

Circle of life

Students will learn about the interactions between animals, plants and water in the circle of life and how we can help protect our environment.

Subject area:

Science

Year level:

Year 4

Learning objectives:

- Understand how animals source food and water for survival.
- Demonstrate understanding of the trophic levels of a food web.
- Ways we can help save water to protect our animals.

Curriculum links

<i>Earth and Space Sciences</i>	ACSSU075
<i>Science as a Human Endeavour</i>	ACSHE062
<i>Biological Sciences</i>	ACSSU073

Cross curriculum priorities - Sustainability

O1.1	The biosphere system is a dynamic system providing conditions that sustain life on Earth.
O1.2	All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.
O1.3	Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

General capabilities



Literacy



Information and communication technology (ICT) capability



Critical and creative thinking



Personal and social capability

Activity 1

Rusty loses his loop

The concept of sustainability, and the importance of clean water for all living elements of our environment is communicated through this beautifully written story. Students will investigate the impacts humans have on our environment before re-writing the story ending.

Time required:

1 hour

Resources required:

- iPads for students
- Student workbooks

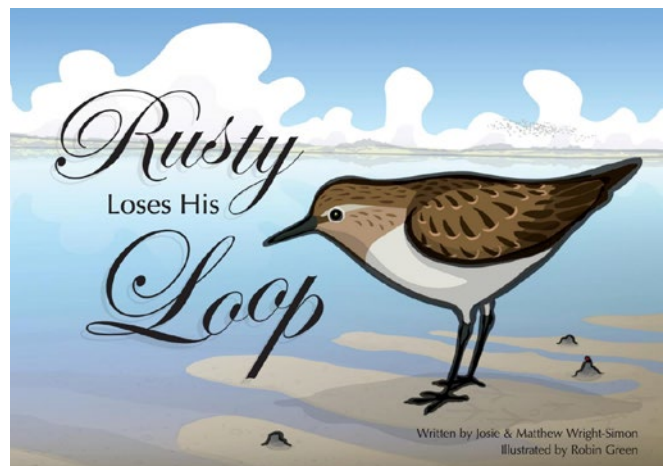
Preparation:

1. Download the online book [Rusty Loses His Loop](#) by Josie and Matthew Wright-Simon.

Steps:

1. Read [Rusty Loses His Loop](#) by Josie and Matthew Wright-Simon.
2. Ask students literal questions about the book to familiarise them with the content. For example:
 - a. What is the name of the main character?
 - b. What type of creature was the main character?
 - c. Where did the main character live? (Name both places).
 - d. What did the main character look forward to eating each season?

3. Expand the students' understanding of the book and the key messaging with more thought provoking questions, such as:
 - a. Why did Rusty lose his loop?
 - b. What happened to the water?
 - c. What do you think might happen to the lake and Rusty's food supply if the town keeps using too much water?
 - d. How could the salty water impact other animals around the lake?
 - e. In the story, Rusty realises that "people everywhere are using too much water". Discuss ways we can all save water at home and school.
4. Students think about how the story would be different for Rusty and the other wildlife reliant on the lake, if the water didn't go salty. Students write a happy ending for Rusty in their writing book explaining:
 - a. The role of the residents in maintaining the water quality of the lake.
 - b. The consequences of the residents' actions on the water quality.
 - c. The consequences of the improved water quality on the lake's ecosystem, and in particular on Rusty.



➤ Extension Activity 1

Wonderful food web

Students will learn about, and then create their own food web to understand the inter-dependence of all living things on each other, and on a clean water source.

Time required:

1 hour

Resources required:

- iPads for students
- [Activity page 1: Wonderful food web](#)
- Online book *Rusty Loses His Loop* by Josie and Matthew Wright-Simon.
- A3 paper for each student
- Bluetack
- Scissors

Preparation:

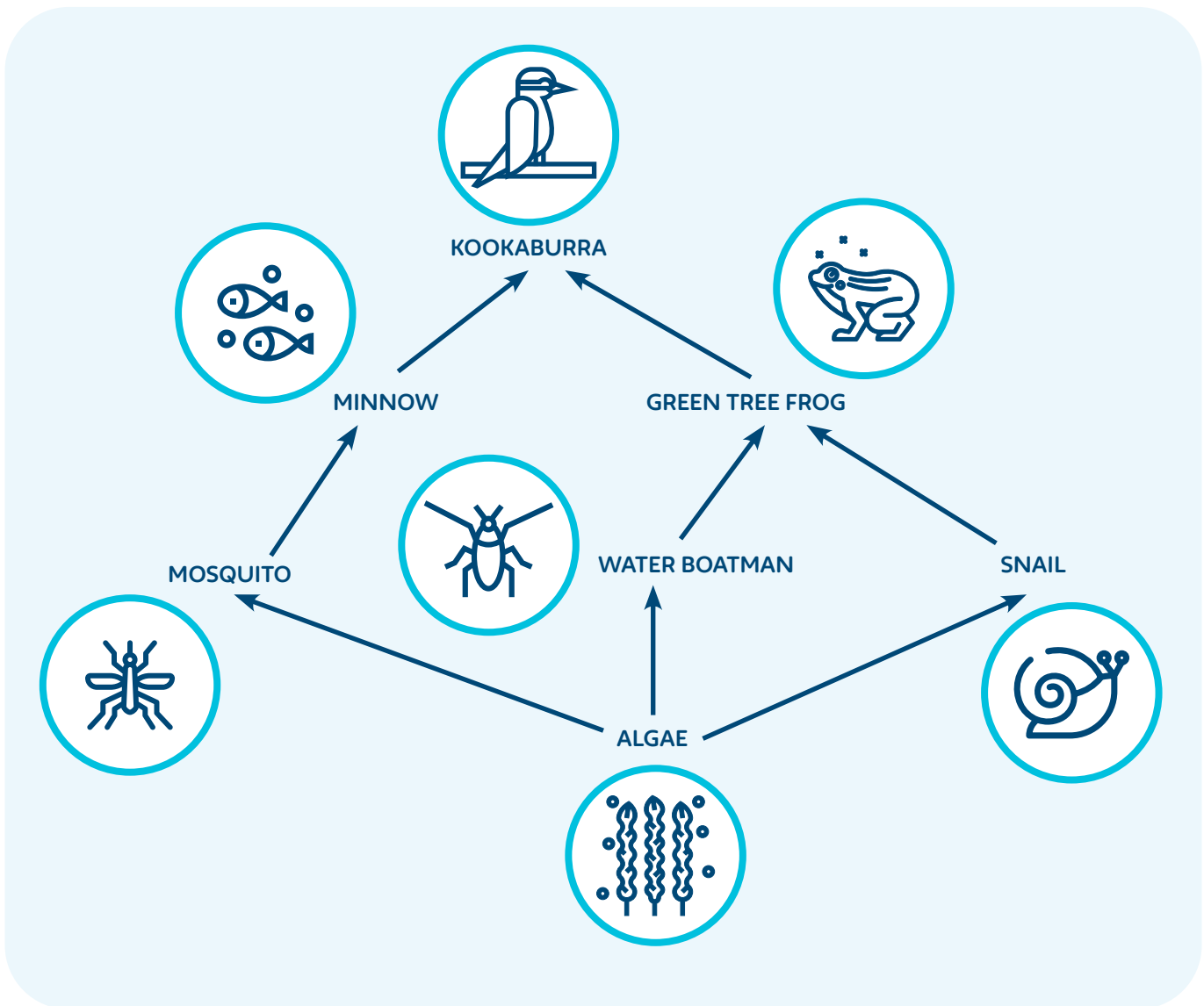
1. Print [Activity page 1: Wonderful food web](#) for students

Steps:

1. Write the words 'ecosystem', 'food web' and 'species' on the board. Ask students what they already know about these concepts from previous activities or readings. Explain each concept to the students:
 - a. An ecosystem is an environment where living and non-living organisms interact with each other. An ecosystem may be a lake or a river.
 - b. A food web exists inside an ecosystem made up of groups of animals and plants that eat a variety of food.
 - c. A species is a group of living things that share common characteristics and are capable of interbreeding to create fertile off-spring. This is possible in birds, fish and humans.
2. Review, [Rusty Loses His Loop](#) by Josie and Matthew Wright-Simon. Refresh students on what happened to the animals from the lake and why. Emphasise the importance of water to the survival of all animals. The story shows us how a change in the water quality impacts animals which rely on the water source, meaning the food web is compromised.
3. As a class, discuss a simple food web that may exist in the ecosystem where Rusty spends his time. Illustrate this on the board for students to refer to in the next step. Identify the five key trophic levels of a food web:
 - a. Plants and algae.
 - b. Primary consumers: Herbivores.
 - c. Secondary consumers: Carnivores that only consume herbivores.
 - d. Tertiary consumers: Carnivores that consume both herbivores and other carnivores.
 - e. Apex consumers: Carnivores that have no other predators and consume animals from the tertiary level.
4. Once they are familiar with the dynamics of a food web, they need to create their own using a selection of the plants and animals from [Activity page 1: Wonderful food web](#). This table captures an ecosystem commonly found in the wetlands of WA.
5. Ask students to identify an animal in the apex level of the wetland to begin. They will then provide a description of what this apex animal consumes, finding an example of a tertiary consumer on the activity page. Students will continue the process of creating a food web with descriptions of what they consume until they are confident they have covered all five levels of the food web.
6. Using the information, have students cut out the images to create their own food web on A3 paper. NB: Use bluetack, not glue when sticking down your images.

➤ Extension Activity 1

7. To highlight the importance of saving water, get students to review their food web and remove plants and animals which would be negatively impacted by high salt levels or low supply of fresh water. Ask students to discuss the impact on their food web if these plants or animals are no longer available to consume.



➤ Extension Activity 2

Water for my animal

Students will investigate sources of water used to supply the Perth metropolitan area, and how water is treated to make it safe for drinking. After researching a body of water near their school, they will create a factual account of an animal commonly found in this environment.

Time required:

1 hour

Resources required:

- iPads for each student
- Library access for research

Preparation:

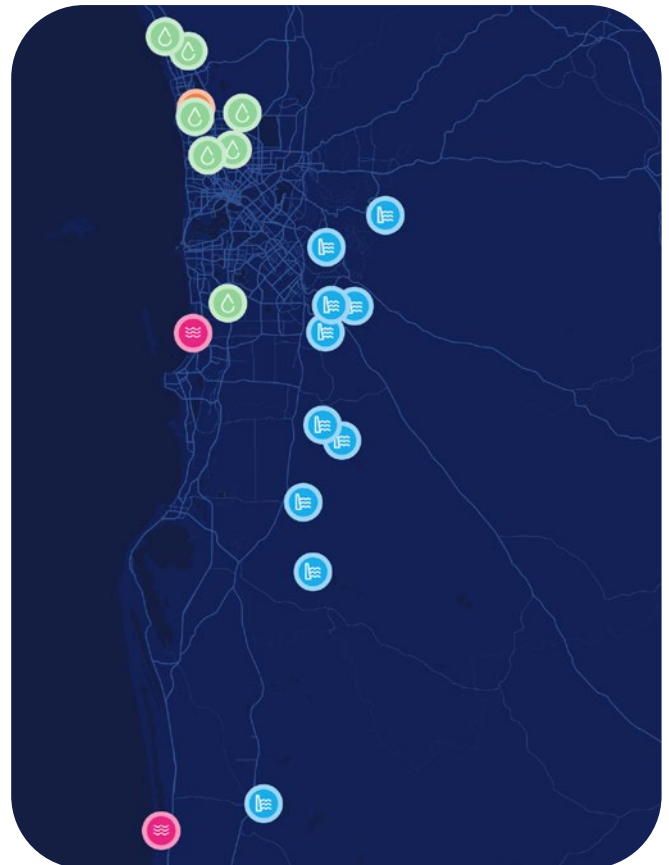
Ensure access to:

1. [Book creator](#) app.
2. [Water Corporation Perth's water supply tool](#)
3. [Google maps](#)

Steps:

1. Students are to enter their school or home address in the [Perth's water supply tool](#) to find out how water is supplied to their location. Please note this tool only captures water sources around Perth. If the students live outside of the Perth metropolitan area, place Kings Park in the address section for students to explore.
2. By clicking on the different icons, students will better understand the processes involved in treating water.
3. Using [Google maps](#), locate a body of water close to the school, and find animals which live in this area.
4. Research one of these local animals online or in the library using non-fiction books and encyclopaedias.
5. Ask students to find the following information: appearance, habitat, diet, adaptations and interesting facts.

6. While researching interesting facts about their animal, get students thinking about:
 - a. How the animal sources fresh water for survival.
 - b. How it gains water from its food.
 - c. What environmental factors can affect its survival.
 - d. How can we help protect the animal's water supply.
7. Using the [Book creator](#) app, students create a non-fiction book about their animal.
8. The teacher will create a class library using the [Book creator](#) app and upload all the books for students to share.



 Desalination

 Groundwater







 Dams

 Groundwater replenishment



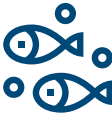






Wonderful food web

Every living plant and animal needs food to survive. In any successful ecosystem there is a complex food web with plants and animals relying on each other to survive.










1. There are five key trophic levels of a food web:
 - a. Plants and algae.
 - b. Primary consumers: Herbivores.
 - c. Secondary consumers: Carnivores that only consume herbivores.
 - d. Tertiary consumers: Carnivores that consume both herbivores and other carnivores.
 - e. Apex consumers: Carnivores that have no other predators and consume animals from the tertiary level.
2. Identify an animal in the apex level of the food web to begin.
3. Place a description of the type of food this animal consumes to survive in the column on the right.
4. Can you find a picture on the activity page of what this animal consumes?
5. Go to this row and repeat the process for each level of the food web for this wetland.

Animal/plant	What it eats/needs to survive
humans 	
cormorants 	
worms 	
pelican 	
spiders 	
water boatman 	

Activity page 1: Wonderful food web

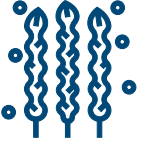
snails 	
grasshoppers 	
minnow 	
shrimps 	
dragonflies 	
brilga 	
yabbies 	
ibis 	
kookaburra 	

Activity page 1: Wonderful food web

perch 	
ducks 	
green tree frog 	
crabs 	
swans 	
mosquitos 	
ribbon weed 	
water lilly 	
common reeds 	

Activity page 1: Wonderful food web

algae



mulloway



banjo frog



brown goshawk



water rat



gecko



snake



lizard



goanna

