EVER NOW
A FESTIVAL DURING KAMBARANG

Learn About a Species: Boorna Waanginy

Education Resource

4 - 9 OCTOBER
EVERNOW.COM.AU

BOORLOO / PERTH
WESTERN AUSTRALIA

WESTERN AUSTRALIA
WALKING ON A DREAM

PERTH FESTIVAL
Special Projects

CONTENTS

WELCOME

Welcome to the Boorna Waanginy Education Resources for 2023. This is one of three complementary sets of activities to support your learning.

Background

Australia's South-West is one of the most extraordinary areas of biodiversity in the world, but it is under threat. Boorna Waanginy: The Trees Speak celebrates this fragile and complex environment through science and Noongar culture, considering how all perspectives must work together to preserve our natural world. In 2017 and 2019, hundreds of thousands of people saw Boorna Waanginy. Due to extraordinary popular demand, a renewed and updated Boorna Waanginy returns to Kings Park as part of EverNow in 2023, and you can be part of it!

- Learn about a species
- Each participating student or class chooses a species they commit to learning about and caring for.
- Classes research their species, using the activities in this resource as a guide

Do Something to help the Environment

- Practical projects big and small. These can be scaled from individual to whole school projects.

Make Something to Display at Boorna Waanginy 2023

- Create an artwork to become part of the massed display in Kings Park

The **Learn about a Species** resources provide a series of activities you can use to investigate local biodiversity. Start by researching and then choosing a local species. The activities will help you to understand your species, its importance in the ecosystem and what you can do to ensure its survival. If you commit to caring for your species, the **Do something to help the Environment** resources provide practical activities that can be conducted as individual, group, class or whole school projects. You can **Make Something to Display at Boorna Waanginy 2023** using creative ideas provided by Festival artists.

The resources are flexible – you can choose to engage with the activities as much or as little as you want. You can choose to learn about your species, create an artwork, conduct a revegetation project, or all of these! Share your work with Perth Festival and become part of Boorna Waanginy 2023.

CURRICULUM LINKS

Learn About a Species activities can be adapted to suit any primary school year level, and secondary students up to Year 10.

These activities link to cross-curriculum priorities Sustainability and Aboriginal and Torres Strait Islander histories and cultures, as well as the following curricula:

- Humanities and Social Sciences (H +SS)
- The Arts (A)
- English (E)
- Languages (L)
- Science (S)
- Mathematics (M)

	Cross-Curriculum Priorities				General Capabilities							Learning Areas							
Activities	Primary	Secondary	Sustainability	Asia and Australia's Engagement with Asia	Aboriginal and Torres Strait Islander Histories and Cultures	Literacy	Numeracy	ICT Capability	Critical and Creative Thinking	Personal and Social Capability	Intercultural Understanding	Ethical Understanding	English	Mathematics	Science	Humanities and Social Sciences	The Arts	Health and Physical Education	Languages	Technologies
Learn About a Species From Your Local Environment	✓	✓	✓			✓	✓						✓		✓	✓	✓			✓
Where Does Your Species Live?	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓			

PART 1: LEARN ABOUT A SPECIES FROM YOUR LOCAL ENVIRONMENT

Image: Mike Bamford

How Noongar People Care for Country

Noongar relationships to Country are strengthened by a system which links each Noongar child to species that they commit to care for throughout their life. Professor Stephen Hopper, Professor of Biodiversity at the University of Western Australia says that everyone should start thinking about the environment in the way that Indigenous cultures have always done – not as a resource for us to use, but as the interconnected wellspring of life that needs care.

Noongar Elder, Dr Noel Nannup explains that in order to care for something, you need to understand it. Learning about your species will also build your understanding of the interconnectivity within the ecosystem and encourage an appreciation of sustainability and stewardship.

Do some research to understand more about how the perspectives of science and Noongar culture can work together to preserve our natural world.

Objectives

In these activities you will:

- Choose a species that is important to you
- Develop an understanding of your species
- Consider scientific and Noongar cultural knowledge of your species
- Learn ways of talking about and categorising your species

Activity 1: Choosing Your Species

Years K - 12

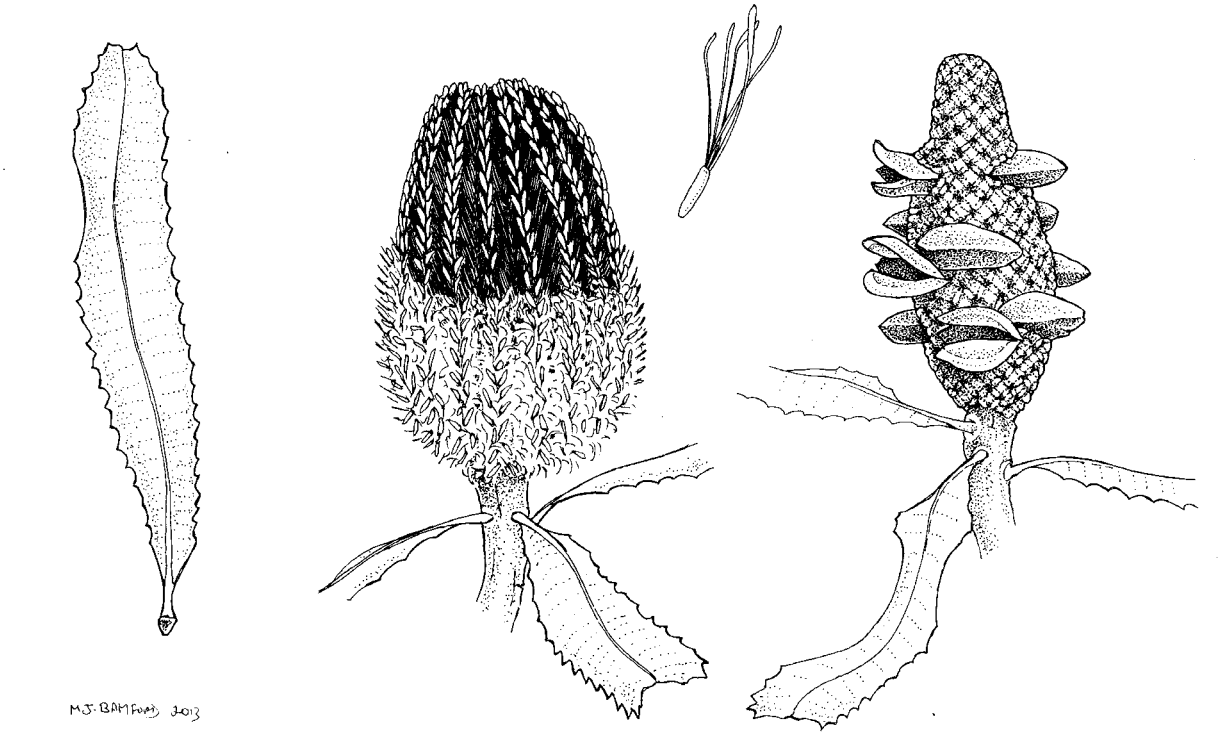


Image: Mike Bamford

Notes for Teachers

Students can choose their own species, work in a group, or you can choose a species as a class. The resources can be used for both individual and group activities. Encourage students to choose a species that they care about which lives, or could live, in their local area.

Activity

Research plants, animals and fungi which live in your local area, using resources such as your library, computer, books, Elders, and other experts in your community. Is there a particular species that you notice, or one that you care about and would like to protect? Consider if you would like to commit to learning about and protecting it. Discuss as a class.

You can either choose to learn about your own species or choose a species as a group or class.

Once you have decided on a species you can move on to Activity 2.

Activity 2: Introducing Your Species Years K - 5

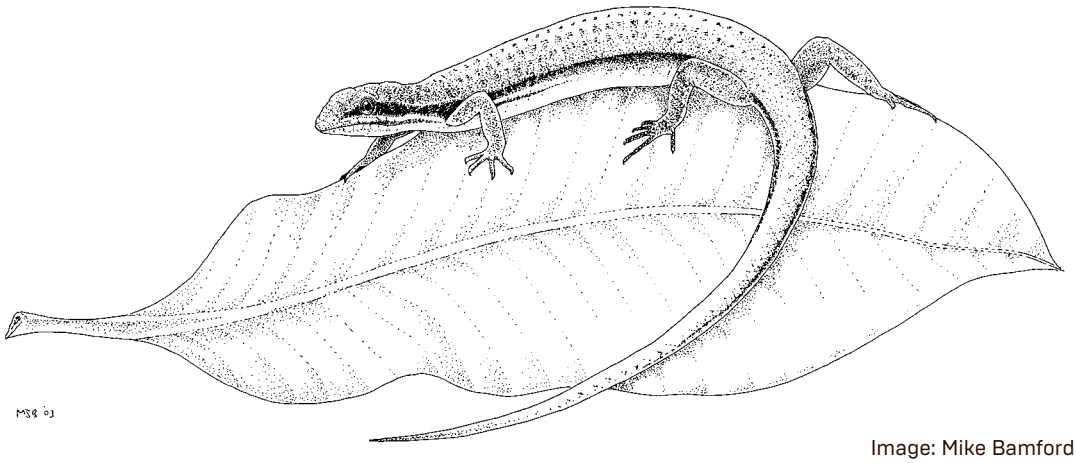


Image: Mike Bamford

Note for Teachers

This activity is intended to get your class thinking about their species and what they already know about it and will also provide a framework for students to track their knowledge as they learn more about their species.

Activity

Discuss with your class what they already know about their species. You can use these questions as a framework for your discussion:

- What does it look like?
- What does it need to survive?
- What does it eat?
- What eats it?
- What other species share its environment?
- How are these species important to your species?

You don't have to know all the answers to these questions – you can hypothesise the answers or use these questions to guide your future research.

Outcome

Using the above discussion as a starting point, create a Knowledge Chart that tracks your class' learning about your species. Write one thing that you already know about your species on a sticky note and add it to the chart. As your class learns more, you can continue to add this information to the chart. You could also create a chart like the one below to identify key questions that you can answer over time.

What we think we know	What we want to know	What we learned	How we know

Activity 3: What's in a Name?

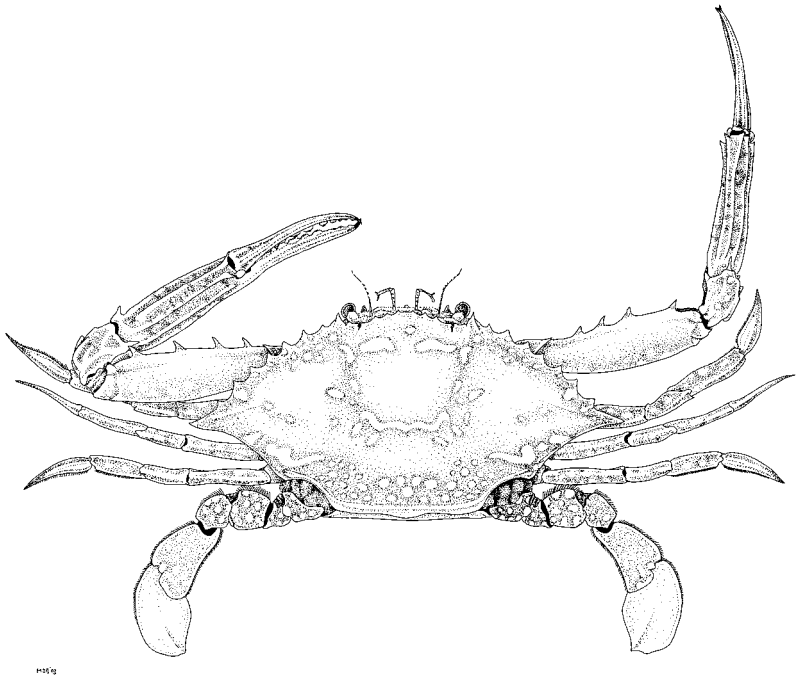


Image: Mike Bamford

Note for Teachers

Students explore modes of classification and use the taxonomic system to classify their species. Use this system to prompt discussion around other species that could be related to your species.

Activity

There are differences within and between groups of organisms and classification helps organise this diversity. Some characteristics are better classification tools than others. We could group together organisms because of their colour; blue wrens, blue whales, bluebottles, blue crabs, blue stain fungus, blueberries. Or we could group together species that live in the same place – like a city street; humans, cockroaches, pigeons, rats, flies, mosquitoes, all sorts of bacteria. Both of these criteria are not very useful classification systems for scientists. Blue organisms or organisms that share a habitat may have very little else in common besides their colour or where they live. Using structural characteristics as a basis for classification means that groups of species are classified according to common traits. The science of defining groups of biological organisms on the basis of shared characteristics is called taxonomy. The Swedish botanist Carl Linnaeus is regarded as the founder of taxonomy. He developed a system known as Linnaean classification for categorisation of organisms and binomial nomenclature for naming organisms.

Outcome

Plants and animals have traditionally been classified by the structure of their bodies, in a descending hierarchy of categories: kingdom, phylum, class, order, family, genus, and species. Use this system to classify your species.

Activity 4: Observing Your Species Years 3 - 10

Image: Mike Bamford

Note for Teachers

This activity includes two observation exercises. The first is a mindful observation, in which students silently observe their species for a period of two minutes. This is intended to prompt students to notice things they have not seen before. You can use an image or specimen of the species for students to observe. The second activity develops these observation techniques through a scientific drawing of their species. Introduce the concept of a scientific drawing to your students by showing them examples, such as the scientific illustrations by Mike Bamford, that are provided in this resource. Use the questioning framework: What do you see? What do you notice? to develop students' understanding of the content of a scientific drawing.

Activity

Some species are big and some are small. Some are out in the open, while others hide away. Some are plants, some are animals. This activity is about observing your species so that you can start to build a connection with it. In order to do that, you need to find a way to see it.

Start with these questions: Does your species live in your local environment? Is it something you can see? Go out into your school grounds and see if you can spot your species. If your species is a plant, try and collect a specimen (a twig and several leaves) to bring into your classroom. If it is an animal, try and take some photographs. If you can't see your species, find other ways of looking at it. Research images online, look in books or magazines.

Once you have gathered images or specimens of your species, set aside a period of two minutes to quietly observe it. This is called mindful observation. Don't do anything except notice the thing that you are looking at for as long as your concentration allows. At the end of this activity, share one thing you noticed about your species. Add any new observations to the Knowledge Chart you created for your species.

Outcome

Apply the observation techniques you practised to create a scientific drawing of your species. A scientific drawing is a precise record of specific details – see Mike Bamford's illustration as an example. For a scientific drawing you should use a sharp pencil. If you want to add labels to indicate your observations, these should be horizontal and the label lines should have no arrows.

Activity 5: Life of Your Species

Years K - 5

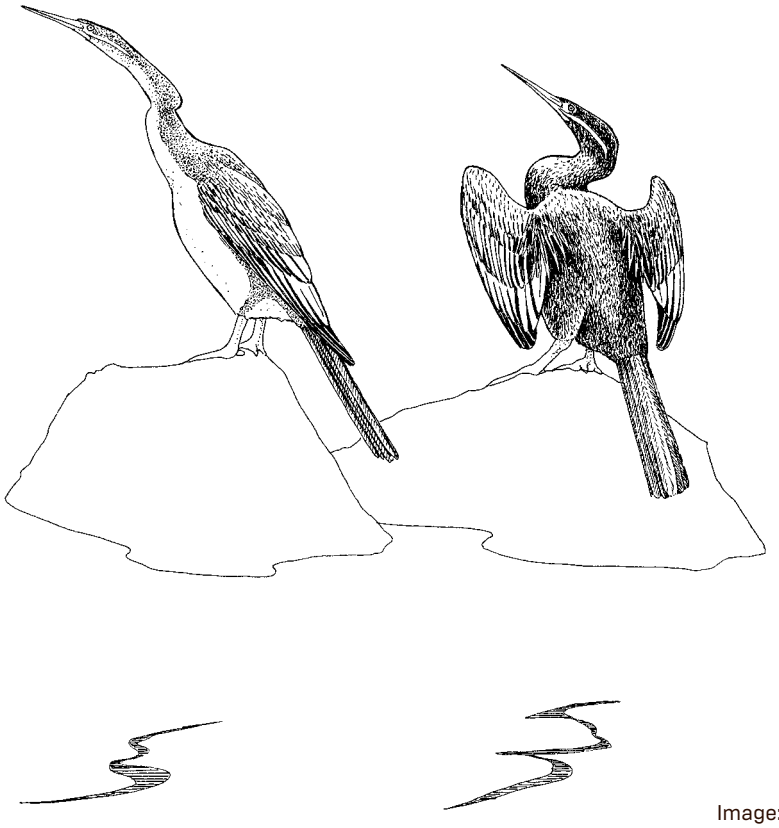


Image: Mike Bamford

Activity

Most species undergo changes over their lifetime. This can be complete or incomplete metamorphosis. Butterflies and beetles go through complete metamorphosis, involving larval, pupal and adult stages. The lifecycles of leafhoppers and stick insects are examples of incomplete metamorphosis – their young (nymphs) are similar to the adult and grow to adulthood through a series of moults. Think about how your species changes over its lifetime. Research its lifecycle and create a series of drawings that show these changes.

Outcome

How does your species spend its time? Is there a lot of flying, squawking, and beak-sharpening like a cockatoo? Does it hang around, just waiting for birds to eat its seeds like a marri tree? Write a diary of your species that includes all the details of its daily life, including the changes that happen over the course of its lifetime.

PART 2: WHERE DOES YOUR SPECIES LIVE?

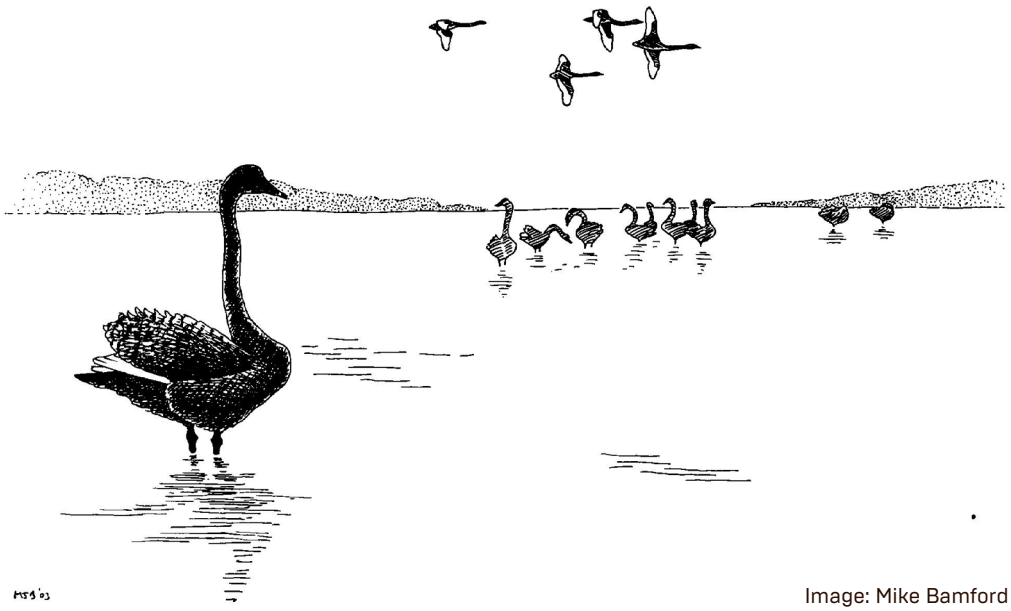


Image: Mike Bamford

Your species exists within an ecosystem, a community of plants, animals, fungi and micro-organisms that live, feed and interact together in a specific area.

A habitat is where an organism lives and has its survival needs met. There are multiple habitats for specific organisms within an ecosystem. It is where animals find the food, shelter and water they need for survival, where plants have the sunlight, water and nutrients they need to grow. A healthy habitat is a place where plants and animals live harmoniously together without overpopulation or depletion of resources.

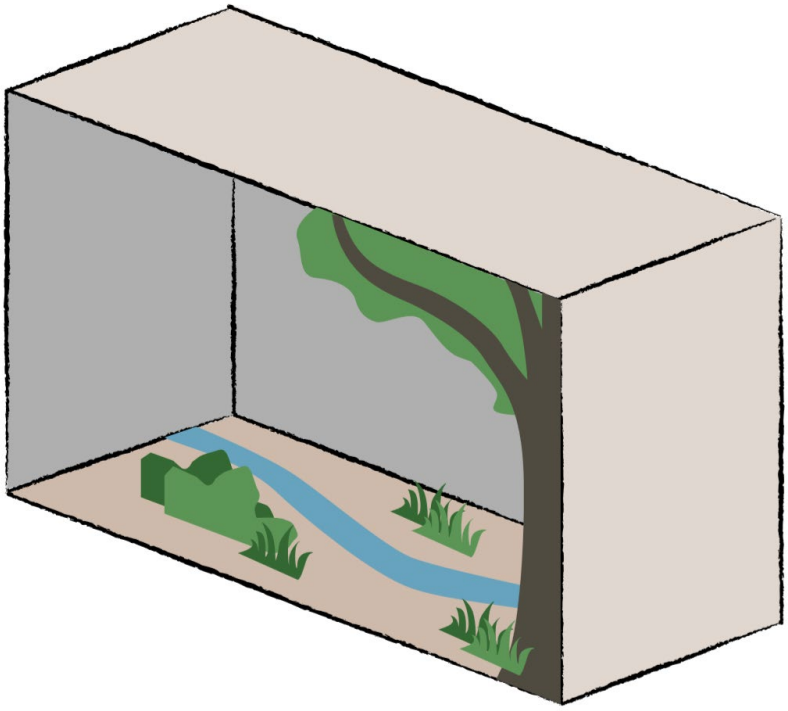
Every habitat is different depending on the organism. An ant's habitat will be much smaller than the habitat for a bird that may fly long distances from its nest to find food. The two habitats may overlap and have common elements that make up an ecosystem. They may also be dependent on each other for survival.

Objectives

In these activities you will:

- Learn about your species' role in its ecosystem.
- Recognise how this relates to other species.
- Learn about the importance of caring for its environment.

Activity 6: Observing The Environment Years K - 5



Notes for teachers

Students observe their natural environment, record the species they see there and how these interact. Using this record, students create a diorama that reflects what they saw within their local ecosystem.

Activity

You chose your species because it is from your local area. You can learn a lot about your species by understanding its environment – even if the species itself isn't there.

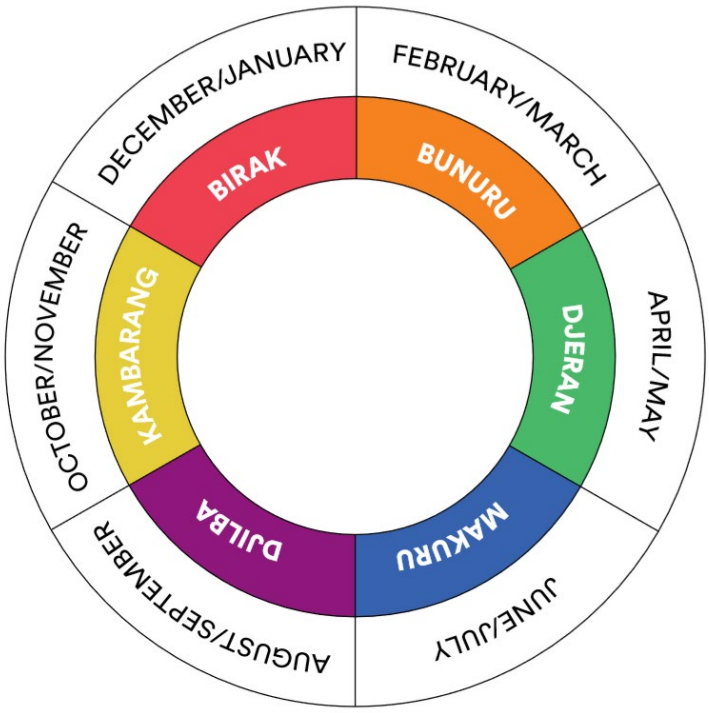
Go out into your school grounds or a nearby park to observe the species you see there. Can you see your species? What other species can you observe? How many? How are they interacting with one another? Use the chart below to tally how many of each thing you see.

Living thing	How many?	What was it doing?	What did you notice?

Outcome

Use the information you gathered about your species' environment to create a miniature version of this ecosystem in a diorama. A diorama is a model representing a scene with three-dimensional figures, either in miniature or as a large-scale museum exhibit. For this activity you will need a shoebox and coloured paper or recycled materials to create the elements of your diorama.

Activity 7: Your Species and the Six Seasons Years 3 - 8



Activity

Noongar people understand their local environment in deep and meaningful ways. Their knowledge of Country is based on six seasons.

This six-season calendar is an important guide to what is happening at every stage of the year. It is based in deep respect for the land and reflects plant and animal fertility cycles, land and animal preservation.

- Birak – December and January, the first summer
- Bunuru – February and March, the second summer
- Djeran – April and May, autumn
- Makuru – June and July, the first rains
- Djilba – August and September, the second rains
- Kambarang – October and November, the wildflower season

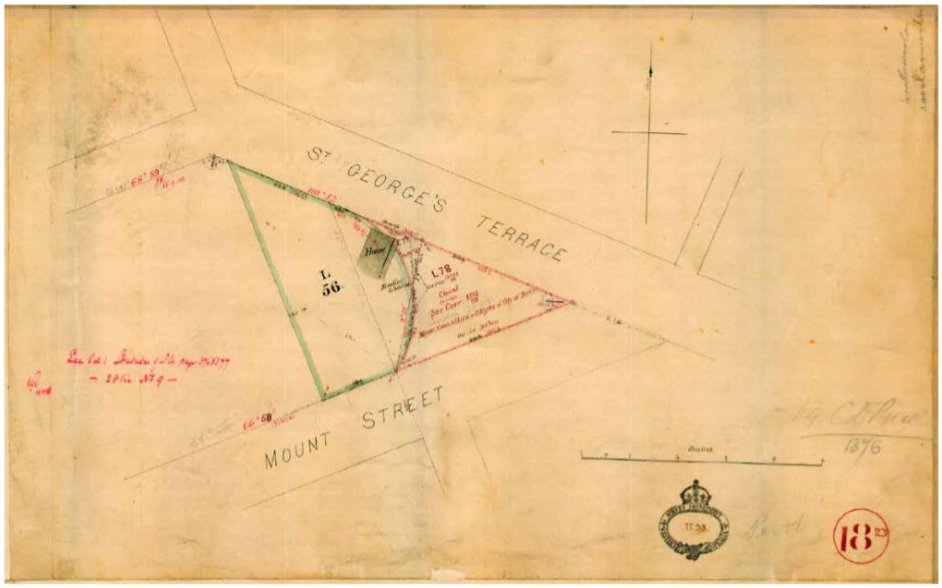
For more information go to noongarculture.org.au/food/?searched=yes

Think about how your species has adapted to the six seasons. What is it doing at what time of year? When is it born, when does it grow, when does it mate and when does it die? How is it interacting with other species within the ecosystem, and how does this affect what is happening to your species?

Outcome

Copy the template provided above and track the lifecycle of your species against the six seasons in a circle.

Activity 8: Changes to the Environment Years 4 - 10



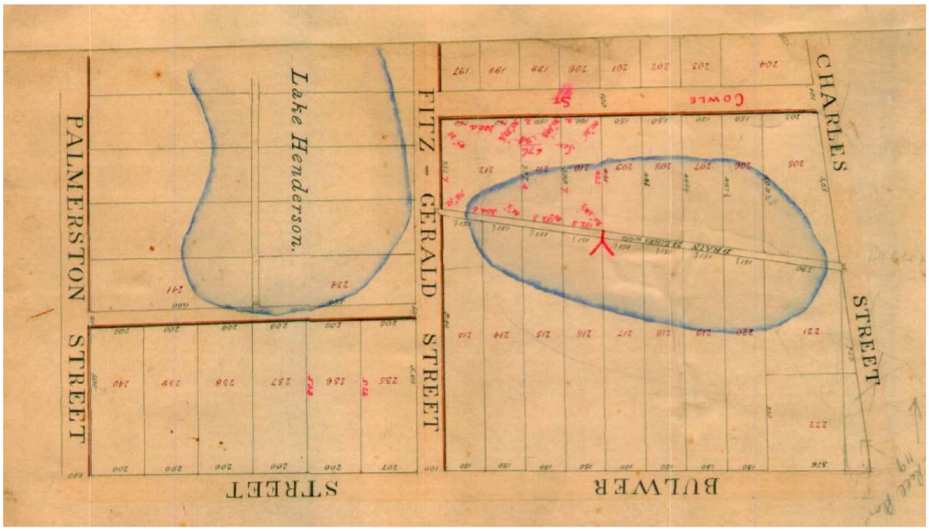


Image: State Records Office of Western Australia

Activity

Use historic resources from your local library, the State Library of Western Australia or the Public Records Office of Western Australia to gather information about how your species' ecosystem has changed over time. Think about positive and negative impacts. Maps and historic photographs are good places to start, but you could also think about using old newspapers, the diaries and journals of early settlers, parish plans or local council records to build up the picture of how the landscape has changed.

Outcome

Create a map or a series of maps that reflect changes to the ecosystem over time.

Activity 9: Impacts

Years 2 - 10

Image: www.slv.vic.gov.au

A simple way of thinking about the interdependence of species in your local ecosystem is to think about what eats what. You can illustrate this by creating a food chain or food web. Start with your species and create a food chain or web that shows the interdependence of organisms within your species' habitat. Now think about what would happen to the ecosystem if your species disappeared. Discuss this with your class.

Biodiversity is the foundation on which all life, including human life, depends. All living things provide us with the food we eat, the air we breathe, the water we drink, the raw materials we use to construct our homes, countless medicines and natural remedies and many other things on which we rely. Biodiversity is linked to our lives in every possible way, and we need to protect it.

Learn more about biodiversity at https://m.youtube.com/watch?v=mWVATekt4ZA

Australia's South-West is one of the most extraordinary areas of biodiversity in the world but it is under threat. Biodiversity 'hotspots' are characterised by exceptional numbers of unique species and by serious levels of habitat loss. To qualify as a hotspot, a region must meet two strict criteria – it must contain at least 1,500 endemic vascular plant species and it must have lost at least 70 percent of its original habitat.

Outcome

Identify the top five impacts on the numbers of your species in your local area.

WHERE FROM HERE?

Building partnerships

Students' learning can be enhanced by building partnerships within the school and wider community. Partner organisations could include the following:

- Your nearest natural resource management organisation or conservation group
- Guest speakers from local catchment groups to discuss the habitats within which they work
- Local Council environmental or schools' liaison officers are often keen to partner with schools
- Local Indigenous Elders
- Local birdwatching groups
- Local fauna groups

Noongar Knowledge

The best place to start learning about your species is with the knowledge of the Noongar people, who have always been carers of this Country. Noongar people strengthen their relationship to the land by linking each child to a species that they commit to care for throughout their life.

Noongar knowledge is best learned in person, on Country, with an Elder from the community. If you can, we encourage you to bring an Elder into your school, to share this knowledge with your class. A good place to source contacts is the South West Aboriginal Land and Sea Council or your local municipal council.

USEFUL LINKS

Biodiversity

- Kwongan Foundation: https://library.dbca.wa.gov.au/static/FullTextFiles/203249.pdf
- Federal Department of the Environment and Energy: https://www.dcceew.gov.au/environment/biodiversity
- Western Australian Department of Biodiversity, Conservation and Attractions: dbca.wa.gov.au
- CSIRO Biodiversity: https://research.csiro.au/biodiversity-knowledge/
- World Wildlife Fund Australia: wwf.org.au
- BirdLife Australia: https://birdlife.org.au/
- Perth Zoo: https://perthzoo.wa.gov.au/conservation
- The WA Museum: museum.wa.gov.au/
- The WA Naturalists' Club: www.wanaturalists.org.au/
- WA Gould League: wagouldleague.com.au

Sustainability

- WA Sustainable Schools Initiative: https://myresources.education.wa.edu.au/programs/sustainable-schools-wa#:~:text=Sustainable%20Schools%20WA%20provides%20a,sustainability%20in%20the%20school%20community

Cultural Significance

- Noongar culture: noongarculture.org.au
- South West Aboriginal Land and Sea Council: noongar.org.au
- ICOMOS: https://australia.icomos.org/
- Whadjuk Corporation: https://whadjuknoongar.org.au/
- Danjoo Koorliny: https://www.danjookoorliny.com/

Endangered Species

- Current Endangered species list, Department of the Environment and Energy: https://environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl
- Earth's Endangered Creatures: http://earthsendangered.com/continent.asp?gr=&view=&ID=4PLANTS
- APACE native plant list by suburb: apacewa.org.au/suburb-selector/
- WA Herbarium. Information about native plants: florabase.dpaw.wa.gov.au/
- Wildflower Society of WA: wildflowersocietywa.org.au/

Birds

- Birdlife Australia: https://birdlife.org.au/bird-profiles/
- Birds in Backyards: www.birdsinbackyards.net/
- Sir David Attenborough's The Life of Birds: pbs.org/lifeofbirds
- ABC Science Bird Identifier: abc.net.au/science/birds/

USEFUL LINKS (CONT.)

Taxonomy

- How to name species: https://www.abc.net.au/news/science/2016-08-05/how-to-scientifically-name-species/7681634

Scientific Illustrations

- On scientific illustration: theconversation.com/what-makes-a-good-scientific-illustration-10037
- Zoological illustrations from Colonial Victoria: https://collections.museumsvictoria.com.au/articles/17279