

AUSTRALIANS
TOGETHER

TEACHER GUIDE
FOUNDATION SCIENCE & HASS

Caring for Country: Indigenous scientific observation and cultural practices

Warning – Aboriginal and Torres Strait Islander teachers and students are advised that this curriculum resource may contain images, voices or names of deceased people.

FOUNDATION SCIENCE & HASS

Caring for Country: Indigenous scientific observation and cultural practices

Australian Curriculum Link

Science/Foundation/Science as a Human Endeavour/Nature and development of science/ACSHE013

HASS/Foundation/Knowledge and Understanding/Geography/ACHASSK016

Australian Curriculum Content Description

ACSHE013: Science involves observing, asking questions about, and describing changes in, objects and events.

ACHASSK016: The Aboriginal or Torres Strait Islander Country/Place on which the school is located and why Country/Place is important to Aboriginal and Torres Strait Islander Peoples.

Australian Curriculum Elaboration

ACSHE013: recognising how Aboriginal and Torres Strait Islander Peoples gain knowledge about the land and its vital resources, such as water and food, through observation. 🖐️

ACHASSK016:

- Identifying and using the name of the local Aboriginal or Torres Strait Islander language group. 🖐️
- Identifying how and why the words 'Country/Place' are used by Aboriginal and Torres Strait Islander Peoples for the places to which they belong. 🖐️
- Inviting members of the traditional owner group to talk about Country/Place and places of cultural and historical significance to the Aboriginal or Torres Strait Islander community in the local neighbourhood, suburb, town or rural area. 🖐️
- Identifying local Aboriginal and/or Torres Strait Islander landmarks in the local area. 🖐️

Essential question

How can the scientific knowledge and cultural practices of Aboriginal and Torres Islander Peoples be applied to benefit ecosystems?

Australians Together Learning Framework

Tells Australia's narrative through the lens of 5 Key Ideas that inform teachers and students about Aboriginal and Torres Strait Islander perspectives.



The Wound

Injustice from the impact of colonisation

Students will recognise the pain and disadvantage many First Nations people experience, that started at colonisation and continues today.



Our History

A past that shapes our story as a nation

Students will critically engage with Australia's stories and understand the impact our history continues to have on Aboriginal and Torres Strait Islander people and all who call Australia home.



Why Me?

What's it got to do with me?

Students will explore why Aboriginal and Torres Strait Islander histories and cultures are relevant to them today.



Our Cultures

Everyone has culture. Know about your culture and value the cultures of others

Students will learn more about their own culture and identity, and gain a better understanding of, and respect for, Aboriginal and Torres Strait Islander cultures.



My Response

Steps we can take to build a brighter future

Students will gain an understanding that a brighter future is possible for all Australians, but to get there we each need to play our part.

Glossary

Terms that may need to be introduced to students prior to teaching the resource:

carbon emissions: carbon dioxide and carbon monoxide in the atmosphere, produced by vehicles and industrial processes.

colonisation: the act of one country invading and taking over another; the invaded country is called a 'colony'. The British began the colonisation of Australia in 1788.

Country: the lands where Aboriginal or Torres Strait Islander communities have always lived and belonged to. It's also a belief system, a relationship with all living things that are part of a landscape and includes everything within that landscape: rocks, trees, creeks, animals, plants, medicines, sacred sites, songs, stories, dance and art, as well as all people, ancestral spirits and past, present and future community connections. Country sustains First Nations Peoples and must be respected and cared for by every generation that is and will be.

D'harawal people: an Indigenous language group whose Country extends from the southern shores of Port Jackson, to the northern shores of the Shoalhaven River, and from the eastern shores of the Wollondilly River system to the eastern seaboard.

ecosystem: a biological community of organisms that interact with each other and their physical environment; that is, a deciduous forest or tropical lagoon.

First Nations people: Aboriginal and/or Torres Strait Islander Peoples.

lore: the learning and transmission of customs, traditions, kinship (the system that comprises the connections between individuals in First Nations communities) and heritage. Lore is the knowledge of Aboriginal and Torres Strait Islander Peoples transmitted orally from generation to generation. Much lore is told through Dreaming stories (a European term used to describe complex Indigenous stories that offer an understanding of Country, rules for living/a moral code and show connections between all people and all things through time).

Songlines: language songs that run across Australia. Where one song starts it's the border of a language group. Where it changes language it's the area of another.

	Teacher guidance	Ideas for student activities
<p>Introduction</p>	<p><i>Before beginning the study, it's important to ask students to access their prior knowledge about the topic with an introductory question or activity.</i></p> <p>Introduction This unit investigates the scientific knowledge traditions of Aboriginal and Torres Strait Islander Peoples and how the practices of observing, asking questions, testing hypotheses and making connections have enabled First Nations Peoples to accumulate, refine and use their intricate knowledge of plants, animals, land, sea and sky to ensure Country is able to survive and thrive. As students investigate, they are supported to consider how these skills can be applied to better understand and care for their own environment.</p> <p>As part of the unit, students identify the Traditional Custodians of their local area and are supported to recognise the importance of Country for Aboriginal and Torres Strait Islander people, as well as the purpose and historical context for cultural protocols such as Welcome to and Acknowledgement of Country.</p> <p>The importance of Country for Aboriginal and Torres Strait Islander people For many First Nations people in Australia, land is much more than soil, rocks or minerals; it's a living environment that sustains and is sustained by peoples and cultural practices (Australian Museum 2020). Though there are clear lore, customs and geographical boundaries that define the lands of First Nations Peoples, Country isn't owned in the traditional Western sense. Individuals aren't seen as separate or 'above' the natural ecosystem, instead they're an integral part of it and have a responsibility to maintain and care for all aspects of Country (AIATSIS 2020; Deslandes et al. 2019).</p> <p>Before colonisation, the reciprocal relationship between people and Country was deeply interwoven with almost all aspects of life for First Nations Peoples: spirituality, culture, language, family, lore and identity. Today, despite the negative impacts of colonisation, this relationship remains fundamental to the way of life and identity of many First Nations people, providing a deep sense of purpose and belonging (AIATSIS 2020; Common Ground 2015). This relationship is often referred to as 'connection to Country'.</p> <p>Useful resources You may wish to share an example of a Welcome to Country with students, such as this one from Gubbi Gubbi Elder Lyndon Davis (04:34): https://www.youtube.com/watch?v=LWxX8DGcSXo</p> <p>Written by respected Wurundjeri Elder Aunty Joy Murphy, <i>Welcome to Country</i> beautifully and simply explains the concept of welcoming ceremonies and their significance to Aboriginal communities across Australia. If your school doesn't have a hard copy of <i>Welcome to Country</i>, you can watch Aunty Joy Murphy introducing and reading her book via Story Box Library if your school has a subscription (05:37): https://storyboxlibrary.com.au/stories/welcome-to-country</p>	<p>What is Country? Ask students to share what they think Country means. Record all responses on a large sheet of poster paper without correcting or affirming.</p> <p>Reading to understand Read <i>Welcome to Country</i> written by Aunty Joy Murphy and illustrated by Lisa Kennedy.</p> <p>Discussing Country Revisit students' initial ideas of Country. What would they now add, change or take away?</p> <p>Explain that a Welcome to Country is a custom that's been performed for thousands of years in which a Traditional Custodian welcomes and offers safe passage and protection to a visitor on Country. These days it can take many different forms such as a short speech in English or a local First Nations Language and could include singing, dancing or a smoking ceremony.</p> <p>Mind mapping Create a mind map with the word <i>Country</i> at the centre. Around the outside create a series of subheadings based on different aspects of Aunty Joy Murphy's book. These might include <i>spirituality, food, family, animals, plants, water, shelter, family, ceremony</i> etc.</p> <p>Re-read <i>Welcome to Country</i> and see if students are able to identify and sort the ideas or events in the story under the different subheadings. Display the poster in your classroom; revisit, add and revise throughout the unit.</p>



Our History

Teacher guidance

There are many stories that make up Australia's history. It's important to use resources that include perspectives and voices of First Nations people, such as those contained in this resource.

The oldest continuing living cultures

With increasingly sophisticated dating methods, archaeologists have been able to identify Indigenous artefacts dating back at least 65 000 years (Australian Museum 2020). Exploring examples of these on a timeline helps students conceptualise this extraordinary length of time. These artefacts also provide valuable information about how First Nations people live and confirm that Aboriginal and Torres Strait Islander Peoples are the world's oldest continuing living cultures (Australian Museum 2020; Australian Human Rights Commission 2016).

Understanding the diversity of First Nations people

It's estimated that, prior to colonisation, there were between 500 to 700 Aboriginal and Torres Strait Islander language groups inhabiting this continent. Today, only around 100 distinct language groups remain (AIATSIS 2020). Indigenous language groups are connected to a defined area of land (both geographically and spiritually) complete with knowledge systems, cultural practices, languages and lore (AIATSIS 2020). You may wish to support students' understanding of the rich diversity of First Nations cultures that exist by providing a comparison of familiar national identities that exist within other continents, such as, Asia (Indian, Chinese, Japanese, Lebanese etc) or Europe (Russia, Italy, Ireland, France etc).

Acknowledging Country

An Acknowledgement of Country is an opportunity to pay respect to the Traditional Custodians of the land you're on and acknowledge their continuing connection and custodianship of that area. Like Welcome to Country ceremonies, Acknowledgements of Country have been part of First Nations cultures for thousands of years (Reconciliation Australia 2017). It's important that students are also supported to understand that Acknowledgements of Country are an important way that non-Indigenous people can begin to redress the historical exclusion of First Nations people from Australia's national identity and democratic processes (e.g. the national anthem, the Constitution, voting and land rights, history books, the Australian flag).

Useful resources

Information in this clip on the archaeological discoveries of Madjedbebe rock shelter will give you an idea of the kinds of discoveries you can share with students before beginning the 'The oldest continuing living cultures' timeline activity: <https://www.smh.com.au/technology/the-extraordinary-science-behind-an-aboriginal-history-discovery-65000-years-in-the-making-20170720-gxf6rb.html>

This timeline from the Bringing them Home website provides background information on key archaeological findings. The photographs of each artefact may also be useful for students during the 'The oldest continuing living cultures' timeline activity: <https://bth.humanrights.gov.au/significance/historical-context-ancient-history>

Use the AIATSIS map during the 'Understanding the diversity of First Nations Peoples' activity to help students understand the distinct cultures, customs, languages and geographical boundaries of different First Nations: <https://aiatsis.gov.au/explore/map-indigenous-australia>

Ideas for student activities

The oldest continuing living cultures

Timeline

Using a 1 m ruler, draw a 100 cm horizontal line on the whiteboard. Write *65 000+ years* at one end and *Today* at the other.

Explain that this line represents what archaeological evidence currently tells us about how long **First Nations people** have been on this continent.

Mark out the dates associated with these important artefacts using the following information:

Ruler mark	Date	Artefact
0 cm	65 000 years	Madjedbebe stone tools
42.5 cm	36 000 years	Grinding stone for grain (suggesting First Nations people were the world's first bakers)
53 cm	28 000 years	Oldest known rock art painting
90 cm	7 000 years	Oldest stone foundation of a house
99 cm	1 500 years	The oldest bark painting

Using a different coloured marker, colour in a small 4 mm rectangle between 99.6 cm and 100 cm.

	Teacher guidance	Ideas for student activities
	<p>The <i>Gambay first languages map</i> allows students to explore various audio and/or video clips of the diverse first languages being spoken around Australia: https://gambay.com.au/</p>	<p>Explain to students that this tiny rectangle represents the time since British colonisation in 1788 all the way up to today. Help them to compare this relatively tiny amount of time to the referenced 65 000+ years First Nations people have been living on and caring for this land.</p> <p>Understanding the diversity of First Nations Peoples</p> <p>AIT SIS map discussion Show students a copy of the AIT SIS map. Explain that this is a map showing all the different Indigenous language, social or nation groups in Australia. Emphasise that each nation has its own language, customs and culture. Invite students to point out where they think their school is on the map. Ask if anybody knows the name of the language group or Traditional Custodians of your area.</p> <p>Gambay language stations: small group rotations Switch to the Gambay first languages map and locate the language group of the land that you're on. Listen to the audio files of people speaking and talking about Country. You may wish to encourage students to learn the Indigenous word for 'hello' or similar in the Indigenous languages of your area if available.</p> <p>Have four to six devices with a different language group from your state open on the Gambay map. In small groups or pairs, allow students 2 to 3 minutes at each station to listen to the audio and video from each area then move students on to the next. Encourage students to share something new they learnt.</p> <p>If you don't have access to several devices, you can explore different language groups as a class on the Gambay map.</p>

	Teacher guidance	Ideas for student activities
 <p>Our Cultures</p>	<p><i>Help students connect with and acknowledge the importance of culture and examine the living cultures of First Nations Peoples, which have adapted and survived since colonisation.</i></p> <p>Indigenous science knowledge and practices Aboriginal and Torres Strait Islander Peoples have some of the oldest, most in-depth ecological understandings in the world (Deslandes et al. 2019; ACARA 2019). This wealth of knowledge about the interconnectedness of land, sea, sky, plants and animals has been accumulated and refined over thousands of years through the practice of careful observations of the environment and establishing cause and effect or time-related relationships between different seasonal events. These knowledge systems are used to predict the availability of food and resources, to assist with navigation or to identify the right time for hunting, ceremony or land management practice (ACARA 2019). By exploring these processes, students can begin noticing changes and relationships that exist in their own environment.</p> <p>Although these Indigenous scientific methods are similar to Western science, they're unique in the way that information and practices are embedded throughout daily life in cultural systems, such as song, dance, art, spirituality, ceremony, food and resource gathering. This ensures these important understandings are accurately passed down to future generations in order to survive and thrive (ACARA 2019; Davis 1998).</p> <p>Seasonal calendars The seasonal calendars of First Nations Peoples in Australia contain intricate knowledge of the interdependence and interrelationships between different aspects of an ecosystem. The name, features and number of seasons vary between language groups, each containing specific knowledge of the geographical area that has been accumulated and refined through noticing changes and relationships in the environment and climate over thousands of years (BOM 2020).</p> <p>Unlike Western seasons, which are linked to the same date every year, Indigenous seasons are defined by observations of key physical changes in the environment; such as, animal behaviours (i.e. migration, mating, aggression or activity), life-cycles or changes in the appearance of plants (i.e. fruiting, flowering, seeding, changes in the shape of colour of bark or leaves) as well as astronomical or meteorological patterns (i.e. moon phases, position of the sun or stars, weather patterns etc). These indicators don't function independently within the calendar, they are deeply interconnected with each other through causal (e.g. moon phases directly influencing changes in tides) and temporal (e.g. the timing of a tree blossom each year may coincide with particular eggs being available for harvesting) relationships. These observed relationships are then used to accurately predict upcoming weather patterns, inform timings for journeys or ceremonies and to determine the availability of a particular resource. An example of this can be found in the seasonal knowledge of the D'harawal people, who know that the mating calls of the tiger quoll indicates that the fruit of the lilly pilly tree has started to ripen, and when the lilly pilly fruit starts to fall, it's time for the annual journey to the coast to find other seasonal resources (ACARA 2019).</p> <p>Connecting with local Indigenous knowledge This unit provides an excellent opportunity for students to connect with the unique knowledge and practices of the Traditional Custodians of the local area. Incursions and excursions by Indigenous-led organisations can provide invaluable opportunities for students to engage with local knowledge of seasonal</p>	<p>Living seasonal calendar exploration</p> <p>Before beginning try to locate information about the seasonal knowledge from the language group of your local area, CSIRO and BOM both have a selection of seasonal calendars from around Australia. Your local land council may also be able to help you connect with local knowledge or resources.</p> <p>Discussion Introduce students to the idea of seasonal calendars by watching ABC's Indigenous Seasons Across Northern Australia (01:42).</p> <p>Explain to students how careful observation of the local environment over tens of thousands of years have enabled many First Nations people to identify the availability of resources, choose the best times to harvest, hunt, fish, prepare or collect bush medicine, go on journeys or perform ceremonies.</p> <p>Explore the seasonal calendar of the Traditional Custodians of your area (or nearby), bringing students' attention to the characteristics and number of seasons, what changes occur in plant and animal life, and how the seasons connect to cultural activities. Encourage students to make connections to any observations they may have made of changes in their own environment.</p> <p>Exploring seasonal changes through movement In pairs, assign students one or two seasonal events identified in the local calendar. Allow students time to work out how they'll show the changes in the plant's life cycle, animal behaviour or weather patterns through movement and sound.</p> <p>Performing a seasonal calendar With students standing in a circle, narrate the cycle of the seasonal calendar, asking students to perform their movements as you narrate</p>

	Teacher guidance	Ideas for student activities
	<p>indicators, uses of plant and animal resources, and land management practices that help maintain the health of local ecosystems.</p> <p>If an incursion or excursion isn't possible, it can still be valuable to contact your local land council or registered Aboriginal party who may be able to direct you towards other resources that help explore local knowledge.</p> <p>Caring for Country</p> <p>Careful observation of the environment, coupled with the intricate ecological knowledge many First Nations people possess, also informs the process of ecological management or caring for Country (ACARA 2019). By noticing the growth and life cycles of plants, many First Nations people have built effective, sustainable land management methods, which ensure plentiful wildlife and plant growth throughout the year (ACARA 2019; Schnierer, Ellsmore & Schnierer 2011). These include:</p> <ul style="list-style-type: none"> • Monitoring and managing animal populations to prevent the damaging effects that an over or under abundance of species can have on the ecosystem. • Watching for invasive overgrowth of certain plant species, which may negatively affect other plants or animals; identifying ideal conditions to collect and propagate plant seeds and tubers. • Using cultural burning techniques to stimulate new plant growth, clear areas for increased access and visibility or to minimise that chance of wildfires. (ACARA 2019; Pascoe 2019) <p>Useful resources</p> <p>The CSIRO have a selection of Indigenous seasonal calendars to choose from: https://www.csiro.au/en/Research/Environment/Land-management/Indigenous/Indigenous-calendars</p> <p>BOM's <i>Indigenous weather knowledge</i> map allows you to select an area nearest to you: http://www.bom.gov.au/iwk/</p> <p>This short video from the ABC provides background on how scientists and First Nations communities have worked together to communicate and record Indigenous science knowledge of seasons into resources that can be shared with all Australians (01:42): https://education.abc.net.au/home/?sf185114247=1#!/media/1771788/indigenous-seasons-across-northern-australia</p> <p>There are numerous online guides to Indigenous plants that can be used to supplement information provided by your local land council. These include:</p> <ul style="list-style-type: none"> • Monash University: https://www.monash.edu/_data/assets/pdf_file/0004/542119/Guide-to-the-Aboriginal-Garden-Clayton-Campus.pdf • The Tiwi Island Land Council: https://www.tiwilandcouncil.com/documents/Uploads/Tiwi%20plants%20and%20animals%20booklr.pdf • Australian National Botanic Gardens: https://www.anbg.gov.au/gardens/education/programs/pdfs/aboriginal_plant_use_and_technology.pdf • Murrumbidgee Catchment Authority: http://archive.ils.nsw.gov.au/_data/assets/pdf_file/0009/495261/archive-wiradjuri-plant-use.pdf 	<p>the particular event or change, creating a 'living seasonal calendar'. This could be adapted into a performance, which could be shared at school assembly or a special event.</p> <p>Alternatively, or in addition, each student could illustrate and write a simple sentence about the seasonal event or change, which could be arranged to form a wall display or a class book of the seasonal calendar.</p> <p>See, think, wonder</p> <p>Nature hunt</p> <p>Take students out into the local environment to find familiar markers of change in plant life cycles (seedpods, flowers, fruit, leaves, etc). Try to identify which plant the markers came from and prompt students to access any prior knowledge or observations they've made about the various plants.</p> <p>See, think, wonder activity</p> <p>In pairs, ask students to choose a plant sample (leaf, seedpod, flower, etc), to take back to the classroom and create a 'see, think, wonder' exploration:</p> <ul style="list-style-type: none"> • <i>See (observation)</i>: describe the colour, texture appearance of the thing you see. • <i>Think (hypothesis)</i>: which plant do they think it came from? Do they have an idea about how it might be used by animals or humans (smart guesses or hypothesis)? • <i>Wonder (asking questions)</i>: students create a question about the object they would like to find out more about. <p>This exploration could be completed in writing using a simple template, shared verbally or presented as a herbarium by attaching the plant samples to their 'see, think, wonder' template and displaying.</p>

	Teacher guidance	Ideas for student activities
	<p>• Parks Australia: https://parksaustralia.gov.au/botanic-gardens/pub/anbg_educationresources_aboriginalplantuse_150802.pdf</p> <p>This short video by the Royal Botanical Gardens also provides examples of Indigenous plant use (05:02): https://www.rbg.vic.gov.au/virtualgarden/aboriginal-knowledge</p> <p>The VICFLORA database may assist in identifying local plant species during various activities throughout the unit: https://vicflora.rbg.vic.gov.au/</p> <p>Google Lens https://lens.google.com/ is a free app, which utilises the camera function of your device to identify plant and animal species in your local environment. This could be useful during the 'See, think, wonder' or 'Creating a school yard seasonal calendar' activities.</p> <p>This ACARA resource provides detailed background information about the Indigenous curriculum links explored throughout this unit: https://www.australiancurriculum.edu.au/media/5653/ccp-tbi-f-6-ver5-online.pdf</p> <p>The Australasian Virtual Herbarium is an online database of photographs of native plant samples recorded as a herbarium. It's helpful for providing students with a visual example of what a herbarium looks like as well as general information about plant species: https://avh.chah.org.au/</p>	<p>Encourage students to continue observing the plant their sample came from throughout the year, sharing any changes they observe with the class.</p> <p>Creating a school yard seasonal calendar</p> <p>Outdoor discussion Begin this lesson outside, preferably under or near a tree that has flowers, fruit, seeds or drops its leaves during autumn. Prompt students to share any observations or prior knowledge about the tree.</p> <p>Nature observers Explain that the class will be creating a seasonal calendar based on observations of the school environment, such as, when changes occur in the flowers, fruit, seeds or leaves, what they notice about changes in animal populations and behaviours throughout the year (e.g. magpies swooping, appearance of flies, ants or mosquitos) as well as general observations about weather patterns.</p> <p>Developing your school yard seasonal calendar Begin your calendar by exploring the school grounds and recording observations about the plants and animals in the school yard at the current time and recording any patterns noticed in recent weather.</p> <p>Continue to collect these observations in a wall display, class big book, or on large posters. Revisit and add to these throughout the year. Also, record any questions or hypotheses that arise from students during their observations (e.g. Why are there so many flies at the moment? Where do they go the rest of the year?).</p> <p>Indigenous observational science slide show and bingo (Student handout) Before starting, print off enough 'Indigenous observational science bingo' cards for</p>

	Teacher guidance	Ideas for student activities
		<p>students to play independently or in pairs. You'll also need six counters for each bingo card.</p> <p>Explain that you'll be exploring some of the ways many First Nations people predict weather patterns and locate and predict where and when they might find resources, such as food and water.</p> <p>Slide show Download the 'PDF Slide Show' on Indigenous observational science. Go through each image with students, encouraging them to share any connections or questions. You may wish to identify and use local Indigenous names for these species alongside the English names.</p> <p>Bingo Hand out bingo cards (see p.20) and begin the game by reading out the clue cards (see p.19). If you're able to learn the Indigenous names for any of the plants or animals from the language group of your area, these could also be included in the clues. The game is finished when all images on the bingo card are covered.</p>
 <p>The Wound</p>	<p><i>The story of our nation's past is hard to face but it's important; it's left a wound that can be seen in the inequality between Aboriginal and Torres Strait Islander people and non-Indigenous Australians. Help students understand how this wound continues to have an impact today.</i></p> <p>Discussing the effects of colonisation with young children There's much about Australia's violent and traumatic colonial past that's inappropriate to explore with very young children. One age-appropriate way younger students can begin understanding some of the impacts of colonisation is to investigate how it has affected Country and the environment.</p> <p>The effects of terra nullius <i>Terra nullius</i>, a legal term translating as 'land belonging to no-one', refers to absence of people and/or the absence of pre-existing property relationships of occupying people on an area of land. The false declaration of terra nullius by colonial powers occurred because of the inability or unwillingness of early colonists to recognise the sophisticated relationships that had existed between First Nations people and Country for thousands of years. Early colonists prioritised British knowledge, laws, culture and people over those of Aboriginal and Torres Strait Islander people (Jagot 2017). The declaration of terra nullius occurred despite the existence of colonial records that describe in detail exactly the types of significant architecture and agriculture that would prove this claim to be false (Pascoe 2019; Gammage 2011) and was used to justify</p>	<p>Country before, Country after</p> <p>Book exploration – <i>The Rabbits</i> Before reading Shaun Tan and John Marsden's <i>The Rabbits</i> as a class, explain that this is a story with a hidden, more complex meaning story – an <i>allegory</i>. Sometimes the characters in an allegory will represent a bigger idea.</p> <p>While reading, draw students' attention to the colour, artwork and events in the book.</p> <p>After reading ask students to identify who the characters are in the story. Explain that rabbits are not native to Australia and originally came from Europe. Add that although rabbits are very cute, they actually cause a great deal of damage to the environment due to their large numbers,</p>

	Teacher guidance	Ideas for student activities
	<p>taking land without treaty or payment to First Nations people (Jagot 2017). The dispossession of land rights and power paved the way for the ongoing oppression of First Nations people who were treated, essentially, as trespassers (Moreton-Robinson 2019).</p> <p>Although the legal fiction of terra nullius was abolished in the landmark native title case led by Eddie Koiki Mabo in 1992, the consequences of this declaration continue to be felt by First Nations people, as governments, private landowners and corporations continue to tightly control the ways in which First Nations people interact with and make decisions about ancestral lands (Schnierer, Ellsmore & Schnierer 2011).</p> <p>Destruction of Country and culture</p> <p>In recent years we've seen the destruction of numerous culturally and historically significant sites in the name of industry, agriculture and land development (Schnierer, Ellsmore & Schnierer 2011). Over the past 10 years, mining companies have been granted permission by state and federal government departments to damage more than 460 sites of cultural significance (Schnierer, Ellsmore & Schnierer 2011) including the high-profile destruction of a 46 000-year-old rock shelter at Juukan Gorge in 2020, which resulted in national and international outcry. Roads, railways and private land developments also threaten important ecosystems and culturally significant sites including ancient scar trees and birthing trees, rock shelters and rock art. They also sever Songlines, which have existed for millennia. The legal and financial weight of large corporations and industries, coupled with a failure on the part of government to respect or recognise the continuing importance and cultural significance of these sites to Aboriginal and Torres Strait Islander people, has led to an imbalance of power, which often sees the wishes of First Nations communities ignored or suppressed (Schnierer, Ellsmore & Schnierer 2011).</p> <p>Research also shows these destructive actions have a significant impact on the wellbeing of First Nations people and communities (Common Ground 2015).</p> <p>The impact of agriculture on Country</p> <p>The introduction of Western agricultural practices has resulted in significant degradation of ecosystems in many regions of Australia with introduced plants and animal species, such as livestock, insects and domestic pets, and agricultural practices such as grazing, crop irrigation and polluted water run-off, all contributing to the degradation (Schnierer, Ellsmore & Schnierer 2011; Pascoe 2019).</p> <p>Recent books such as Bruce Pascoe's 2014 <i>Dark Emu</i> and Bill Gammage's 2011 <i>The Biggest Estate on Earth</i> use early colonial records of the land to highlight both the careful land management practices of First Nations people prior to colonisation (with descriptions of soft loamy soils and fields of cultivated grains and cops), but also the steep decline in soil health and native plant and animal populations that occurred within 50 short years of the introduction of Western farming practices. These saw soils becoming hard, barren and compacted under the hooves of livestock, and native vegetation and edible crops devastated by the constant grazing of cattle and livestock (Pascoe 2019; Gammage 2011).</p> <p>Invasive plant and animal species</p> <p>Introduced animal species, such as, cats, rabbits, foxes and insect populations have decimated parts of the native animal and plant populations. In the last 200 years, Australia has lost 25 species of mammals,</p>	<p>destroying vegetation and competing with native animals for food and shelter.</p> <p>Explain that the numbat is a unique Australian animal that was once widespread across Australia, but these days are endangered due to loss of habitat and food supply and being eaten by foxes.</p> <p>Explain that <i>The Rabbits</i> is an allegory about European colonists who came to Australia in 1788 and took land from First Nations people who had lived on and cared for Country for over 65 000 years.</p> <p>Ask students who they think the rabbits and numbats represent in the story? How do they feel about the two different characters and the events in the story?</p> <p>Imagining Country: before and after</p> <p>Book discussion – <i>Young Dark Emu</i></p> <p>Read Chapter 6 of Bruce Pascoe's <i>Young Dark Emu</i> to students. Discuss the negative impacts that colonisation had on the environment.</p> <p>Divide a sheet of poster paper into two columns: <i>before colonisation</i> and <i>after colonisation</i>. Revisit the timeline created earlier in the unit to demonstrate these two periods of time are not equal.</p> <p>Using subheadings, such as, <i>plants, animals</i> and <i>other</i>, support students to list what would've been in the local area before colonisation (e.g. native plants and animals) then what we see today (e.g. crops, veggie gardens, plants that use up lots of water, pets, cattle and feral animals, such as, foxes that damage the soil and kill native wildlife, cars, roads, factories that pollute the air and water, etc).</p> <p>Before and after colonisation artwork</p> <p>Using an A4 or A3 sheet folded in half, ask students to create an artwork showing what the local area may have looked like before colonisation and what it looks like now.</p>

	Teacher guidance	Ideas for student activities
	<p>making Australia responsible for over 40 per cent of the world's total extinctions during this period (ABS 2002). These losses not only upset the balance of already fragile ecosystems, but also endanger Indigenous knowledge systems and cultural practices, such as, hunting, resource collection and ceremony, all of which are deeply connected to the presence and availability of particular animals (ACARA 2019).</p> <p>The introduction of exotic plant species has helped to cause the extinction of over 61 native plant species as well as having significant negative impacts upon the natural ecosystems through reducing soil and water quality and preventing suitable growing conditions for native species to propagate. Unlike native trees and plants (which require no special treatment to survive in their natural setting), introduced plant species from colder, wetter climates often require a constant supply of water and fertilisers to replicate the growing conditions of their original habitat, putting additional pressure on the already scarce resources and taking up nutrients from the soil at a rate which is difficult to replace (ACARA 2019).</p> <p>Useful resources</p> <p><i>Young Dark Emu</i> is Bruce Pascoe's 2019 children's version of his acclaimed book <i>Dark Emu</i>. It provides short summaries of key information from early colonial accounts of First Nation's culture and agricultural practice in child-friendly language supported by images and prompting questions.</p> <p>ABC Education has recorded short videos to create a digital book of Bruce Pascoe summarising the ideas from each chapter of <i>Dark Emu</i>. Chapter 7 discusses the importance of <i>murnong</i> (yam daisies), the ways in which First Nations people cultivated this crop and the damage that was done to the crops and the land by colonial agriculture, sheep and cattle (03:54): https://education.abc.net.au/home#!/digibook/3122184/bruce-pascoe-aboriginal-agriculture-technology-and-ingenuity</p> <p>If your school doesn't have or isn't able to purchase a copy of <i>The Rabbits</i> by John Marsden and Shaun Tan, you can watch and listen to First Nations actor Richard Green reading the book via Story Box Library if your school has a subscription (04:10): https://storyboxlibrary.com.au/stories/the-rabbits</p>	<p>After completing their artwork, lead students around the tables to view the artworks of their peers. Encourage them to identify particular plants, animals, buildings or other features that have been included in the artworks.</p>
 <p>Why Me?</p>	<p><i>Help students understand that because they call Australia home this relates to them. Explore what's happening, or has happened, around your local area that's relevant to this topic.</i></p> <p>This section supports students to engage with the ways in which the scientific knowledge and cultural practices of Aboriginal and Torres Islander Peoples is currently being applied for the benefit of all Australians. It also provides examples of how Indigenous and non-indigenous people are working together for this country's future.</p> <p>Applying Indigenous knowledge</p> <p>Western science is slowly beginning to recognise the value and potential Indigenous knowledge has in addressing issues such as climate change, land management and sustainability. Research and land management schemes, which incorporate Indigenous knowledge and practices, have begun gaining more attention in recent years (Deslandes et al. 2019). Research also shows that investing in programs that utilise and build on existing Indigenous knowledge result in improved social, health and wellbeing outcomes for Indigenous participants through strengthening cultural knowledge and identity and providing meaningful job pathways for improved economic outcomes (Putnus, Josif & Woodward 2007; Hill et al. 2013).</p>	<p>Applying Indigenous knowledge</p> <p>Allow 5–10 minutes within each school day for students to watch and discuss a range of short video exploring how Indigenous knowledge is being celebrated and applied around the country. Record dot point examples of how Indigenous cultural and scientific knowledge is being used under a heading, such as:</p> <p><i>Indigenous knowledge can ...</i></p> <p>BTN, NITV, ABC Education and ABC Indigenous are just some of the online resources available to explore. Resources include:</p> <ul style="list-style-type: none"> • Backburning, Caring for Country (03:09). • Bardi Jawi Rangers: caring for Country (03:01).

	Teacher guidance	Ideas for student activities
	<p>Land management</p> <p>Since the devastating Australian bushfires during 2019 and 2020, cultural burning or ‘firestick farming’ programs are gaining greater interest from governments and local fire authorities as potential means for reducing the impact of future bushfires (ACARA 2019).</p> <p>Early colonial accounts, coupled with archaeological evidence and oral histories, show that First Nations people have been using controlled burning to manage the environment for thousands of years (Pascoe 2019). This process is shown to have numerous benefits including:</p> <ul style="list-style-type: none"> • Ensuring the health of plant and animal resources. • Protecting sacred sites; reducing potential fuel sources for wildfires through the elimination of dry leaves and overgrowth. • Regenerating important plant species; fertilising soils as well as assisting with visibility, hunting and ease of movement around Country through the clearing of sections of land. (Pascoe 2019) <p>Recent studies show carefully timed and controlled burns can substantially reduce carbon emissions caused by bushfires in some cases (Johns 2020).</p> <p>Indigenous marine and land ranger programs are also gaining momentum across Australia, employing Indigenous youth and knowledgeable Elders to monitor and maintain the health of different coastal, marine or inland environments. Activities undertaken by the rangers vary from area to area and use specific local knowledge to address local problems. This can include:</p> <ul style="list-style-type: none"> • Monitoring native animal and plant populations. • Propagating and planting Indigenous flora. • Identifying and removing invasive plant and animal species. • Monitoring soil and water health. • General maintenance of the environment. (Hill et al. 2013) <p>Native plants and crop cultivation</p> <p>The benefits of planting native plants are numerous. Native species have adapted to their unique environment over thousands of years, needing only the water and nutrients provided by the local climate and ecosystem, saving water and the need for fertilisation. Scientists have also discovered that the large root masses produced by native trees in dry landscapes, are capable of taking in large amounts of carbon both below and above ground, meaning existing eucalypt forests in Australia have the potential to store up to 38.5 billion tonnes of carbon in their lifetime. This is more than 70 times Australia’s total annual carbon emissions, potentially reducing the impact of greenhouse emissions (Finkel 2009).</p> <p>Native plants provide a plentiful food source of nectar, seeds, flower, fruit and foliage for native animals, which in turn improves the biodiversity and ecological health of the environment (ABS 2002). However, it’s the human interest in Australia’s edible and medicinal plants that has captured the imagination of the Australian food industry. The native food or ‘bush tucker’ industry has seen demand for native plant products boom in the last 10 years, creating potential opportunities for First Nations groups to use unique Indigenous scientific and cultural knowledge to build economic and job prospects for First Nations communities (Honan & McCarthy 2017).</p>	<ul style="list-style-type: none"> • <i>Indigenous Knowledge and Western Science Unite to Save the Reef</i> (03:06). • <i>Endangered Seeds</i> (03:05). • <i>Backyard Bird Count</i> (03:29). • <i>Bush Tucker Garden</i> (03:00). • <i>Bush Tucker</i> (03:48). • <i>The Many Uses of Indigenous Plants</i> (06:01). <p>Cooking with native ingredients</p> <p>Cooking with native ingredients can be a great way to get students excited about the potential of native plants. Identify a recipe that uses native ingredients or spices that students can prepare and try (damper with added lemon myrtle or wattleseed is a simple option).</p> <p>You might like to invite parents to come in and sample the food prepared by students. You could also create sensory jars for parents and students to view and smell different native ingredients.</p> <p>Connecting with local initiatives</p> <p>Contact your local land council or city council to get information on any Indigenous environmental initiatives that exist in your local area. You may be able to organise a visit or video link up with one of these organisations to discuss how local knowledge is being utilised to benefit the community.</p>

	Teacher guidance	Ideas for student activities
	<p>Useful resources</p> <p>The following clips provide students with examples of how Indigenous knowledge and practices are being celebrated and utilised around Australia for the 'Applying Indigenous knowledge' activity:</p> <ul style="list-style-type: none"> • <i>Backburning, Caring for Country</i> (03:09): https://www.youtube.com/watch?v=iHg9vgGQFSE • <i>Bardi Jawi Rangers: caring for Country</i> (03:01): https://education.abc.net.au/home#!/media/526699/bardi-jawi-rangers-caring-for-country • <i>Indigenous Knowledge and Western Science Unite to Save the Reef</i> (03:06): https://www.youtube.com/watch?v=MNMucCdjhgQ • <i>The Many Uses of Indigenous Plants</i> (06:05): https://education.abc.net.au/home#!/media/30780/the-many-uses-of-indigenous-plants • <i>Endangered Seeds</i> (03:05): https://www.abc.net.au/btn/classroom/endangered-seeds/11229492 • <i>Backyard Bird Count</i> (03:29): https://www.abc.net.au/btn/classroom/backyard-bird-count/10527476 • <i>Bush Tucker Garden</i> (02:59): https://www.abc.net.au/btn/classroom/bush-tucker-garden/11724674 • <i>Bush Tucker</i> (03:48): https://www.abc.net.au/btn/classroom/bush-tucker/10532360 <p>If you are interested in running a cooking or tasting experience with your students, this website has a number of recipes that feature Australian native ingredients: https://www.teaandbelle.com/single-post/2017/07/26/Indigenous-Bush-Tucker-recipes</p>	
 <p>My Response</p>	<p><i>Help students critically and creatively process and demonstrate their learning on this topic by exploring meaningful ways to respond. Ask students to come up with their own ideas about what they can do.</i></p> <p>Supporting students to identify ways in which they can apply their new skills and understandings in everyday life is an important way to ensure that their learning extends beyond the classroom. Students should be encouraged to share their own ideas of ways this could be achieved. You might provide some examples of what this can look like, such as:</p> <ul style="list-style-type: none"> • Grow native plants from seed, ensuring plants have the right conditions to thrive. Once established, students could sell seedlings in a plant sale or plant in the school grounds. Money raised could be put towards creating a native edible garden in the school or donated to one of the important Indigenous land management organisations they have been learning about. • Identifying and attending events run by a local Traditional Owners group. • Invite an Indigenous-led organisation that offers school talks to speak at an important school event. • Connecting with local Indigenous groups or environmental organisations to identify opportunities to participate in environmental regeneration programs. • Petitioning council, government, or industry groups to do more to protect important ecosystems and sites of cultural importance. 	<p>Student science projects</p> <p>Native plant hunt and survey</p> <p>Students may wish to undertake a survey comparing the number of Indigenous versus introduced plants in the school grounds. This information, combined with the knowledge students have gained during their investigations about the importance of native and Indigenous plants, could be used to petition local council or school leadership to plant more native plants and trees.</p> <p>Using apps, such as Google Lens, or enlisting the help of a knowledgeable gardener or plant nursery staff member may assist with identifying difference species.</p> <p>Student-led tours of school or local environment</p> <p>Using the knowledge gained during the 'See, think, wonder', 'School seasonal calendar' or 'Native plant</p>

	Teacher guidance	Ideas for student activities
	<p>Useful resources</p> <p>The <i>Let nature be your teacher</i> report, produced by the South Australian Government, provides suggestions for ways native plants and wildlife can be incorporated into schools and learning: https://landscape.sa.gov.au/files/sharedassets/adelaide_and_mt_lofty_ranges/nrm_education/let-nature-be-your-teacher-bro.pdf?BestBetMatch=let%20nature%20be%20your%20teacher fb26a223-a334-4770-8299-ed2e6ac7039e cdf631d2-9686-4d43-903e-a2b500bf165f</p> <p>Google Lens is a free app that can assist you and your students in identifying different plant and animal species. Information about how to download for different devices can be found here: https://lens.google.com/</p> <p>The <i>Australian Citizen Science project finder</i> tool can help you locate suitable projects in your local area for students to take part in: https://biocollect.ala.org.au/acsa#isCitizenScience%3Dtrue%26isWorldWide%3Dfalse%26max%3D20%26sort%3DdateCreatedSort</p> <p>Aussie Backyard Bird Count, https://aussiebirdcount.org.au, is another annual citizen science project with free apps and a fantastic bird finder tool that helps students identify birds based on their size, colour and shape:</p> <ul style="list-style-type: none"> • IOS: https://apps.apple.com/au/app/aussie-bird-count/id917024019 • Android: https://play.google.com/store/apps/details?id=au.org.birdlife.birdcount&hl=en <p>Playschool's <i>Acknowledgement of Country</i> can be found in this episode and provides an example of what an Acknowledgement of Country can look and sound like (at 05:01): https://iview.abc.net.au/video/CK1911H001S00 as does the Queensland Education Department's <i>Acknowledgement of Country</i> (01:05): https://www.youtube.com/watch?v=zwB19PARVRc</p>	<p>survey' activities, students could lead tours for parents and carers around the school or local area. Beginning with an Acknowledgement of Country, students can demonstrate and share what they now know about the changes in wildlife and native plants, as well as highlighting different plant uses and cultural significance.</p> <p>Citizen science project</p> <p>Identify a citizen science project that allows students to use key observational skills to collect and contribute data on the local environment to a large-scale scientific study.</p> <p>Acknowledgement of Country</p> <p>Sitting in a circle, ask students to each contribute one thing they have learnt about the Traditional Custodians of your local area (e.g. ways of caring for Country, plant use, bush tucker, seasonal changes etc). Record these ideas on a large sheet of paper or whiteboard. Using these ideas to create an Acknowledgement of Country as a shared writing piece.</p> <p>Discuss again with students the purpose of an Acknowledgement of Country. You may wish to review an Acknowledgment to Country, such as, Playschool's (found at 05:01) or the Queensland Education Department's (01:05).</p> <p>When complete, the shared writing piece can be displayed as a poster in your room, shared at assemblies or class meetings, or when welcoming guests into the room. You could also print out as a template that students could illustrate and display in different areas of the school (e.g. presenting to each classroom, staffroom, offices etc) or be presented to local cafes or businesses to ask if they would like to display it in their windows. Students could also take home to put on their bedroom door to acknowledge the land on which they live.</p>

	Teacher guidance	Ideas for student activities
Other resources	<p>Connection to Country</p> <p>These resources from Australians Together, Common Ground and the Queensland Government can be useful in building teacher's background knowledge of connection to Country and the special spiritual and cultural relationship First Nations people have with Country:</p> <ul style="list-style-type: none"> • https://australianstogether.org.au/discover/indigenous-culture/the-importance-of-land/ • https://www.commonground.org.au/learn/connection-to-country • https://www.qcaa.qld.edu.au/downloads/approach2/indigenous_res005_0803.pdf <p>Welcome to Country and Acknowledgement of Country</p> <p>Reconciliation Australia has created a guide explaining the difference between Welcome to and Acknowledgement of Country as well as explaining why it's important: https://www.reconciliation.org.au/wp-content/uploads/2017/11/Welcome-to-and-Acknowledgement-of-Country.pdf</p> <p>This video from Reconciliation Australia provides an example of how one early learning centre has incorporated an Acknowledgement of Country into their organisation's everyday practice and examines the processes they went through to achieve this (04:16): https://www.youtube.com/watch?v=ksBoJT_gkVc</p> <p>The ABC Indigenous series <i>This Place</i> (04:16): https://iview.abc.net.au/show/this-place and <i>Mother Tongue</i> for all videos: https://www.youtube.com/playlist?list=PLmWe-V9tacwHqfIBPvZMThlaYH6gH2u0 are addition resources for researching local Indigenous knowledge about your local area.</p>	
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	Teacher guidance	Ideas for student activities
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	Teacher guidance	Ideas for student activities
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Indigenous observational science bingo

Teacher clue cards

<p>Many First Nations people know to wait for the fruit from <u>this tree</u> to turn deep orange or red before eating because the green fruit is poisonous.</p> <p>(Answer: kangaroo apple/bush tomato)</p>	<p>Many First Nations people know to look for <u>this bird</u> as it will lead them to fresh water.</p> <p>(Answer: zebra finch)</p>	<p>Many First Nations people know that cracks or bumps in the ground near <u>this tree</u> mean there may be water-filled roots just under the ground.</p> <p>(Answer: mallee eucalyptus)</p>
<p>Many First Nations people know that they'll often find delicious honey ants in their nest underneath trees that have <u>these marks</u> on their leaves.</p> <p>(Answer: white lerp spots)</p>	<p>Many First Nations people watch for bulges in the trunk of <u>this tree</u> which mean fresh drinking water may be found inside.</p> <p>(Answer: paperbark or melaleuca tree)</p>	<p>Many knowledge holders of the Tiwi Islands know that when the seeds of <u>this tree</u> turn orange it's safe to eat mangrove worms without cooking them. Raw mangrove worms will make you sick at other times of the year.</p> <p>(Answer: minta plant)</p>
<p>Many First Nations people know that when <u>this plant</u> produces a pretty yellow flower, the coconut-flavoured root is ready to be dug up and eaten.</p> <p>(Answer: murnong daisy)</p>	<p>Many First Nations people know that when the seedpods of <u>these trees</u> are dry, they can be used as fire torches.</p> <p>(Answer: banksia)</p>	<p>Many Ngan'gi knowledge holders know that the arrival of <u>these insects</u> means it's a good time for barramundi fishing. It also means the dry season is coming.</p> <p>(Answer: fireflies)</p>

Indigenous observational science bingo



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