Toolangi State Forest – a *rich* learning environment

Anne-Maree McInerney

Forests have always been a rich learning environment as they provide the framework for ecosystem services that sustain life on earth, yet few have known the economic value they provide until recently. In this article, Global Sustainability Advisor and Gould League General Manager Anne-Maree McInerney provides an insight into the value ecosystem services provide, why this is important, and how this knowledge is being shared with students and teachers alike through their excursion programs at the Toolangi State Forest.

Forest facts

Forests cover about one-third of Earth's land and are vital to both people and the planet. They are home to more than 80% of all terrestrial species of plants and animals, including insects, provide essential resources like food, fuel, medicine, and materials used in daily life. They also support over 1.6 billion people, including 70 million who live in them. Since 1970 however, due to ongoing mass deforestation, forest-dwelling wildlife populations have dropped by a whopping 69% with some tropical forests losing up to 100 species daily.

This should be a major wake up call to us all, as forests provide critical infrastructure and ecosystem services – protecting against erosion, enriching and conserve soil, helping to protect communities from landslides and floods and producing the rich topsoil needed to grow plants and crops. They also play an important role in the global water cycle, moving water across the earth by releasing water vapor and capturing rainfall. Forests also filter out pollution and chemicals, improving the quality of water available for human use and play a key role in fighting climate change, acting as major carbon sinks (**Figure 1**).

Globally, the ecosystem services forests provide have been valued at an estimated USD 125–140 trillion (US dollars) per year, i.e. more than 1.5 times the size of the global GDP.[1] In Australia, Climate regulation through carbon storage is considered to be worth A$43.2 billion in 2020–21, according to Australia's first National Ecosystem Accounts, which were released by the Australian Bureau of Statistics earlier this year.[2] Australian ecosystems stored more than 34.5 billion tonnes of carbon in FY 2020–21, the most valuable service by ecosystems examined in the accounts. The accounts also examined the provision of surface water taken from ecosystems, and used for drinking, energy production, cooling, irrigation and manufacturing. This was valued at A$1.4 billion.

Having these accounts is critical to provide a holistic view of Australia's land, freshwater and marine environments so that, for the first time, policymakers get to look beyond GDP to a broader measurement of how ecosystems contribute to society and the economy.

More than half the world's GDP is dependent on nature

According to the 2020 World Economic Forum's *Nature Risk Rising Report*, more than half of the world's GDP (USD$44 trillion) is highly or moderately dependent on nature. Many businesses are, therefore, at risk due to increasing nature loss. Global sales of pharmaceuticals based on materials of natural origin are worth an estimated USD$75 billion a year, while natural wonders such as coral reefs are essential to food and tourism.

Globally, three out of four jobs are dependent on water while the agricultural sector employs over 60% of the world's working poor. In the Global South, forests are the source of livelihoods for over 1.6 billion people. In India, the world's most populace country, forest ecosystems contribute only 7% to India's GDP, yet 57% of rural Indian communities' livelihoods. Ecosystems, therefore, must be protected and restored – not only for the good of nature but also for the communities that depend on them.

Although globally, some fear environmental regulation, and the safeguarding of nature could threaten businesses, the 'restoration economy', according to some estimates, is worth **USD$25 billion per year and directly employs more than the coal, mining, logging and steel industries combined**. Nature-positive businesses can provide

1 World Economic Forum *Nature Risk Rising Report* 2020.

2 National Ecosystem Accounts https://www.abs.gov.au/statistics/environment/environmental-management/national-ecosystem-accounts-experimental-estimates/2020-21

Figure 1. Forests provide a range of environmental services

cost-effective, robot-proof, business-friendly jobs that stimulate the rural economy without harming the environment.

Inspiration from nature – or biomimicry – is also big business

Velcro for example was inspired by the hooked barbs of thistles, and the first highway reflectors were made to mimic cat's eyes. A sharkskin-inspired swimsuit helped American swimmer Michael Phelps win eight gold medals at the 2008 Olympics in Beijing. The costumes use overlapping scales to cut down on drag and more than 130 world records were broken using them. Today we have a sharkskin-inspired film for hospital surfaces because they found sharks don't develop as much bacteria on them.

The science of copying nature, a field known as biomimetics, is today a billion-dollar industry solving every day human problems. In Europe, Japan, and the USA, biomimetics is recognised as *the technology of the future*. Global companies such as Ford, General Electric, Herman Miller, HP, IBM, and Nike are collaborating with scientists and designing laboratories to explore novel technologies. Between 2005 and 2008, the market size for products and construction projects that applied biomimetics was estimated to be above $1.5 billion. By 2025, industry analysts project that products and services in biomimicry will increase to $1 trillion in market size.

There is great potential for the global economy to grow and become more resilient by ensuring biodiversity. **Every dollar spent on nature restoration leads to at least $9 of economic benefits**.[3] In addition, **changing agricultural and food production methods could unlock $4.5 trillion per year in new business opportunities by 2030**,[4] while also preventing trillions of dollars' worth of social and environmental harm.

3 The United Nations Decade on Ecosystem Restoration: Strategy

4 The Food and Land use Coalition: Growing Better: Ten Critical Transitions to Transform Food and Land Use

Excursions provide more than just field work!

Visiting a forest has always been an important part of Geography field work, but a visit to a forest brings many other important benefits. It aids physical and mental wellbeing and gives some students the opportunity to visit a forest for the first time. That is important as the more urbanised we become, the more disconnected from nature and our food sources we become, which can have dire consequences. Research tells us the less we are connected to nature, the less likely we are to understand it, and be willing to fight for it, so connecting students to the natural world can have a lifetime of benefits.

Toolangi's ecosystem services

Our planet has many different types of ecosystems, including terrestrial, marine, freshwater, forest and grassland. Each ecosystem is a dynamic community that comprises living organisms such as microorganisms, plants and animals, as well as non-living components such as water and soil.

The forests at Toolangi are an important source of continued provision that directly or indirectly impacts human existence. These include *provisioning services* such as food, water and medicines, *regulating services* such as carbon sequestration, pollination, pollution control and climate control, *supporting services* such as shelter, soil formation, nutrient recycling, water recycling, air and water purification, and *cultural services* such as recreation and tourism.

Humanity came into being after most ecosystem services had been in operation for hundreds of millions of years. These services are so fundamental to life that they are easy to take for granted, and so large in scale that it is hard to imagine that human activities could irreparably disrupt them. Historically, however, the vital role of natural ecosystem services has not been given much attention. Because they are 'free', these services are sometimes thought of as without value. Nothing could be further from the truth. Ecosystem services are essential to life as we know it.

Carbon sinks

Carbon is an essential element stored in all living things: trees, plants and animals; it is also found in non-living things too: the atmosphere, rocks, the ocean, soil and fossil fuels. Carbon, like water in the water cycle, changes its state (between gas, liquid and solid) as it moves in and around the Earth.

When carbon gets trapped in rocks it takes millions of years to return to the atmosphere. It is melted and chemically changed into the gas carbon dioxide (CO_2) when released as a part of volcanic activity. Carbon is also stored deep underground in ancient reserves of excess organic material; what was once living plants and animals (including dinosaurs!) has evolved into peat, oil, gas and coal after millions of years of pressurised burial below the earth's surface. When these products are burnt, they are called fossil fuels, and the process releases ancient, stored carbon into the atmosphere as CO_2.

Carbon is stored and cycled at a much more frequent rate through trees. When trees lie dead on the ground, they either keep the carbon they absorbed in a solid form, which slowly deteriorates with the plant's decomposition and breaks down into a solid form of elemental carbon in the soil, or the carbon transfers back into a gas that is released (as CO_2, along with methane). When trees are cut for timber, they keep the gaseous carbon that they had absorbed when alive in a solid form within the fibres of the wood. If the wood of trees is burnt, the carbon stored in the plant is converted back into CO_2.

We hear a lot about the increase of carbon in the atmosphere, but actually the number of carbon atoms on the earth hasn't changed, it's just that since the Industrial Revolution it has been spending more time as the gas CO_2 in the atmosphere. While CO_2 is a required gas that is naturally found in the Earth's atmosphere, when too much is present it acts like a blanket on the planet, trapping in heat from the sun. This excess heat cannot escape the atmosphere, and the planet can't absorb the CO_2 fast enough to keep it under control, which leads to what is called 'global warming' or 'the greenhouse effect' – a planet getting warmer and warmer every year.

Fortunately, plants (and the ocean) absorb more carbon dioxide than they release each year. The trees actually require CO_2 to grow by converting the gas and sunlight into carbohydrates that are used to fuel their growth of leaves and branches (a process called 'photosynthesis'). After absorbing the CO_2 (which chemically is made up of one carbon atom and two oxygen atoms), they hang onto the Carbon molecules and expel most of the Oxygen molecules back into the environment. This constant exchange of oxygen and carbon helps make up for the excess created when humans burn fossil fuels, timber and clear land. This exchange helps combat the global warming imbalance caused by the greenhouse effect. Mature forests containing *E. regnans* (Mountain Ash), have the capacity to store more carbon than any other forest. Unlogged forests over 100 years old, with minimal human disturbance, in the Central Highlands of Victoria, are the most carbon dense in the world. The natural forests serve two purposes: It maintains a large carbon sink, and it stops the release of the forest's stored carbon.

Water catchment and purification

An old forest provides shade and promotes the build-up of organic matter, and in turn provides moisture and a cooling system to the area. The forest attracts clouds and precipitation, then filters and regulates the flow of water, slowing the fall to the forest floor by its leafy canopy. The forest floor acts like a giant sponge by absorbing the precipitation before gradually releasing it to natural channels and recharging the underground aquifers. Melbourne's water supply was determined by the Melbourne Metropolitan Board of Works (MMBW) as early as 1891 when they initiated the policy of closed catchments. Areas of forested mountains were closed to public access, ensuring clean drinking water that requires little treatment. This foresight has led to Melbourne being known as having some of the best quality drinking water in the world.

Nutrient recycling

This is another service the forest provides. Nutrient recycling is a continuous process where dead plant material decomposes and provides nutrients to the soil that are absorbed by plant roots, so that plants grow. A forest contributes greatly to nutrient recycling.

Bush tucker and medicines

The forests in Toolangi provide a large range of bush foods and medicines. These were used widely and understood comprehensively by the Wurundjeri and Taungurung people. Some examples of plant use are:

- berries from the Prickly Current Bush *Coprosma quadrifida* were eaten when ripe
- pith of the Tree Ferns *Cyathea australis* roasted
- Mountain Pepper *Tasmannia lanceolata* leaves and berries used for seasoning food
- Bracken Fern *Pteridium esculentum* – rhizomes were roasted to provide starch in the diet and the sap from the stems of young ferns was applied directly to insect bites to relieve pain
- seeds from *Acacia species* ground into flour, and the sap was also eaten
- fruit from Appleberry – *Billardiera scandens* eaten when ripe
- roots/bulbs from many wildflowers were roasted
- Southern Sassafras *Atherosperma moschatum* – bark made into tea to relieve headaches.

Recreation and tourism

The forests of Victoria are a valuable asset for recreation and tourism. National Parks are managed by Parks Victoria for minimal impact activities such as bushwalking, research, education, photography, conservation, and bird watching.

State forests are managed by DEECA for activities such as horse riding, 4WD, fishing, bee keeping, camping, trail bike and mountain bike riding. Toolangi State Forest is popular for its variety of recreational uses and its close proximity to Melbourne's growing population.

Geography programs delivered by Gould League at Toolangi State Forest include:

Forest discovery – Levels 3 and 4

This program is a fantastic way for students to discover the tall trees, soft ferns, mountain creeks, prickly plants and native wildlife that inhabit the forest.

Students experience all five senses during a loop walk to the river that takes in messmates, mountain ash (the world's tallest flowering tree) and tree ferns. They then meet The Kalatha Tree – a living giant that stands testament to the resilience of nature and community spirit. This tree is one of the largest trees in Victoria standing 65 metres tall, 14 metres in girth and is 400 years old.

Students also discover: the animals of the forest including the Leadbeater's Possum, Victoria's faunal emblem; natural processes of the forest to provide clean drinking water to the city of Melbourne; what makes a healthy forest habitat; the different ways that people use forests; and how we can ensure the sustainability of forests for the future. As part of this they have the opportunity to do important field work (observations, recordings and sketches).

Curriculum Links: Geography data and information; Geographical knowledge

Fire and the forest – Levels 5 and 6

The geographical location of Victoria, its vegetation and climate of mild winters followed by hot summers combine to produce one of the most fire-prone environments in the world. Fires have occurred frequently throughout our history and provide a threat to plants and animals of the forest as well as the people who live and work in these areas.

As part of this Gould League excursion to the Toolangi State Forest and Kinglake, students will:

- understand how and why forest fires begin and progress so quickly
- investigate the Forest Fire Index and warning system of the BOM
- reflect on Victoria's Black Saturday Fires
- explore the ways that plants and animals of the forest have adapted to their environment and the threat of fire over time
- complete a fieldwork sketch of the fuel load in the forest
- mind-map causes and effects of fire and what is being done to protect forests, people and property from future fires
- reflect on changes made after Victoria's Black Saturday Fires and the impact of global citizenship
- look at ways in which Forest Management, DEECA, CFA and the community work to prevent, prepare, fight and limit the extent of bushfires.

Curriculum Links: Geographic knowledge and factors that influence people's opinions of places; Geographical data and information

Forest transformations: Adaptations and changes in the forest – Levels 5 and 6

This program introduces students to the changes in the position of the continents over the last 65 million years due to tectonic plate movement. It also outlines the subsequent changes to climate, soil, vegetation, animals and water experienced over time including the Pleistocene (a geological epoch that includes the last ice age and lasted 2.5 million to 11,700 years ago) when megafauna roamed the Earth.

It also explores the history of Indigenous Australians that began at least 65,000 years ago, when humans first inhabited the Australian continent, (predating European and American settlement) their hunter-gatherer minimalist Lifestyle that adapted to the diverse environments of the continent; their Connection to Land and; the impact of European colonisation that led to significant changes in Indigenous cultures and populations, including the introduction of new diseases and the loss of land and traditional ways of life.

It also looks at other impacts of colonialism such as the Gold Rush and the environmental impacts of the introduction of animal species like the fox and the domestic cats and explores plant and animal adaptations.

Teachers may choose an optional activity for students to complete introductory-level fieldwork sketching and data collection tasks as a part of the Victorian Geography curriculum.

Curriculum Links: Geographical concepts and skills; Data and information; Geographical knowledge – factors that space places and influence interconnections

Bushfires and the Environment – Levels 7 and 8

Wildfires are a natural force of the environment that can have tremendous impact on both living and non-living factors in the forest. This excursion investigates how fire affects the plant, animal and human communities in Toolangi; discover how it can change entire landscapes in a short period of time; and complete a hands-on fieldwork data measurement activity to assess present bushfire hazard.

The four-hour excursion includes a visit to a variety of forest ecosystems, where comparisons will be made between the Mountain Ash and Messmate Eucalypt Forests and a Cool Temperate Rainforest.

Curriculum Links: Geographical concepts and skills data and information; Geographical knowledge, landforms and landscapes.

Going with the Flow: Water in the World – Level 7 and 8

The Toolangi State Forest is critical to Melbourne's water supply. During this excursion, students explore how Toolangi State Forest contributes to creating, collecting, storing and filtering water, as well as the natural and human influences on water movement and quality such as logging, bushfires, weeds and climate change.

Students perform field work data collection and activities that compare water quality from a number of different

sources, explore water uses, the water outlook and ways to save water. Students also have the option to explore water values for a range for plants and animals.

Curriculum Links: Geographical concepts and skills; data and information; Geographical knowledge water in the world; Geographical knowledge place and liveability.

Tale of Two Forests – Levels 7 and 8

More than one third of the State of Victoria is public land. State forests, managed by the Department of Energy, Environment and Climate Action (DEECA) make up 3.4 million hectares of the State.

Located 1.5 hours' drive from the centre of Melbourne is Toolangi State Forest, in the Central Highlands Forest. The Central Highlands forests are important for a range of uses and values. They contain many types of ecosystems, from drier lowland forest, cool temperate rainforest and mountainous Snow Gum woodlands (**Figure 2**).

The program gives students the opportunity to explore:

- the difference between State Forests and National Parks
- the way different user groups view the forest
- the living and non-living features of the Mountain Ash and a Cool Temperate Rainforest and what similarities and differences can be observed
- the timber harvesting process
- impacts that human use has on our forests.

Curriculum Links: Geographics concepts and skills: Data and information; Geographical knowledge landforms and landscapes.

Bush Biodiversity – Levels 7 and 8

Our forests are diverse, dynamic environments. This excursion explores:

- forest ecosystems and the interactions and interrelationships between forest plants and animals
- past, present and future use of the forest by people and native animals and plants
- the differences between a Mountain Ash Forest and a Cool Temperate Rainforest
- living and non-living features of each ecosystem
- evidence of animals and plants living in the forest that can be elusive and hard to find
- habitats provided by the forest
- forest food chains
- timber harvesting and its impact
- the impact of fire on the different landscapes.

Curriculum Links: Geographical concepts and skills, Geographic – Water in the world, landforms and landscapes

Biomes and Food Security (Food and Fibre in the Forest) – Levels 9 and 10

The ecosystems of the Victorian Central Highlands have distinctive characteristics which help to class the region firmly as part of a Temperate Forest Biome. Explore this special region and have your students study many key elements of **Geographical Knowledge & Understanding** in accordance to the Victorian Geography Curriculum.

The programs covers:

- the distribution and characteristics of biomes as regions, with distinctive climates, soils, vegetations and productivity
- the interconnection between food production and land and water degradation; the supply of fresh water; competing land uses; climate change
- the human alteration of biomes to produce food and fibre, and the environmental impacts of these alterations
- land and resource management strategies used by First Nations peoples to achieve food security

Figure 2. Fieldwork in the forest

- the difference between growth rates, materials use and ability to capture carbon and remediate soil of trees compared to bamboo and hemp.

Students will:

- visit a Mountain Ash Forest and Cool Temperate Rainforest
- identify characteristics of the biome, take a closer look at the water cycle in the forest and measure abiotic data
- reflect on Traditional Land Owners use and management of the land
- examine the timber harvesting process and visit a clear felled logging coupe
- consider human impacts on the environment
- discover local foods grown in Toolangi
- explore the benefits of regenerative farming practices
- discover how plantations such as bamboo and hemp, that are fast growing and absorb more carbon than trees, are now providing more sustainable materials for our homes and the built environment.

Curriculum Links: Geographical knowledge and understanding

Our Forests Our Future – Years 9 and 10

This Geography program looks at how to measure carbon stored in trees, the impact of climate change, how governments manage protected and unique environments, the ethical use of forest, the impact of forestry and the ban on native forest logging, and it discusses the potential benefits of the Great Forest National Park.

Curriculum Links: Geographical concepts skills, data and information; geographic knowledge environmental change in management; geographical knowledge geographies of interconnections.

The Forest Environment – Enviro Science Unit 1 for VCE Students

This Science/Geography program explores the forest environment, its structure, functions and natural processes by investigating:

- changes occurring in the forest, including human-induced changes
- how forests are managed and conserved
- a clear-felled logging coupe
- a protected Cool Temperate Rainforest
- a Mountain Ash Forest that has regenerated from the 1939 Black Friday bushfires.

Student field work includes:

- observing, listing energy flows of plants and animals in eco-systems and the connections between them
- observing and listing biotic and abiotic components of the ecosystem
- comparing plant communities by drawing, labelling or describing (their choice) of specific forest characteristics such as canopy species and preferred fire regimes for a Messmate Forest, Mountain Ash Forest and a Cool Temperate Rainforest
- observing and then describing the process of change in plant species distribution and abundance after disturbance (succession) one year after disturbance; 12–15 years after disturbance; 60 years after disturbance – and in maturity once it reached a balanced state (climax community) at 120 years and 500 years
- observing and describing human-induced changes and their impact
- using quadrats in two sites to study plants to determine the differences within a Wet Forest environment
- observing adaptations for forest plants to cope with fire and other conditions such as drought.
- discussing Australian animal adaptions to cope with changes to the environment
- comparing surveys to assess growth, change or impact over time (1869 V 1887) of vegetation cover and discussing the causes of the vegetation loss
- discussing vegetation coverage since 1987 – is it the same or has it worsened and why?

There is also discussion around Indigenous impacts on forests compared to European settlers and the impact of species such as cats and foxes.

Hazards and Disasters in the Forest – VCE Geography Unit 1

Months of hot and dry conditions in south-eastern Australia led to a heatwave in January 2009. Melbourne's temperature peaked at 45.1 degrees on 30 January, one of the hottest days in the city's history.

On 7 February 2009 extremely strong winds brought hot air from central Australia and blew down power lines in the Kinglake–Whittlesea area in Victoria. This resulted in many fires breaking out throughout the day. By evening, almost 400 fires had broken out across Victoria.

On 8 February many of the fires merged at Kinglake. The fires took weeks to extinguish. A total of 173 people died in the fires, 414 were injured, and more than a million animals died. More than 450,000 hectares of land had burned and 3,500 buildings, including more than 2,000 houses, were destroyed.

This program looks at the cause and impact of the fires, recovery from the Black Saturday Bushfires, and preparedness for future bushfire seasons.

We visit sites with contrasting ecological functions and response to bushfire, and that are at varying stages of recovery. We discuss human responses to the region's bushfire hazards and disasters, including prediction of risk and vulnerability, planning protection and mitigation, recovery and reconstruction and complete fieldwork activities that will collect primary data for the unit's SAC requirement.

The Full Day (four-hour) program includes:

- introduction to the region's geography and ecology
- visits to numerous sites in the region looking at Mountain Ash and Messmate forests
- the use of GNSS technology to locate specific sites for fieldwork activities.

- practical fieldwork activities and observations that will be used as primary data for the Fieldwork SAC, using equipment supplied by the Gould League
- time for lunch
- discussion of bushfire impacts on humans, and their response to that hazard.

Curriculum Links: This program covers key knowledge for AOS 1 Outcome 1 and key knowledge for AOS 2 Outcome 2.

Leadbeater's Possums – VCE Environmental Science Unit 3

It is believed that Leadbeater's Possum evolved about 20 million years ago. Historical records and fossil distribution suggest they once colonised a large area of the Great Dividing Range from north of Melbourne to south of Sydney. There are estimated to be only between 1,000 and 2,000 Leadbeater's Possums left in Victoria's Central Highlands.

The Leadbeater's Possum, which is Victoria's faunal emblem, is the only marsupial endemic to Victoria.

It is a small omnivorous arboreal marsupial. The species was discovered in 1867, then thought to be extinct from 1909–1960, until it was rediscovered in 1961. The possum was sighted by naturalist and geology student Eric Wilkinson near Marysville, at Cambarville, 90 to 120 minutes' drive north-east of Melbourne – far from its original known habitat in the swamp forests of Western Gippsland around the Bass River region towards Western Port Bay and Phillip Island.

Currently, the Leadbeater's Possum is listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999*. The remaining populations of Leadbeater's Possum are in danger of extinction due to natural collapse of large, old hollow-bearing trees.

During this fieldtrip students:

- explore the requirements that Leadbeater's Possum have for survival
- investigate past and current management strategies to conserve Leadbeater's Possum populations
- discuss the impact of the Supreme Court orders that were handed down in November 2022 that limited the area available for logging and expanded protected areas after it found the state-owned logging agency VicForests failed to adequately protect the yellow-bellied glider and the endangered greater glider in Victoria which then moved forward a ban on native timber harvesting in state forests from 2030 to January 1, 2024. During this four-hour program, you will visit the majestic mountain ash forests of Toolangi, exploring the intricate ecosystems found in the Victorian Central Highlands and a clear-felled logging coupe. You will discuss present management of the forests and how this affects overall biodiversity and that of the survival of the Leadbeater's Possum and the changes made to logging to protect them. Students will make observations and have the option of collecting data to be used for the Outcome's Assessment task in relation to the management of this threatened endemic species.
- visit Leadbeater's Possum habitat – Mountain Ash Forest with old growth trees and a Logging Coupe.

Curriculum Links: This excursion covers key knowledge for AOS 1 Outcome 1: Importance of biodiversity; Biodiversity change over time; Measuring changes in biodiversity; Threats to biodiversity; and Protection and restoration of biodiversity.

Relationships with Forests – VCE Outdoor and Environmental Studies Unit 3

The forested mountains which embrace the city of Melbourne are the setting for giant trees, dramatic geological events, human stories of tragedy and triumph, evolution of unique organisms and regular occurrence of bushfires. They have also been the focus of many court cases in recent years.

Victorian State Forests are managed to balance a variety of values and uses. These values and uses include the conservation of flora and fauna, protection of water catchments and water quality, the protection of landscape, archaeological and historic values, and the provision of recreational and educational opportunities.

This excursion visits a protected Cool Temperate Rainforest, a Mountain Ash Forest that has regenerated from the 1939 Black Friday bushfires and a clear-felled logging coupe. Students investigate how each of these areas are managed and the controversy that has surrounded them. Throughout the program students are encouraged to develop and consider their own views on how Victorian State Forests are and have been managed, and options to improve them.

Students also:

- explore how First Nations people lived and their relationship with forests
- discover the impacts of European colonisation
- gain an understanding of contemporary Australians' forest values
- explore contemporary political, social and economic views of the forest, and how they affect the way in which Toolangi's forests are utilised today
- discover the court ruling that stopped the logging of native forests in Victoria
- be able to make practical observations in order to complete journal entries/reports for Outcome Assessment tasks
- explore forest losses, be introduced to Great Forest National Park along with Biodiversity Credits and the Nature Repair Act
- investigate the 'views of nature' from a variety of perspectives
- discover a portion of a forest that sequesters and stores more carbon per hectare than any other forest studied in the world
- visit the home of the Leadbeaters Possum.

This excursion explores contemporary political, social and economic views of the forest, and how they affect the way in which Toolangi's forests are utilised today. Students will be able to make practical observations in order to complete journal entries/reports for Outcome Assessment tasks.

Curriculum Links: It directly addresses AOS 1 Outcome 1 Key Knowledge and skills as well as AOS 2 Outcome 2 Key Knowledge and skills.

About Gould League: Gould League www.gould.org.au is one of Australia's oldest and much-loved environmental charities. It was established in 1909 as 'The Gould League of Bird Lovers' with a charter to educate school children about birds, and provide long-term protection and conservation of birds. It expanded into all areas of sustainability around 50 years ago, and today runs more than 40 incursion and excursion programs for students K to Year 12 all linked to the Curriculum, as well as community programs and Teacher PDs at Toolangi State Forest, Beaconsfield Flora and Fauna Reserve, Ricketts Point Marine Sanctuary, and their Cheltenham Sustainability Education Centre.

Anne-Maree McInerney *is a Global Sustainability Advisor who spent the last 20 years developing and delivering sustainability education to business, government and community leaders prior to joining Gould League as General Manager. Her goal is to now build capacity in the education sector so together we can protect and sustain our world for future generations.*