

KINGS BILLABONG  
**WILDLIFE**  
**DETECTIVE**  
Activity Book



ma/ee  
catchment management authority



# WELCOME TO KINGS BILLABONG

This book belongs to:

Date of your visit(s) to Kings Billabong:

## Become a WILDLIFE DETECTIVE

Welcome to Kings Billabong!! Join Catarina the Freshwater Catfish and her friends and become a Wildlife Detective to learn more about the wetland and floodplain environment at Kings Billabong.

The activities in this Wildlife Detective Activity Book are designed for primary school-aged children. Children are encouraged to select the activities in the book that best interest them.

The activities can be easy and fun to do with an adult so feel free to share your book and get started on your first challenge. **Have fun!!**



## Did you know?

Freshwater catfish (Aboriginal name: "Wunnup" / Scientific name: *Tandanus tandanus*) were once commonly found in the Murray Darling Basin. Since the 1980's, numbers have declined due to introduced predators, habitat loss, fishing pressures, cold water pollution and changes to the natural flow of our rivers. They are now listed as endangered in Victoria and New South Wales.

They are a large, eel-tailed catfish, growing up to 90cm in length with a large head and small eyes. Their skin is smooth with no scales and their dorsal and pectoral spines are mildly venomous. They have a down turned mouth surrounded by four pairs of barbels (sensory organs that look like whiskers).



# Introducing **KINGS BILLABONG**

Kings Billabong is a large 171 hectare wetland located on the Murray River floodplain at Nichols Point, 10 kilometres south east of Mildura. It is part of the Kings Billabong Park (formerly a Wildlife Reserve) which is managed by Parks Victoria. Lower Murray Water manages the irrigation water resources and infrastructure. Psyche Pumps are located within the Psyche Bend Pumps Historic and Cultural Features Reserve and managed by the Committee of Management.

Other stakeholders responsible for the management, or with an interest in the areas around Kings Billabong, include the Department of Energy, Environment and Climate Action (DEECA), Victorian Environmental Water Holder, First Peoples of the Millewa-Mallee Aboriginal Corporation, Wildside Outdoors and OzFish Unlimited.





# The Significance of Kings Billabong

Kings Billabong, with its close proximity to the townships of Mildura and Irymple, is visited by both locals and tourists. The area holds many important environmental, Cultural, social and economic values and it is important that we all help look after and protect this valuable wetland asset.



## THE HISTORY

Kings Billabong took its name from the Aboriginal word for still water (billabong), and its European name from Captain James King, who navigated the Murray River and its tributaries in the late 19th century.

The Murray River wetlands and surrounding floodplain areas have for thousands of years been important to the local Aboriginal people. With a ready source of food and shelter, the wetland and floodplain areas of Kings Billabong provide a reliable source of life for the First People of the Millewa-Mallee Aboriginal Corporation (Latji Latji and Ngintait nations).

There are numerous registered sites of Cultural significance at Kings Billabong including shell middens, scar trees, artefact scatters and burial sites. Plant foods were also plentiful at Kings Billabong with native millet, panic grass, pigface, wild cherries, kangaroo apple, tubers, yams, roots and other grass grains readily eaten and used in bush medicines.

Kings Billabong is strongly linked with the development of irrigation in the Mildura area and has been managed as a water storage basin since 1896. The Chaffey Brothers developed three pumping stations to meet the needs of the surrounding irrigation settlement. Water from the billabong was distributed to nearby properties via a series of pumps and open channels (refer to page 12 for more detailed information on Psyche Pumps). Kings Billabong Park (formerly Kings Billabong Wildlife Reserve) was logged until the 1950s to supply timber for the steam-driven pumps and paddleboats on the Murray River.





## THE ENVIRONMENT

Kings Billabong and the surrounding floodplain areas contain a number of regionally significant wetlands which provide important habitat (homes) for native and threatened flora (plants) and fauna (animals). 189 animals have been recorded at Kings Billabong with 23 water dependent animals listed as threatened in state or national

agreements or conventions. Similarly, 357 plant species have been recorded at Kings Billabong, of which 60 are listed as threatened in Victoria.

Unfortunately, 82 plant and eight animal species are introduced and considered pests.

### Did you know?

Black Box trees (Aboriginal name: "Wayurro" / Scientific name: *Eucalyptus largiflorens*) are the most commonly seen tree species at Kings Billabong. They can grow up to 20 metres tall, have rough, dark coloured bark, bright green to blue-grey leaves and cream coloured flowers.

Black Box trees are generally found higher on the floodplain than the smoother barked River Red Gum trees which are found closer to the water's edge. As a result, Black Box can survive longer periods without water and require less frequent flooding.

Black Box are a key part of floodplain ecosystems and provide important food and habitat for a variety of animals.

How many animals can you see using Grandpa Billy the Black Box tree for habitat? Can you list them all below?

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.....

.....

## RECREATION AND THE ECONOMY

Recreational activities including bush walking, bike riding, canoeing, bird watching, camping, fishing, four-wheel driving and nature photography are extremely popular at Kings Billabong. There are several designated picnic and camping areas and canoe launch ramps for easy access to the area. Walking trails of various lengths provide a wonderful opportunity to explore the area and a bird hide on the edge of Kings Billabong, provides terrific photographic opportunities.

Following the development of the original Psyche Pumping station, Kings Billabong is surrounded by very productive irrigation industries including vineyards, wineries and dried fruits, citrus, avocado, lucerne and nuts (pistachio, almonds and walnuts).





# Wetlands of Kings Billabong

Wetlands are one of the most biodiverse ecosystems on the planet. Kings Billabong and the surrounding wetlands support a huge number of native and threatened water dependent plants and animals which help to form a functioning ecosystem. Terrestrial (land based) animals such as woodland birds and raptors (birds of prey), reptiles and mammals benefit from a healthy wetland system.

## KINGS BILLABONG

Kings Billabong is a large, 171 hectare permanently inundated wetland with a depth of between 2 - 5 metres. It has been used to store and transfer irrigation water for over 100 years. The Lower Murray Water pumps on the Murray River at Psyche Bend maintain the water level in the wetland by pumping water into Psyche Creek which is connected to the southern end of the wetland. The block bank (barrier) at the northern end of Kings Billabong and a regulator to the south east on Psyche Creek (at the connection with the Murray River) help to keep water in the wetland. A second regulator at the

southern end of Kings Billabong, allows water heights to be changed to improve the health of the wetland.



## BUTLERS CREEK COMPLEX

The Butlers Creek complex comprising Butlers Creek, Baggs Lagoon and Ducksfoot Lagoon, is located to the north and east of Kings Billabong. This nationally important wetland complex is listed in the Directory of Important Wetlands in Australia (DIWA) and is managed as semi-permanent open freshwater wetlands. The complex is home to a range of water dependent animals including the endangered Freshwater Catfish, Growling Grass Frog and a number of threatened and migratory waterbirds. In 2010, two regulators were installed at Baggs Bridge

and Jennings Bridge to disconnect the complex from the Murray River weir pool and allow for a more natural wetting and drying cycle to be implemented.



## PSYCHE LAGOON

Psyche Lagoon is located south of Kings Billabong and consists of six semi-permanent saline wetlands covering an area of 53 hectares. The wetlands are surrounded by Lignum and other salt tolerant plants which provide habitat and a food source for wading birds. The wetlands continue to be managed as an irrigation drainage disposal site, which has over time severely degraded the area due to the salinity (salt impacts).





# Water “Ngukko” for the Environment

Prior to river regulation, Kings Billabong and its surrounding wetlands were an intermittent wetland system. This meant the wetlands would hold water when the Murray River flooded and at other times remained dry. Now that the billabong acts as a water storage basin for irrigation purposes, the wetland is permanently inundated (wet).

Wetlands need variation in water levels to be healthy, to improve water quality, promote breeding of native frogs, fish and waterbirds, reduce carp numbers and to encourage native plants to regenerate. With the construction of regulators at Kings Billabong and the Butlers Creek complex, it is now possible to manage the water levels for environmental benefit.

The locks and weirs along the Murray River control how much water flows downstream. Because the river does not flood as frequently, sometimes it is necessary to pump water from the river into the neighbouring wetlands and floodplain for plants to remain healthy and trigger certain animals to breed.

**What are the benefits of environmental water at Kings Billabong?**

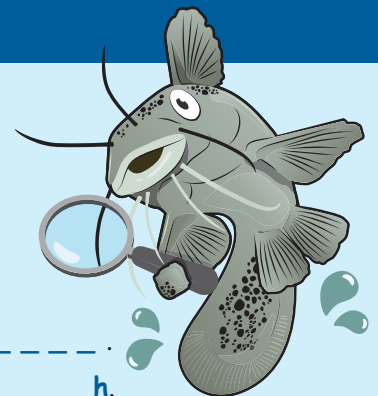
- River Red Gum, Black Box trees and other water dependent plants have the water they need to survive.
- Wetland and floodplain plants remain healthy and continue to provide food and habitat for native animals.
- Native animals are more likely to remain living at Kings Billabong because they have better access to food, habitat and water for drinking and breeding.
- We all get to enjoy the benefits environmental watering provides Kings Billabong!

**KEY MESSAGE**

**Where there is healthy water, there are healthy plants and animals!**

## WETLAND WATERING WORD-FIND

B	U	C	A	T	F	I	S	H	R
L	I	B	J	D	X	S	Z	E	E
A	H	L	E	C	M	W	U	A	G
C	A	T	L	H	R	E	D	L	U
K	B	O	T	A	C	B	F	T	L
B	I	D	R	F	B	S	K	H	A
O	T	Y	U	F	G	O	E	I	T
X	A	H	T	E	W	B	N	A	O
C	T	N	Q	Y	F	R	O	G	R
P	S	Y	C	H	E	L	V	F	P



1. Kings **B** \_\_\_\_\_.
2. Freshwater **c** **t** \_\_\_\_\_ **h**.
3. Environmental water helps to improve the **e** **a** **l** \_\_\_\_\_ of our wetlands.
4. Wetland environments provide important **h** \_\_\_\_\_ **t** for plants and animals.
5. **R** **g** **u** \_\_\_\_\_ **t** **r** structures help to hold water in a wetland.
6. Billy is a \_\_\_\_\_ Tree.
7. Broad-shelled \_\_\_\_\_.
8. The **C** \_\_\_\_\_ **f** **f** \_\_\_\_\_ brothers built the **P** \_\_\_\_\_ **e** Bend Pumps.
9. The Growling Grass \_\_\_\_\_ **g** is endangered in Victoria.
10. Macroinvertebrates are important for healthy wetland food **w** \_\_\_\_\_ **b** \_\_\_\_\_.



# WHAT WILL YOU DISCOVER?

There are so many interesting sites, artefacts, trails and native plants and animals to discover at Kings Billabong and surrounds. It is a fantastic place to explore with the family.



Tick the boxes below showing the places you have visited on the map.



<b>Kings Billabong</b>	
<b>Psyche Bend Lagoon</b>	
<b>Ducks Foot Lagoon</b>	
<b>Baggs Lagoon</b>	
<b>Birdhide Loop Walk</b>	3.5 KMS 1HR / LOOP
<b>Ducksfoot Lagoon Walk</b>	8.5 KMS 2.5HR / LOOP
<b>Birdhide, Ducksfoot Lagoon Walk</b>	6.2 KMS 1.75HR / LOOP
<b>Psyche Pumps Walk</b>	6.4 KMS 2HR / 1 WAY

<b>Psyche Creek</b>	
<b>Butlers Creek</b>	
<b>Murray River</b>	
<b>Psyche Pumps</b>	
<b>Picnic/BBQ Areas</b>	
<b>Fishing Platforms</b>	
<b>Boat Ramp</b>	
<b>Regulator</b>	
<b>Canoe Launch</b>	
<b>Toilets</b>	





### Add your own discoveries

If you discovered a site that is not on the map, please write or draw it here.

### REMEMBER!

When you visit Kings Billabong:

- Leave only footprints, take only pictures and memories.
- Let animals find their own food, do not feed them.
- Don't pick the plants, they provide food and shelter for the animals.
- Do not disturb archaeological sites including shell middens, scar trees and hearths etc.
- There are no bins at Kings Billabong. Please keep this site beautiful by taking your rubbish home with you.






# NATURE DETECTIVES

## Scat, Track or Trace

Go on a scavenger hunt (with a difference!) at Kings Billabong. Look out for (but don't collect), the items in the boxes to the right. Remember to leave all plants, animals and artefacts (and their remnants) where you find them.

Can you match up the scat, track or trace with the native plant or animal?

Draw a line  to connect the two together.



Place a tick against the plants and animals you have seen.

**Good luck!**  
Can you find them all?

### How Can You Help?

The Mallee CMA and other organisations have a number of citizen science monitoring programs in place to help monitor turtles, frogs, birds, bats, echidnas, water quality etc.

Scan here to find out more or to get involved:



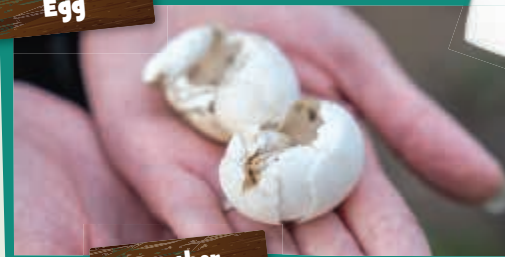
Gumnut/Flower



Scat (Poo)



Egg



Feather



Fruit



Footprint



Wing





# Native Plants and Animals

Broad-shelled Turtle



Kangaroo



Pelican "yeldko"



Growling Grass Frog



Dragonfly



Black Box tree "Wayurro"



Ruby Saltbush



## Did you know?

Broad-shelled turtles (*Chelodina expansa*) are one of Australia's largest freshwater turtles with a pale cream coloured throat, large flattened head and the longest neck in relation to body size of any turtle in the world. They are one of three local freshwater turtles found within the Mallee Catchment area and the Kings Billabong wetland complex.

During autumn, female turtles come out of the water to dig a hole in the surrounding floodplain to lay their eggs. Unfortunately, due to introduced animals such as foxes and pigs digging up the turtle's nest and eating the eggs, Broad-shelled turtles are now considered endangered in Victoria.

Scan here to learn more about Broad-shelled turtles and ways we can help to save their nests:



## Fun Froggy Facts

The Nationally threatened Growling Grass Frog or Southern Bell Frog (*Litoria raniformis*) gets its name from the deep growling call of the males! It ranges in size from 5.5 - 10cm and in colour from bright emerald green to dark brown or dull olive green with gold, brown, black or bronze spots on their warty back.

Their distribution (places they are found) has declined over the last 20 years due to river regulation, loss of habitat, introduced predators such as cats, foxes, introduced fish eating their tadpoles, disease, water pollution from herbicides and pesticides and climate change impacts.

Scan here to learn more about Growling Grass Frogs:



## Are Saltbush Salty?

The fruit of the Ruby Saltbush (*Enchylaena tomentosa*) is bright yellow, orange or red and can be eaten when ripe (red in colour). Yellow and orange fruit taste very bitter. It was a common bush tucker food for the local Aboriginal people and is an excellent source of vitamin C.



# Psyche Bend Pumping Station

George and William Chaffey selected Mildura as a site for irrigation development due to the climate, soil types and close proximity to the Murray and Darling Rivers. They built the Psyche Pump Station in 1891 to meet the needs of the surrounding irrigation settlement.

Water from the Murray River was pumped into Kings Billabong and sent to nearby properties via a series of channels. Approximately 20,000 acres were irrigated via this system. The original Chaffey steam engine and pumps operated at Psyche Bend until 1959, when they were replaced with electric pumps.

The Psyche Bend pumping station building is the oldest pump system of its type in the world and is listed on the Victorian Heritage register. The bricks of the building were hand-made from clay sourced from the site next to the pumping station.

The Psyche Pumps Historical Reserve Committee of Management together with the Sunraysia Steam Preservation Society, restored the historic engine and pumps over a seven-year period. Following the donation of a locomotive boiler, the Psyche Bend engine and pumps were re-commissioned in October 1995. Today it is possible to see the steam-powered pumps operational during school holidays and special events.



## Kings Billabong Interest Groups

The Psyche Pumps Historical Reserve Committee of Management is a passionate group of locals who are government appointed community representatives responsible for the maintenance and upkeep of the 10 hectare historic pumping station Reserve. The reserve includes the current and original pump site and uploading wharf upstream. The restoration and ongoing operation of the Psyche Pumps is undertaken by the Sunraysia Steam Preservation Society (known as the Steamies!). Restoration works in the 1990s included a large undercover pavilion, footbridge and toilets which are used for school education programs and special events.

The Victorian Fisheries Authority routinely stocks Kings Billabong as part of the VicFish Stocking program. In 2022, in partnership with First People of the Millewa-Mallee Aboriginal Corporation, Mallee CMA, local school groups

and recreation fishing clubs including OzFish Unlimited, Kings Billabong was stocked with 60,000 threatened fingerlings (baby fish) including Silver Perch (*Bidyanus bidyanus*) and Golden Perch (*Macquaria ambigua*). OzFish Unlimited together with interested community members, has helped to improve fish habitat at Kings Billabong by installing logs and 'fish hotels' into Butler's Creek, mapping invasive weeds and planting native trees and shrubs.





# SPOT THE DIFFERENCE

Kings Billabong is a fabulous place to camp, fish, canoe or just sit under a tree and enjoy reading a book. But if we don't look after and respect the site, we could be harming the many plants and animals that also call Kings Billabong home. Can you help Larry the Lace Monitor spot the differences in the two pictures below?



A



In picture A, people are respectfully visiting and enjoying Kings Billabong.

Can you list the things that you can see in picture B that may be dangerous and harmful to the environment:

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B

Circle the differences that you see in picture B.





# Wetland Food Chains and Food Webs

A number of food chains linked together form a food web. A food web shows the relationships between different plants, animals and micro-organisms (tiny living things that we can only see through a microscope) within an ecosystem.

There are a number of different levels within a food web, these are called trophic levels:

- **LEVEL 1:** Plants (producers)
- **LEVEL 2:** Animals that eat plants are herbivores (primary consumers)
- **LEVEL 3:** Animals that eat herbivores (secondary consumers, carnivores)
- **LEVEL 4:** Animals that eat carnivores (tertiary consumers, carnivores)
- **LEVEL 5:** Animals at the top of the food chain - Apex predators (nothing eats these animals)!

Water bugs are macroinvertebrates - animals without a backbone than can be seen with the naked eye and that live for all or part of their lives in water. They help to maintain a healthy ecosystem and are an important part of wetland food webs, providing food to animals such as frogs, turtles, fish and birds.

## ACTIVITY

Can you help Walter the Water Boatman recreate the Kings Billabong wetland food web by cutting out the plants and animals and sticking them at the correct level on the opposite page? You will need scissors and glue for this activity.

## FUN FACT!

Water Boatmen are one of the most abundant water bugs found throughout Australia's waterways. They prefer still or slow-flowing water in wetlands, lakes or lowland rivers. Most species are omnivorous and feed on algae and plant debris, but some species will hunt small invertebrates such as fly larvae.



## Did you know?

We can test the water quality of a wetland by looking at the water bugs present. Different water bugs can tolerate different levels of pollution in the water; therefore, the species of bugs present can tell us how healthy the water is! Water bug monitoring can be a fun and easy way for school groups or families to get involved in caring for our local waterways.

Scan here to find out more about water bug monitoring and the Mallee CMA's citizen science programs, please scan here:





# WHO EATS WHO IN A WETLAND FOOD WEB?

Complete the wetland food web by drawing arrows between each of the plants and animals to show the direction of energy transfer (remember when an animal eats something, it receives energy!).

**LEVEL 5**

**Apex  
Predators**  
(Carnivores)

**LEVEL 4**

**Tertiary  
Consumers**  
(Carnivores)

**LEVEL 3**

**Secondary  
Consumers**  
(Carnivores)

**LEVEL 2**

**Primary  
Consumers**  
(Herbivores)

**LEVEL 1**

**Producers**  
(Plants)

Energy from the sun.

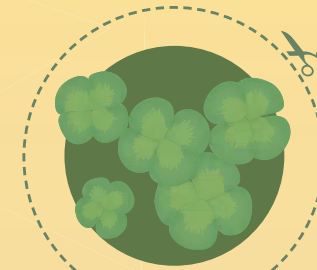
## What is a wetland food web?

A wetland food web is made up of all the food chains within the wetland ecosystem.

Each living plant and animal in the wetland ecosystem are part of multiple food chains (they are all interconnected).

Each food chain is one possible path that energy and nutrients may take as they move through the ecosystem.

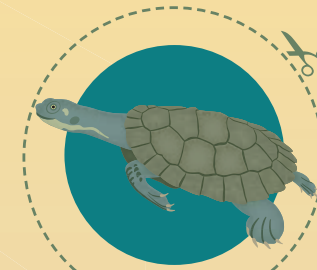
Cut out and glue the animals and plants in their correct place in the wetland food web.



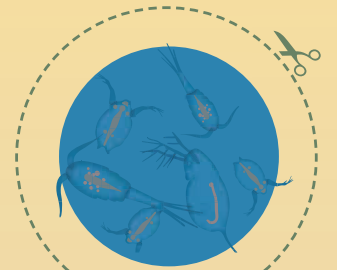
Water Plants



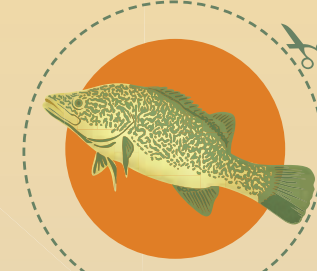
Yabbies



Turtles



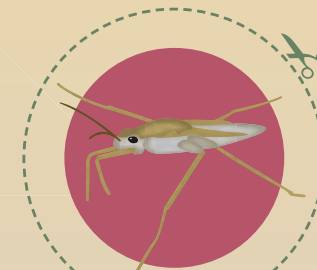
Plankton



Fish



Bird of Prey



Insects



Bats



Frogs



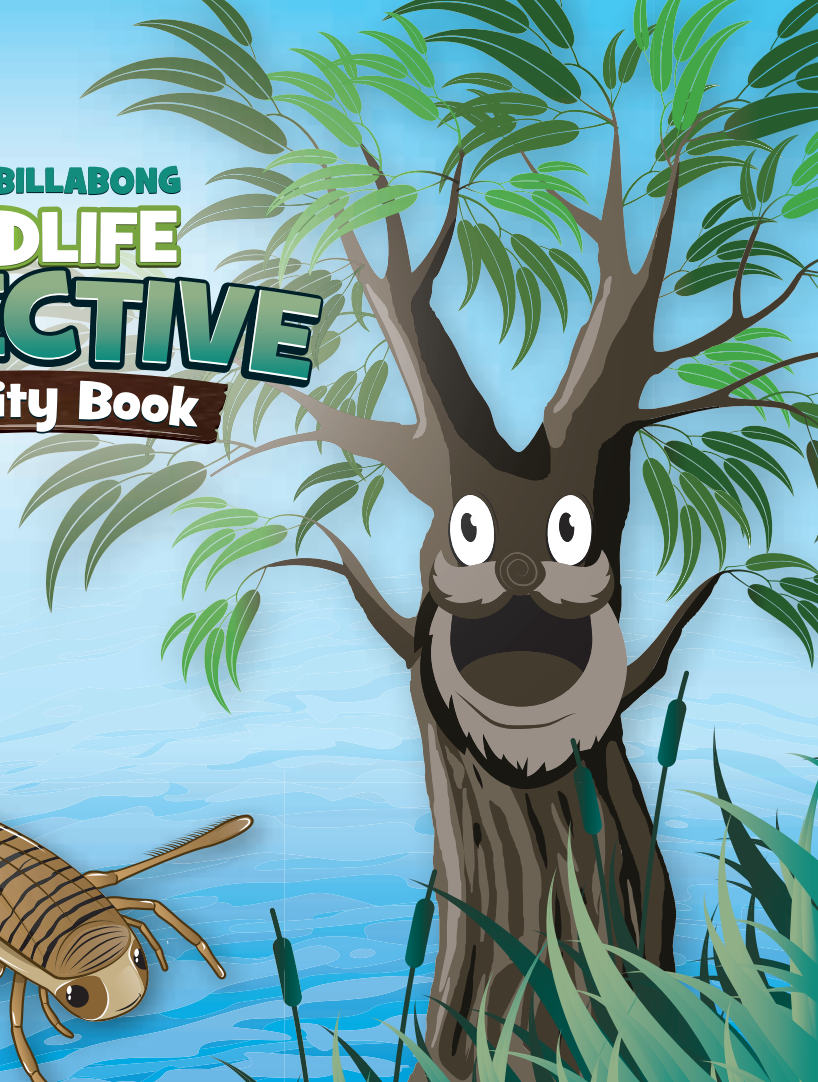
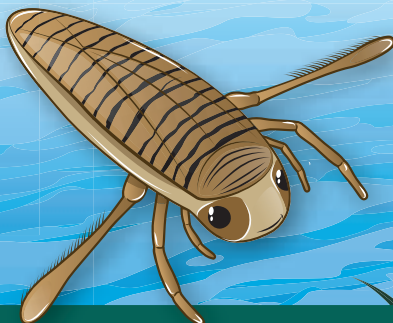
Snails

Bacteria/Fungi/Algae

Nutrients released from soil.



# KINGS BILLABONG WILDLIFE DETECTIVE Activity Book



**Thank you for visiting and learning  
about Kings Billabong and surrounds.**



The Mallee Catchment Management Authority (CMA) acknowledges and respects Traditional Owners, Aboriginal communities and organisations. We recognise the diversity of their cultures and the deep connections they have with Victoria's lands and waters. We value partnerships with them for the health of people and country.

The Mallee CMA Board, management and staff pay their respects to Elders past and present, and recognise the primacy of Traditional Owners' obligations, rights and responsibilities to use and care for their traditional lands and waters.

Language (where known) from the First People of the Millewa-Mallee Aboriginal Corporation has been written within talking marks beside the English name.

Thank you to the following people and organisations for so generously sharing information and photography:

- First People of the Millewa-Mallee Aboriginal Corporation
- Parks Victoria
- OzFish Unlimited
- India T'Anson (p10 feather; p11 pelican)
- Jules Farquhar (p11, 16 Broad-shelled turtle)
- EnviroEDU (p3, 4, 6 Kings Billabong complex)
- Victorian Fisheries Authority (p12 Kings Billabong fish release)