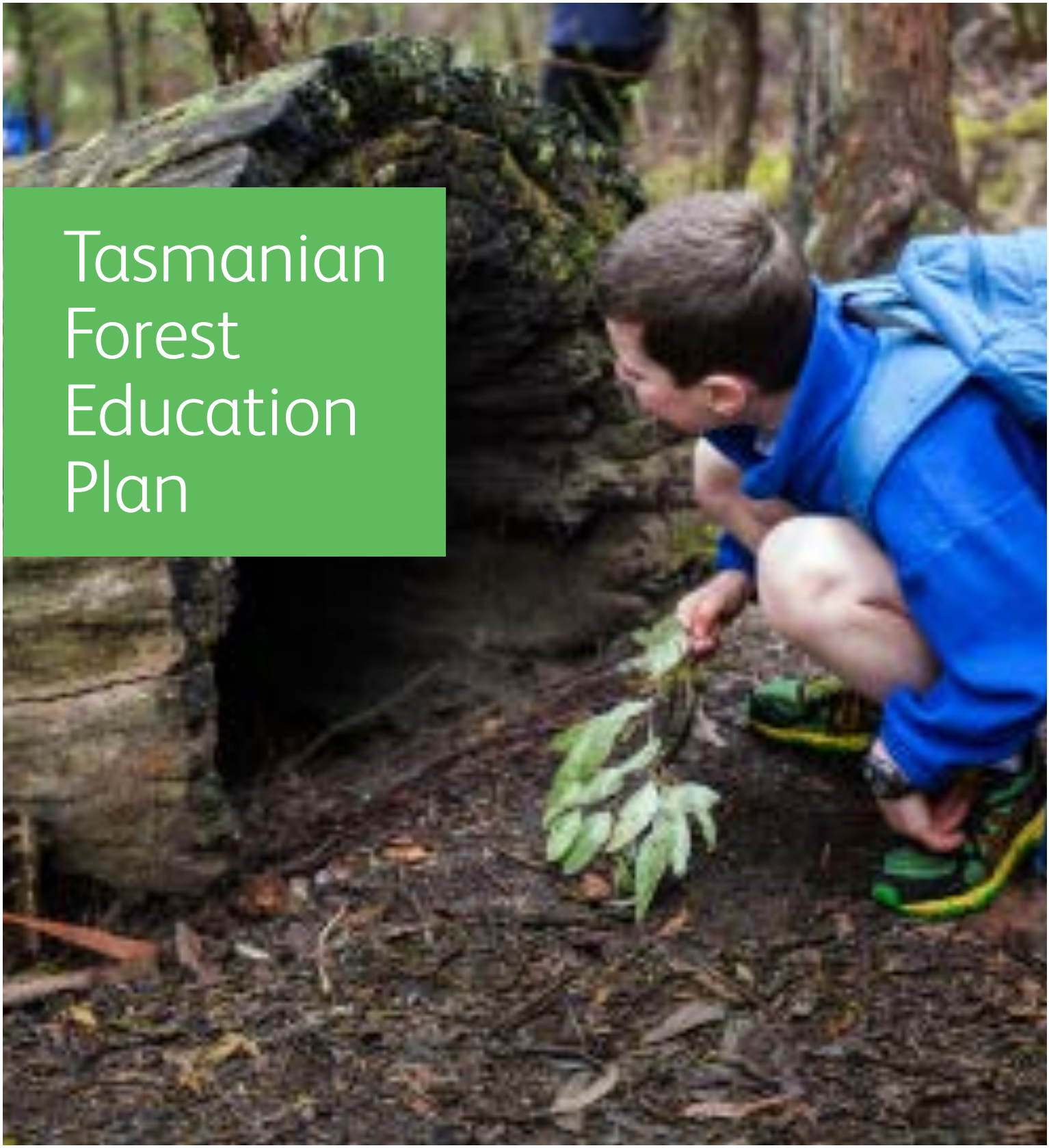
Tasmanian Forest Education Plan



Forest Education Foundation
The stories behind our trees

A conceptual guide towards developing forest literacy in Tasmania

Contents

No matter where you live in Tasmania forests are an essential part of our environment. Forests have played, and will continue to play, a major role in shaping our society. In learning about forests students develop an understanding of, and concern for, stewardship of the natural environment. By building the knowledge, developing the critical thinking skills and appreciating the values of individuals and communities' students have the capacity to contribute to decision making processes towards sustainable futures for our forests.

Schools and communities throughout Tasmania have the opportunity to engage in educational programs that explore forest environments and the role they play in our state. By sharing this knowledge with students, we enable them to become active citizens of the future and stewards of one of our greatest renewable resources: forests.

Board of Directors
Forest Education Foundation Inc.

Vision

Tasmania's K–12 students will have access to high quality forest education opportunities both in the classroom and outdoors. Students will develop the knowledge and skills to make informed decisions about the sustainable management of our forests and the resources they provide, for today and future generations.

About the Plan

The Tasmanian Forest Education Plan is a conceptual guide that demonstrates the process for embedding and integrating forest education in schools. The plan aims to provide the knowledge and context to support educators and encourage consistency, accuracy and excellence in forest education in Tasmania.

The plan provides a pathway for developing forest literacy, to enable active participation in future decision-making processes. While the plan has been adapted, it is derived from working models developed across the United States, in particular the *Oregon Forest Literacy Plan*.

The plan has been developed in collaboration with educators, experts and specialists from across the forest industries with a commitment to forest education in Tasmania.

The plan is structured in two parts: A Conceptual Framework for Forest Literacy and Scope and Sequence. The Conceptual Framework identifies the key concepts that Tasmanian students can explore, based on pedagogical frameworks and theories. The Scope and Sequence outlines the skills, guiding questions and key Australian Curriculum connections relevant to each year level.

Why Teach about Forests?

All life, including our own, depends on forests. Forests help to filter fresh water, supply oxygen, modulate temperature and rainfall. Forests provide habitat for a diverse range of animal and plant species and store atmospheric carbon.

With growing concern about changing climates, exploring the role trees, forests and forest products play in storing carbon is increasingly relevant for future decision makers.

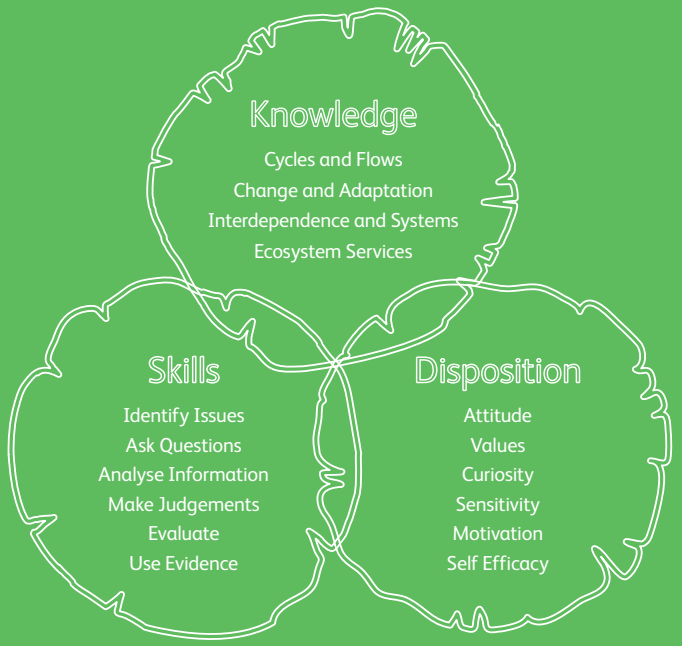
Tasmania's diverse forest landscapes are rich in biodiversity. They contribute to our community and hold multiple values. Forests provide us with renewable resources for timber, paper and heating, along with employment that supports families and communities. They also offer an active playground or quiet retreat for recreation and tourism.

Because we depend so profoundly on our forests, being knowledgeable about them is crucial for all Tasmanians. With almost half of Tasmania's land surface covered by forest, Tasmanians must play an active role in ensuring the long-term sustainability of our forests. To do this, we need the knowledge, skills and disposition to make decisions and understand the impact of our choices. We need to understand not only how forests function, but also how we are connected to them. A good place to start is with the forests in our own backyard.

Using our forests as a context for teaching can enrich student learning and extend it beyond the classroom walls. Studies have found that direct experiences in nature – with students actively involved in their own learning – can improve students' overall academic performance, self-esteem, community involvement and personal health.

The plan is designed to help K–12 educators provide Tasmanian students with a comprehensive education about Tasmania's forests, our interaction with forest landscapes and role in the future of forests.

What is Forest Literacy?



The *Tasmanian Forest Education Plan* presents 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 acts as stewards for the future of forest landscapes and resources.

Conceptual Framework for Forest Literacy

The Conceptual Framework represents a common vision of Forest Literacy for K–12 students, developed by educators, experts and specialists from across the forest industries. The framework embodies shared aspirations forest literate students should understand about Tasmania's forests. The framework is founded on environmental education theories that scaffold education for sustainability.

Designed as a tool for educators, the Conceptual Framework outlines the concepts that support students to understand the importance of Tasmania's forest landscapes and the role we all play in sustaining them. It recognises that Tasmania's ecology, history and economy is deeply rooted in our forests.

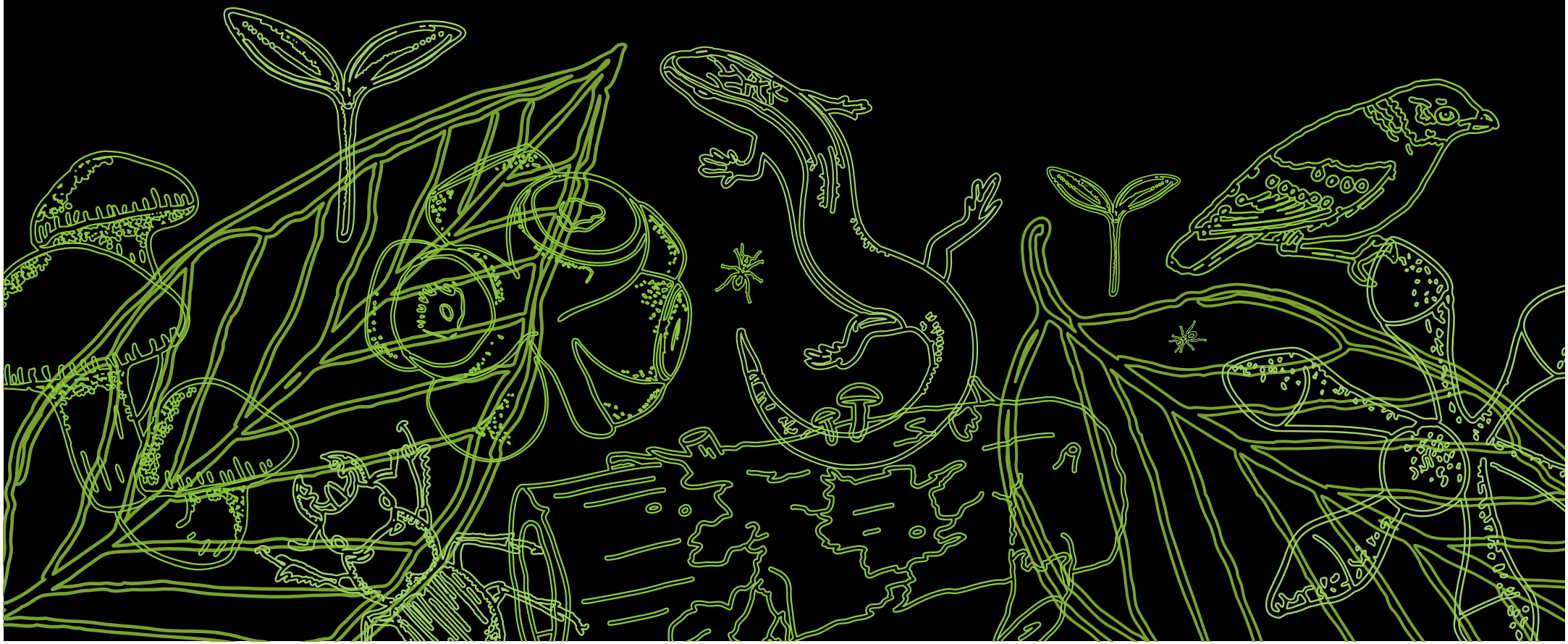
The Conceptual Framework is organised around four theme questions:

1. What is a forest?
2. Why are forests important?
3. How do we interact with forest landscapes?
4. What role do we play in the future of forests?

The 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.

Theme 1
What is a forest?

The concepts within this theme provide students with the fundamental knowledge of Tasmania's forests as ecosystems. Comprehending these concepts will lead to an understanding of the relationship between forests and humans.



Theme 1
What is a forest?

Forest Definition

Identifying what constitutes a forest provides students with the basis for examining forests in a broader context.

A forest is a complex ecosystem characterised by a dominance of tree cover – a living web of many species of plants and animals.

From the forest canopy to deep in the soil, forests provide shelter, food and habitat for thousands of species of animals – birds and mammals, reptiles and amphibians, insects and other invertebrates.

Forest Structure

Most forests have several layers of plants:

- At the top is the canopy of mature trees
- Below are the understorey trees, then a layer of shrubs
- Close to the ground level are herbs and grasses
- Lying on the forest floor is a layer of litter – fallen leaves, branches and rotting logs
- In the soil below, probing roots seek water and nutrients

And that's just the plant life!

Trees as Part of the Forest

One of the defining characteristics of forests is the trees within them. The following concepts help students appreciate the uniqueness of trees and understand how individual trees function and interact in a forest ecosystem.

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

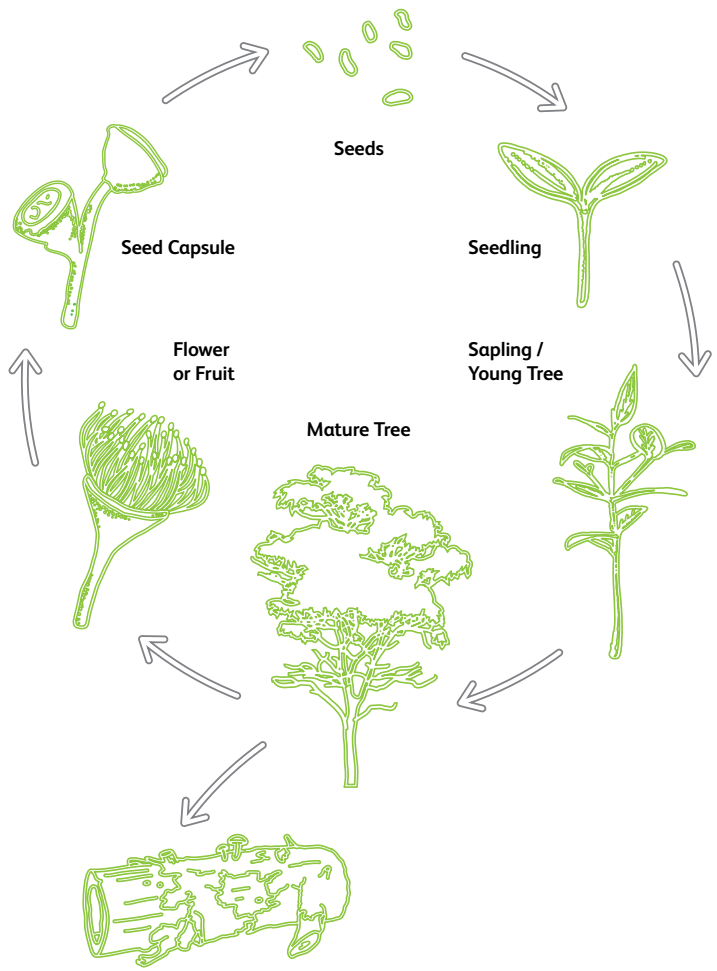
Roots take in water and nutrients from the soil and hold the tree in the ground. While we might not be able to see them the roots of a tree can be as long as the tree itself.

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.

Theme 1
What is a forest?

Trees have Life Stages

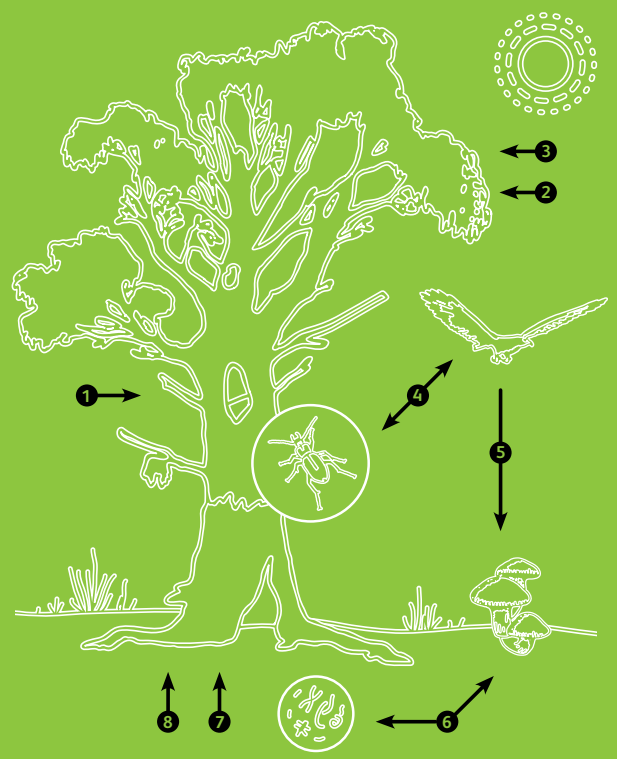


When a tree dies its role in the forest is not over. Rotting logs provide shelter and food for different living things in a forest and as they decompose, they supply nutrients to the soil.

As part of the forest ecosystem, trees have various roles (e.g. supplying oxygen, providing habitat, holding soil, moderating temperature, capturing and storing carbon, and cycling water and nutrients).

Forests as Ecosystems

Trees and forests influence and are influenced by their surrounding environment. Understanding basic ecological principles and how they apply to forests helps students appreciate the characteristics of forest ecosystems.



1 Producer
2 Carbon dioxide used by growing plants
3 Light Energy
4 Consumers
5 Body wastes and dead remains of producers and consumers
6 Decomposers
7 Water
8 Nutrients

A forest is a complex web of life, a solar-powered community of plants and animals that depend on each other for their growth and survival.

Biodiversity, a wide variety of plant and animal species, is a key element of a healthy ecosystem.

In a forest ecosystem, life starts with the sun. Its ultra-violet light enables green plants to create their own nutrients through photosynthesis, using simple chemicals present in soil, water and air.

These plants are the producers, as they grow, they provide food for some of the forest's consumers, plant-eating animals and insects, which browse on leaves and seeds. Other animals in the forest prey on the consumers themselves – birds eat insects, carnivorous mammals scavenge for carrion.

But all the producers and consumers put together are greatly outnumbered by the most numerous, but least obvious, creatures in the forest, the decomposers. These are the fungi, invertebrates and soil bacteria. The decomposers break down the plant and animal material that falls on the forest floor, recycling its nutrients to nourish new growth and to ensure the cycle of life in the forest ecosystem continues.

An ecosystem can be as big as an entire cool temperate rainforest or as small as a pool of water in alpine heathland. Both may support a community of interdependent plants and animals.

Theme 1
What is a forest?

Forest Classification

Classifying and differentiating forests into biomes and types helps students make connections among the forests in their community, the forests in Tasmania and other forests in the world.

Trees can be classified into family, genus and species groups based on their seeds, leaves, flowers and other tree parts.

Different forests grow in different places – Tasmania's forests vary according to changes in soil type, geology, rainfall, climate, topography and fire history and behaviour.

Many different forest types exist in Tasmania, often named by their dominant tree species. Common forest types include Dry Eucalypt Forest, Wet Eucalypt Forest, Mixed Forest and Cool Temperate Rainforest.

Theme 2
Why are forests important?

The concepts within this theme help students investigate the connection between Tasmania's forests and their own lives. Recognising their connections to forests can increase students' understanding of the importance of forests to humans and the factors that have shaped today's forest landscapes.

Theme 2 Why are forests important?

Environmental

When we look at a forest landscape what we see is greatly influenced by our understanding and appreciation of the multiple values we associate with forests and how these are, to varying degrees, interdependent on each other as the natural components of a forest environment.

It is important for students to understand the function of forests environmentally, socially/culturally and economically and the need for integration between these perspectives.

Examining the ecological services provided by forests helps students understand that forests are one of Earth's major life-support systems along with fresh waters, oceans and grasslands.

Forests are one of the Earth's most important natural resources. They play a vital role in sustaining the life forms and atmosphere of our planet. Forests are interdependent and adaptable communities of flora and fauna – complex webs of life, from high in the canopy to deep in the soil.

Forests provide a habitat for all living things contained within them. Forests are an integral part of nutrient cycles in our environment, ensuring that water, minerals, gases and trace elements stored in vegetation and the soil are recycled to maintain soil fertility. Forests protect and increase water supplies and water quality. Trees, forests and forest products store carbon and have the capacity to play a significant role in contributing towards solutions around climate change.

Social/Cultural

When asking someone – 'Why are forests important?' It is rare to get the same answer twice. Answers may include, good health and wellbeing, sense of place, recreation and tourism, aesthetic values, intellectual and spiritual inspiration, identity and cultural heritage or career opportunities and forest products – our ideas are driven by multiple factors. Throughout our history, forest environments have had a profound influence on the emotions and attitudes of the people who interact with them. From a quiet stroll with the dog to a community that relies on forest resources for employment, forests shape Tasmanian culture.

Tasmanians have a strong connection to our local forests and hold different values concerning our forests, based on personal experiences. The intrinsic value of forests is reflected in the expressive arts, literature, design and architecture which, over time, have created a tangible record of our relationships with Tasmanian forest landscapes.

Indigenous Tasmanians' identity and culture is fundamentally linked to a core relationship with the environment and the balance which exists between the human and natural world. This relationship is spiritual, as well as physical, the Earth as Mother sustains all forms of life within a framework of mutual respect.

The social/cultural values of forests are often difficult to define and are profoundly personal. Examining the intrinsic value of forests helps students understand peoples' unique perspectives and why making decisions about our forests can be complex and multifaceted.

Theme 2 Why are forests important?

Economic

Forest products are an important component of Tasmania's economy and play a significant role in communities across the state. By exploring the importance of forests economically, students understand how forests contribute to Tasmania, Australia and the world.

From the earliest times, people have depended on forests – for food and shelter, for warmth and safety, for materials and resources. People who live in country towns on the fringes of our production forests have strong links to the places that have provided their communities with employment for generations. Forests provide income for local, state, national and international economies. Tasmania's forest sector provides critical resources and products to the global marketplace.

We read a book, sitting at a glue-laminated kitchen bench in a timber-framed house, spreading our toast with honey and pouring milk on cereal from cardboard cartons. Where does the wood, paper, cardboard and honey come from?

Yes, from forests and trees.

It is difficult to separate the environmental, social/cultural and economic values of forests. Our interactions with forest landscapes must recognise and reflect the importance of all these values and therefore guide how we manage our interactions, so they can continue to provide us with the resources we need and the values we wish to preserve.

Theme 3
How do we interact with forest landscapes?

Tasmania's forest landscapes have played, and will continue to play, a major role in shaping our society. The concepts within this theme help students understand that Tasmania's forests are sustained through a rich variety of management practices that span private and public sectors, as well as all levels of government.

Theme 3
How do we interact with forest landscapes?

Managing Forests

People manage forests for a variety of environmental, social/cultural and economic outcomes. Understanding the reasons forests are managed helps students' to think critically about forest management processes. Forest landscapes span a range of land-use areas from remote wilderness, parks and reserves through to working production forests, regional and urban communities. Many forest landscapes are made up of a variety of ownership, a mix of management objectives and a blend of forest ecosystems. Managing forests for a variety of purposes is a complex process requiring diverse people with diverse skills.

Forest management includes the use of natural processes and future planning to achieve a variety of desired outcomes, including environmental, social/cultural and economic outcomes. Many of these outcomes are interrelated and can be managed simultaneously.

Forest management ranges from active management including – planting, thinning, pruning, and harvesting to management for special values – streamside reserves, habitat protection, nesting hollows, vegetation restoration, visual landscapes, cultural heritage, recreational values and more…

As global demand for forest resources increase, advances in research, design and technology can help ensure forest resources are maintained or improved to produce the desired values and products for today and generations to come.

Acknowledging Different Perspectives

Examining the different perspectives involved in forest management helps students understand the complexity of forest management decisions.

The way we each perceive the environment depends on the values we associate with it. Our values are constructed largely through factors, such as culture and tradition, where we grew up, what sort of education we received, the values of our parents and community, our experiences, employment and career pathway and the media we engage with.

Forest management can be a controversial topic, because of the diverse perspectives, understandings and values, as well as the complex nature of forest ecosystems.

The sustainability of Tasmania's forests and forest resources relies on an integration of multiples values and perspective, as well as continued research and innovation in forest management.

Theme 3
How do we interact with forest landscapes?

Making Decisions

Understanding why and how forests are managed helps prepare students to participate in forest management decisions. By understanding that many individuals and groups are involved in forest management, students can recognise that the responsibility of forest management is shared.

A variety of individuals, companies, organisations and government agencies manage forests. Forest management decisions may involve some or all of these entities working collaboratively to ensure mutually beneficial outcomes aiming to meet environmental, social/cultural and economic needs.

The type and intensity of forest management, including harvesting and re-planting, is dependent on the purposes for which the forest is managed, as well as forest type, ownership, size and location.

Government has a role in actively engaging organisations, businesses, communities and individuals in forest management, policy and decision-making processes.

Forest industries encompass management of natural forests and woodlands, tree plantations, and the many combinations of trees and agricultural activities, known as agroforestry or farm forestry.

Sustainable management of forests takes into account environmental, social/cultural and economic dimensions of sustainability. It includes maintaining forest health, productivity, diversity and conserving forest landscapes for the needs of present and future generations.

Theme 4
What role do we play in the future of forests?

The concepts within this theme help students identify ways to use their knowledge about forests to be active citizens and connect with Tasmania's forests. With a consideration of the interplay between people and forests, students can make their own decisions and be active stewards for the future of our forest landscapes and resources.

Theme 4
What role do we play in the future of forests?

Our Connection to Tasmania's Forests

Acknowledging their personal connections to forests, encourages students to appreciate the importance of forests and consider the ways that people are dependent on forest landscapes.

There are many ways we connect with forests in Tasmania, from the resources we use and consume every day to recreation, tourism and our sense of place.
By exploring our connection to forests we can become informed and active voters, make wise consumer choices and act for our forest landscapes and resources.

Action for the Future of Tasmania's Forests

Learning to take action and advocate for Tasmania's forests gives students opportunities for involvement, now and in the future.

Everyone has a responsibility to treat forests with respect and to become stewards of Tasmania's forests and forest resources.

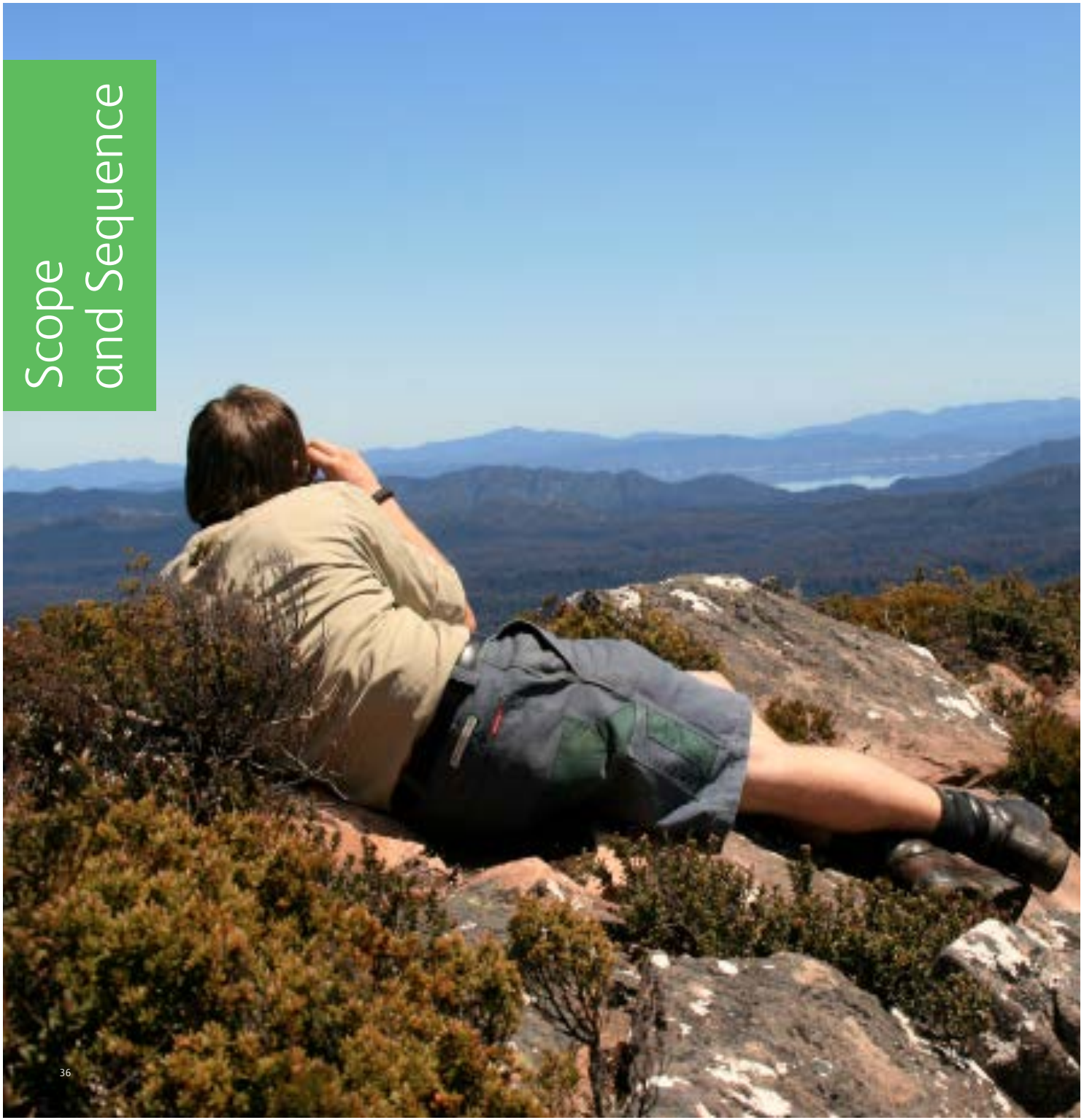
Our individual choices can impact the health and resilience of Tasmania's forests. For example, the products we buy, how we treat tracks and campgrounds, and our use of fire can either harm or help forest landscapes.

The choices we make regarding the use of forest resources affects our ability to sustain forest ecosystems into the future.

A variety of professionals and skilled workers are needed to manage our forests sustainably, including foresters, biologists, soil scientists, engineers, lawyers, information technology professionals, land managers, investors, environmental educators, communications specialists, harvesting and transport operators, mechanics and wood products manufacturers.

As individuals or as members of a group, we can influence decision making, laws and policies that affect Tasmania's forests.

Scope and Sequence



Forest Literacy skills, guiding questions, key curriculum links per year level.

The Scope and Sequence provides educators guidance in embedding and designing forest education experiences and the relevant curriculum for each year level. Forest education provides interdisciplinary links across the Australian Curriculum, including Science, HASS, Design and Technologies and the Cross-curriculum Priority of Sustainability. The plan outlines the key curriculum links, guiding questions and learning intentions for years K–12.

For more resources, excursions/ incursions and loan packages, as well as detailed curriculum connections explore the Forest Education Foundation website:

www.forest-education.com

1. Early Years K–2
2. Primary Years 3–6
3. Secondary Years 7–10
4. Senior Secondary Years 11–12

Scope and Sequence

Early Years K–2

Early Years students are active explorers and are naturally curious about their world. They learn best through direct discovery in hands-on experiences that engage the five senses. During the Early Years, students develop the ability to pose questions based on their interests, personal experiences and familiar contexts.

Nature play has a significant impact on a child's developing brain and supports their academic, social and emotional wellbeing. Providing creative, open and flexible nature play experiences, that support decision making and problem solving, can encourage students to be sensitive and inquisitive about the environment.

Students may have never seen a forest first-hand and may have preconceived notions about forests based on stories or movies. Forest Literacy activities at this level should aim to introduce students to trees and forests, focusing on:

- What is a forest?
- Who lives in Tasmania's forests?
- What do living-things need to stay healthy?
- How am I connected to forests?
- What can we do to care for forests?

Giving students opportunities to be keen observers will provide them with a strong foundation for becoming both caring, curious and critical thinkers. Simple investigations both inside and outside the classroom will help them learn to analyse results and apply their understanding to new situations. Collecting and categorising natural objects, and other hands-on activities, will help acquaint students with the natural world in general – and with Tasmania's forests in particular.

K–2

Kindergarten	**EYLF Outcome 2** Explore relationships with other living and non-living things, notice and respond to change.	Develop an awareness of the impact of human activity on environments and the interdependence of living things.	
Foundation	**Science** Living things have basic needs, including food and water (ACSSU002).		
Year 1	**Science** Living things have a variety of external features (ACSSU017). Living things live in different places where their needs are met (ACSSU211). **Design & Technologies** Explore how plants and animals are grown for food, clothing and shelter and how food is selected and prepared for healthy eating (ACTDEK003).	Explore the characteristics and properties of materials and components that are used to produce designed solutions (ACTDEK004). Identify how people design and produce familiar products, services and environments and consider sustainability to meet personal and local community needs (ACTDEK001).	**HASS** The natural, managed and constructed features of places, their location, how they change and how they can be cared for (ACHASSK031).
Year 2	**Science** Living things grow, change and have offspring similar to themselves (ACSSU030). Earth's resources are used in a variety of ways (ACSSU032). **Design & Technologies** Explore how plants and animals are grown for food, clothing and shelter and how food is selected and prepared for healthy eating (ACTDEK003).	Explore the characteristics and properties of materials and components that are used to produce designed solutions (ACTDEK004). Identify how people design and produce familiar products, services and environments and consider sustainability to meet personal and local community needs (ACTDEK001).	**HASS** The history of a significant person, building, site and/or part of the natural environment in the local community and what it reveals about the past (ACHASSK044).

Scope and Sequence

Primary Years 3–6

Students in the Primary Years are interested in the natural world, how things are put together and how things work. Students capabilities expand greatly as they move from a focus on the here-and-now towards abstract thinking. Students are encouraged to observe and make predictions based on knowledge and understandings.

A focus on collaboration encourages students to understand and acknowledge other perspectives and build upon their thinking. The opportunity for problem-solving, sharing ideas and justifying thinking supports students to deepen their knowledge. With a focus on trees and forests students can practice posing questions for investigations, critically analysing information and use this knowledge to solve problems. Forest Literacy activities at the primary level may explore:

- How are the living and non-living parts of a forest connected?
- Why are forests important?
- How are plants and animals adapted to their environment?
- How are people and forest connected?

Engaging students in a variety of collaborative hands-on activities will deepen their understanding of the forest systems on which we all depend. By using inquiry skills, students can be motivated to consider their role in the future of forests and act as stewards for their local forest landscapes.

3–6

Year 3	**Science** Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044).	**Design & Technologies** 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 (ACTDEK010).	Investigate food and fibre production and food technologies used in modern and traditional societies (ACTDEK012). Investigate the suitability of materials, systems, components, tools and equipment for a range of purposes (ACTDEK013).
Year 4	**Science** Living things have life cycles (ACSSU072). Living things depend on each other and the environment to survive (ACSSU073). **Design & Technologies** Investigate food and fibre production and food technologies used in modern and traditional societies (ACTDEK012).	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 (ACTDEK010). Investigate the suitability of materials, systems, components, tools and equipment for a range of purposes (ACTDEK013).	**HAAS** The importance of environments, including natural vegetation, to animals and people (ACHASSK088). The use and management of natural resources and waste, and the different views on how to do this sustainably (ACHASSK090).
Year 5	**Science** Living things have structural features and adaptations that help them to survive in their environment (ACSSU043). **Design & Technologies** Investigate how and why food and fibre are produced in managed environments (ACTDEK021).	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 (ACTDEK019).	**HASS** The environmental and human influences on the location and characteristics of a place and the management of spaces within them (ACHASSK113). The impact of bushfires or floods on environments and communities, and how people can respond (ACHASSK114).
Year 6	**Science** The growth and survival of living things are affected by physical conditions of their environment (ACSSU094).	**Design & Technologies** 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 (ACTDEK019).	Investigate how and why food and fibre are produced in managed environments (ACTDEK021).

Scope and Sequence

Secondary Years 7–10

Secondary students are gaining a deeper sense of themselves as members of communities, both human and natural. They are becoming aware of how people's actions impact others and their role and place in this system.

Secondary students are encouraged to understand that problems have multiple solutions and to acknowledge different perspectives. By developing an understanding of forest systems and cycles students' can critically analyse information and draw opinions based on evidence. Forest literacy activities at the secondary level may focus on:

- How does energy flow in a forest system?
- How do forests contribute to global systems and cycles?
- What does the term renewable resource mean?
- How do people interact with forest landscapes?
- What is the role of science and technology in managing forests?

Forests can become a meaningful context for secondary students to design and conduct investigations, use evidence to analyse results and examine issues from various perspectives. This can help students gain a deeper appreciation of the interconnected relationships between people and the environment.

7–10

Year 7	**Science** Classification helps organise the diverse group of organisms (ACSSU111). Interactions between organisms, including the effects of human activities can be represented by food chains and food webs (ACSSU112).	Some of Earth's resources are renewable, including water that cycles through the environment, but others are non-renewable (ACSSU116).	**Design & Technologies** Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical and sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures (ACTDEK029).
Year 8	**Science** Multi-cellular organisms contain systems of organs carrying out specialised functions that enable them to survive and reproduce (ACSSU150).	**Design & Technologies** Analyse how food and fibre are produced when designing managed environments and how these can become more sustainable (ACTDEK032).	**HAAS** Different types of landscapes and their distinctive landform features (ACHGK048). Ways of protecting significant landscapes (ACHGK052).
Year 9	**Science** Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (ACSSU176).	**HASS** Human alteration of biomes to produce food, industrial materials and fibres, and the use of systems thinking to analyse the environmental effects of these alterations (ACHGK061).	
Year 10	**Science** Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere (ACSSU189).	**Design & Technologies** Investigate and make judgments on the ethical and sustainable production and marketing of food and fibre (ACTDEK044).	**HASS** Human-induced environmental changes that challenge sustainability (ACHGK070). Environmental world views of people and their implications for environmental management (ACHGK071).

Scope and Sequence

Senior Secondary Years 11–12

Senior Secondary students are able to use sophisticated reasoning when exploring difficult concepts, particularly when the learning context is familiar to them. Using forests as a context for learning is beneficial for Senior Secondary students, as it provides them with a real-world basis for applying new knowledge.

Providing opportunities to collect data and develop explanations, based on evidence collected, can support students to develop informed decisions making strategies and take action based on logic and evidence. Forest Literacy activities at the Senior Secondary level may explore:

- What factors contribute to the biodiversity of Tasmania's forests?
- How do people manage forests to ensure the sustainability of our forests?
- What role do governments, private companies and individuals play in managing Tasmania's forests?
- What is our role in the future of forests?

Forests can become the focus of sophisticated research, in which students can use data to drive their decisions. Forests can also provide a meaningful context for Senior Secondary students to examine the implications of issues on a variety of levels, both locally and globally.

11–12

Environmental Science	**Criteria 2** Develop, interpret and anaylse experiments and investigations. **Criteria 4** Analyse the application and impact of environmental science in society.	**Criteria 5** Apply ecological concepts and processes. **Criteria 6** Apply concepts and processes of ecosystem change.	**Criteria 7** Apply concepts relating to human dependence and impact on ecosystems. **Criteria 8** Apply principles and processes related to ecologically sustainable management of the environment.
Agriculture Enterprise	**Unit 2** **Ecosystems** Soil, nutrients and water. Factors contributing to the degradation of soil and water. Sustainable resource management.	**Unit 3** **Plant Production System** Plant production systems. Constraints on plant production. Managing plant production.	
Agricultural Systems	**Unit 1** **Managed and Natural Systems** Basic Anatomy and Morphology. Natural Systems.	**Unit 3** **Plant Production Systems** Management and Genetics in Plant Production. Plants, climate and resource interaction.	

* Connections can also be found within the Life Science, Pathways to Work and Design courses. For more information contact the Forest Education Foundation.

Acknowledgements

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The FEF would like to thank the partners that collaborated in the development of the Tasmanian Forest Education Plan.

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Forest Education Foundation

The stories behind our trees

About 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:

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