

# Journey Through Living Waterways

and Discover the Secret Life of Water

ACTIVITY BOOK



You'll be amazed by the hidden world of our waterways!



# What is a Catchment?



**Crazy fact:** There is actually no new water on Earth.

## **A Continuous Cycle**

Raindrops fall from clouds into rivers, creeks and drains, flowing downstream to the ocean. This continuous cycle is powered by the sun, and involves evaporation. Water is always moving, which helps create the conditions needed for life on Earth.

## **Caring for Country**

For thousands of years, Traditional Custodians have cared for catchments as *living systems*.

## **What Is a Catchment?**

A catchment is an area of land where rain falls onto the environment and drains towards a common place, like a creek, river, lake or wetland.

## **You, Me, We All Live in a Catchment**

Whether you live in the countryside or a big city, you are part of a catchment too.

## **Everything Is Connected**

Catchments provide our drinking water, food and energy, and places where we swim, play, and explore. The journey of water through a catchment connects us with everything in it!

## **Sharing Habitat**

Catchments are also home to wildlife - your neighbours are frogs, waterbugs and platypus!



# Journey With Me

Imagine you are a raindrop flowing through a water catchment. **Draw or write 6 things you might see on your journey from the sky to the sea.**



RAIN



ROOF



DRAIN



CREEK



RIVER



SEA

**HOT TIP!**

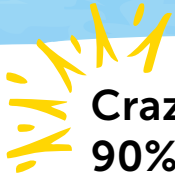


Look around you for inspiration. Can you see a glass of water, a drain, plant, bushwalker, or frog? Where does your house fit in to this?

## DID YOU KNOW...

A drop of rain in the Snowy Mountains near Canberra can travel through farms, towns and cities for more than 2,500 kilometres to reach the ocean in South Australia!

# Caring for Our Waterways



**Crazy fact: Only 10% of waterway litter is visible. 90% is hidden below the surface.**

## Connected Waterways

Our waterways connect urban, rural and natural environments, supporting plants, animals and places we care about. The rain that falls on roofs, streets and schoolyards flows into drains, then into creeks and rivers.

## Actions Travel Downstream

Because everything is connected, our actions travel downstream too. When it rains, water rushes over hard surfaces into stormwater drains, picking up litter, chemicals and other pollution along the way.

## Straight to the Waterway

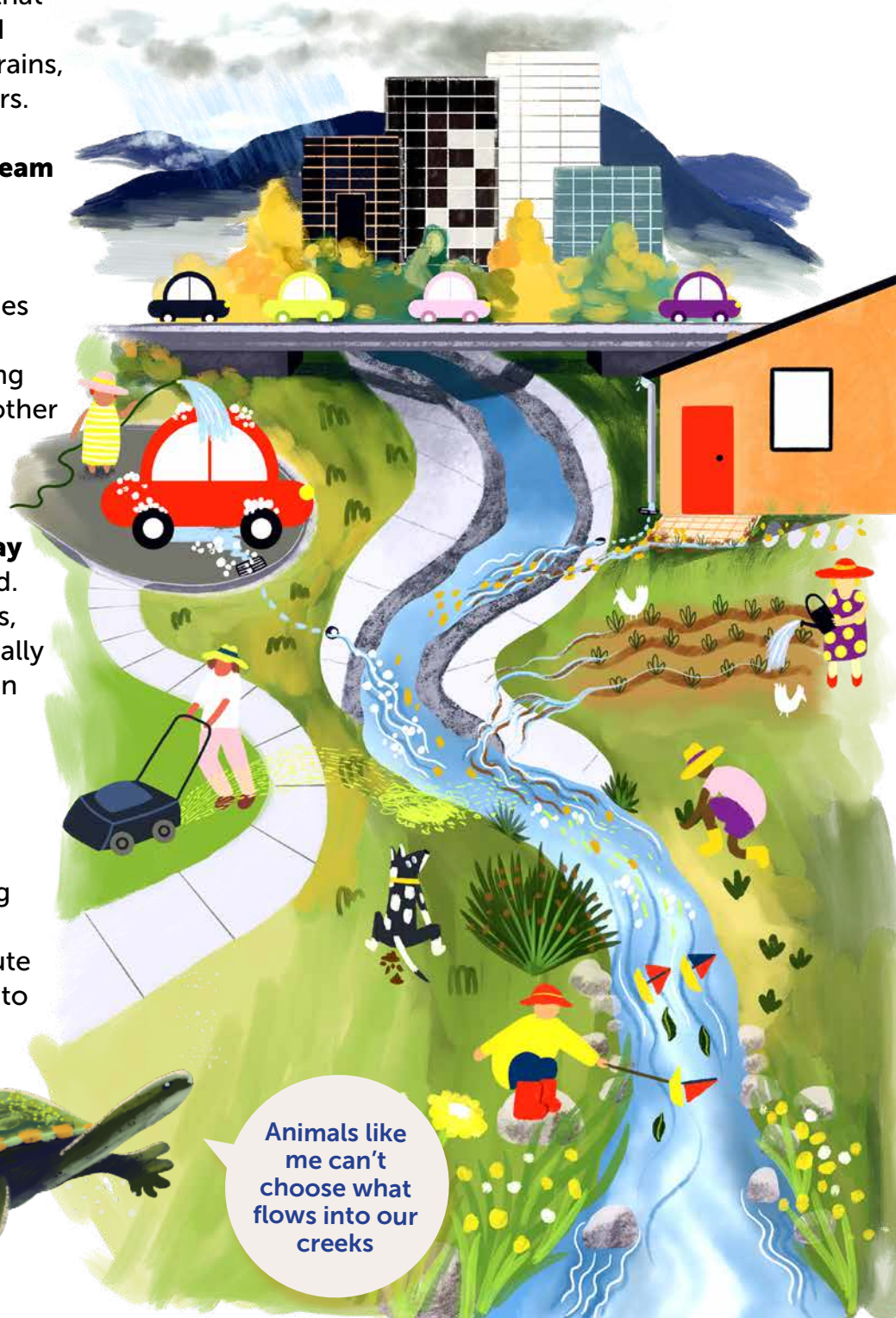
Stormwater is not treated. It flows directly into lakes, creeks, rivers and eventually the sea, carrying pollution into wildlife habitat.

## Drains Are Not Bins

Stormwater drains are designed for rain, not rubbish. Litter, leaves, dog poo and grass clippings can clog drains and pollute waterways. What goes into drains doesn't disappear.

## Shared Responsibility

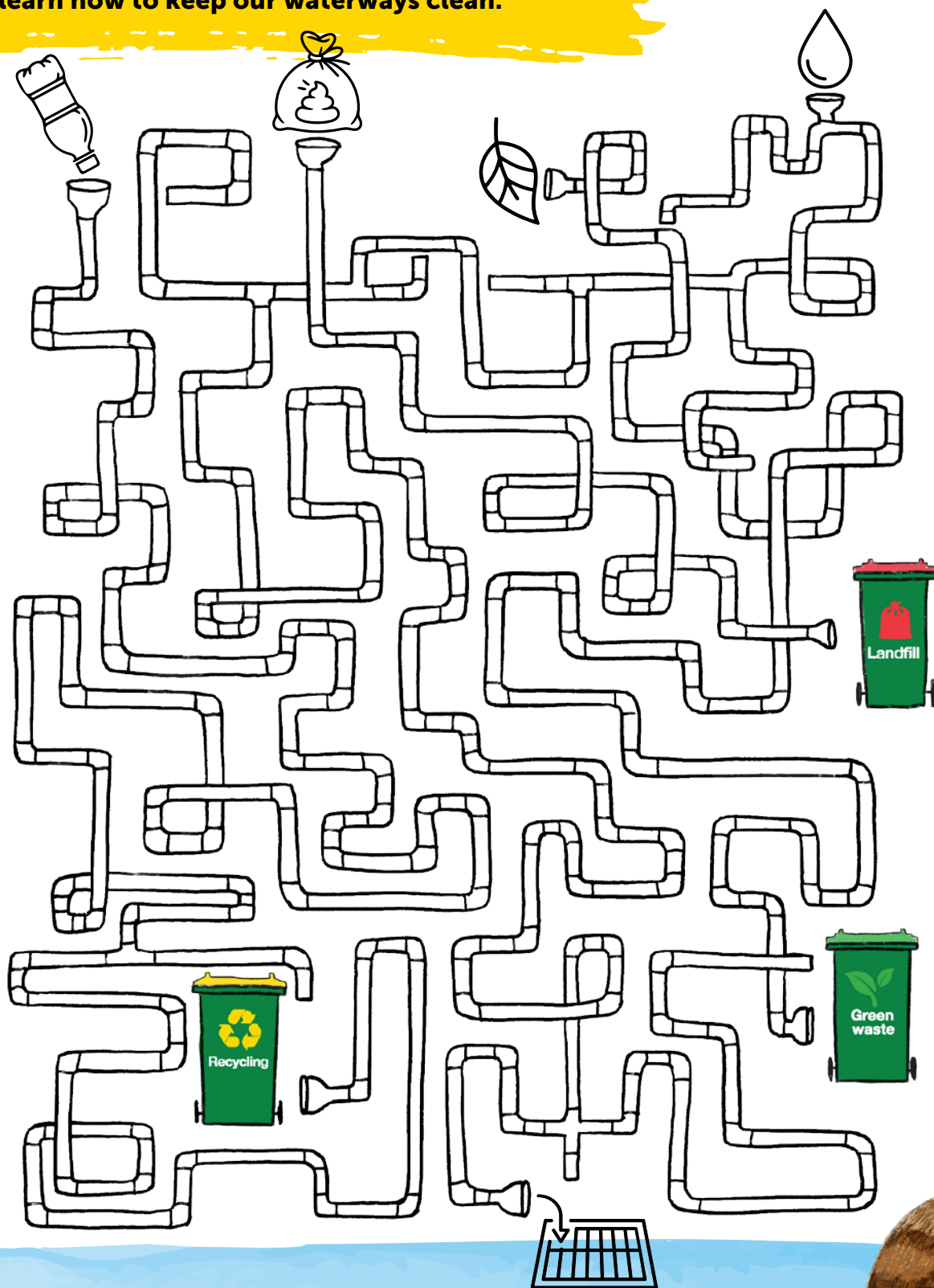
We all share responsibility for what enters our waterways. What flows in upstream impacts wildlife habitat downstream.



Animals like me can't choose what flows into our creeks

# Drain it, or Bin it?

Pollution can be stopped at the source, before it enters the drain. To help care for our waterways, it's important to learn which items belong where. **Complete each item's journey to learn how to keep our waterways clean.**



Want to do more? Help your family sort it right. **Create an artwork showing what household item goes in each bin:**  
Yellow lid (recycling)  
Green lid (garden/food)  
Red lid (landfill)



# How Do Our Actions Affect Waterways?



**Crazy fact:** A creek-side eucalypt can drink hundreds of litres of water from the ground every day and release it back into the air through its leaves.

## Living Waterways

Creeks and rivers are living systems. They are home to plants and animals like platypus, birds, frogs, fish and tiny waterbugs that live beneath rocks and among water plants.

## More Than Just Water

Waterways stay healthy when the land around them is healthy too. Rain falling on roofs, roads, parks and schoolyards flows in drains downstream into creeks and rivers.

## When Pollution Enters

As water moves through the catchment, it can pick up litter, chemicals and other pollution. Even small pieces of rubbish can cause big problems for wildlife living in and around the creek.

## Everything Flows On

Because water is always moving, the choices we make travel downstream, affecting the whole ecosystem, including us.

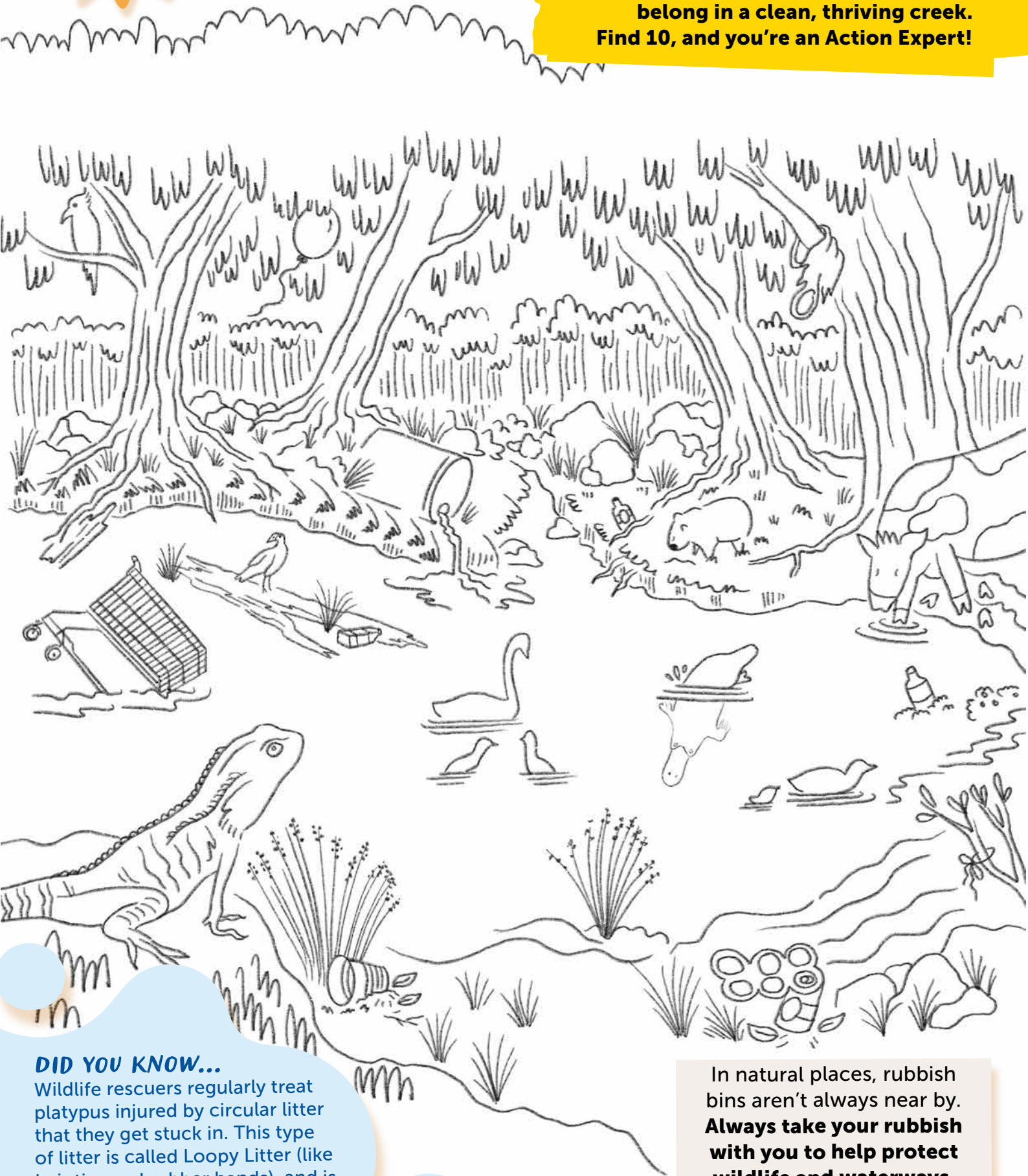
A vibrant, detailed illustration of a creek ecosystem. The scene is filled with lush greenery, including tall grasses, reeds, and various trees. A large blue platypus is in the foreground on the left, partially submerged in the water. A black swan swims in the middle of the creek. Several colorful birds are perched on tree trunks and branches. A butterfly is visible on a tree trunk on the right. The water is clear, showing rocks and small fish underneath. The background features rolling hills under a bright sky.

Even small rubbish has a really big impact

# Taking Action

COLOUR  
IN OUR  
HABITAT

Waterways flow through our farms, towns and cities, connecting everything along the way. Their health depends on our actions. **Find at least six things that don't belong in a clean, thriving creek. Find 10, and you're an Action Expert!**

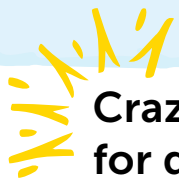


## DID YOU KNOW...

Wildlife rescuers regularly treat platypus injured by circular litter that they get stuck in. This type of litter is called Loopy Litter (like hair ties and rubber bands), and is a big problem for our little friends.

In natural places, rubbish bins aren't always near by. **Always take your rubbish with you to help protect wildlife and waterways.**

# Food Webs In Our Waterways



**Crazy fact:** A single fallen leaf in a creek can become food for dozens of tiny animals, starting a whole food chain.

## What Is a Food Web?

Plants, waterbugs, fish, birds and platypus are all connected through a food web. A food web shows who eats what and how energy moves through a waterway.

When food webs are balanced, waterways can support many different plants and animals. Even the smallest creatures play an important role.

## Every Living Thing Has a Role

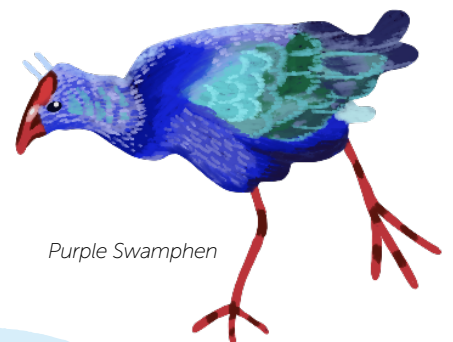
Producers make food using sunlight. Consumers eat plants or animals. Recyclers break down dead plants and animals, returning nutrients to the water.

## Who Eats What?

Plants get energy from the sun. Waterbugs from the plants. Frogs and platypus from the waterbugs. Birds from the frogs.



*Corroboree Frog*



*Purple Swamphen*



*Sunshine*



*Platypus*



*Dragonfly Nymph*



*Water Plant*



# Find-A-Word

Scientists use some BIG words to help us understand how waterways work.

**Discover their meanings to uncover the secret world living in our waterways.**

**Consumer**

**Ecosystem**

**Energy**

**Food web**

**Habitat**

**Native**

**Platypus**

**Producer**

**River**

**Waterbug**

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

But, what do these words mean?

**Consumer** – An animal that eats plants or other animals

**Ecosystem** – All living things in a place, and what they need to survive

**Energy** – What living things need to live and grow

**Food web** – flow of energy linking living things in an ecosystem (who eats who!)

**Habitat** – The natural home of a plant or animal

**Native** – Plants or animals that belong naturally in a place

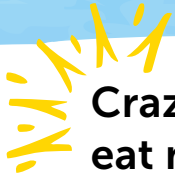
**Platypus** – A native Australian animal that eats waterbugs

**Producer** – Plants and algae that make food from sunlight

**River** – A natural flow of freshwater moving across land

**Waterbug** – A small animal that lives in water for some or all of its life

# What Does a Platypus Eat?



**Crazy fact:** To get enough energy, a platypus has to eat more than 40,000 waterbugs every day.

That's the equivalent of you needing to eat 25 pizzas a day!

## **An Underwater Hunter**

Platypus are incredible hunters. They can find food underwater without using their eyes, ears or nose. When they dive, they close them and rely on special sensors in their bill.

Their bill contains tens of thousands of electroreceptors that detect the tiny electrical signals made by moving waterbugs. It's similar to how sharks sense prey.

Platypus sweep their bill side to side through water and mud, sensing where prey is hiding. They scoop up insects, worms, snails and small crustaceans, storing them in cheek pouches.

Platypus don't have teeth! When they return to the surface, they grind food with tough keratin pads at the back of their bill, in a side-to-side, circular motion.

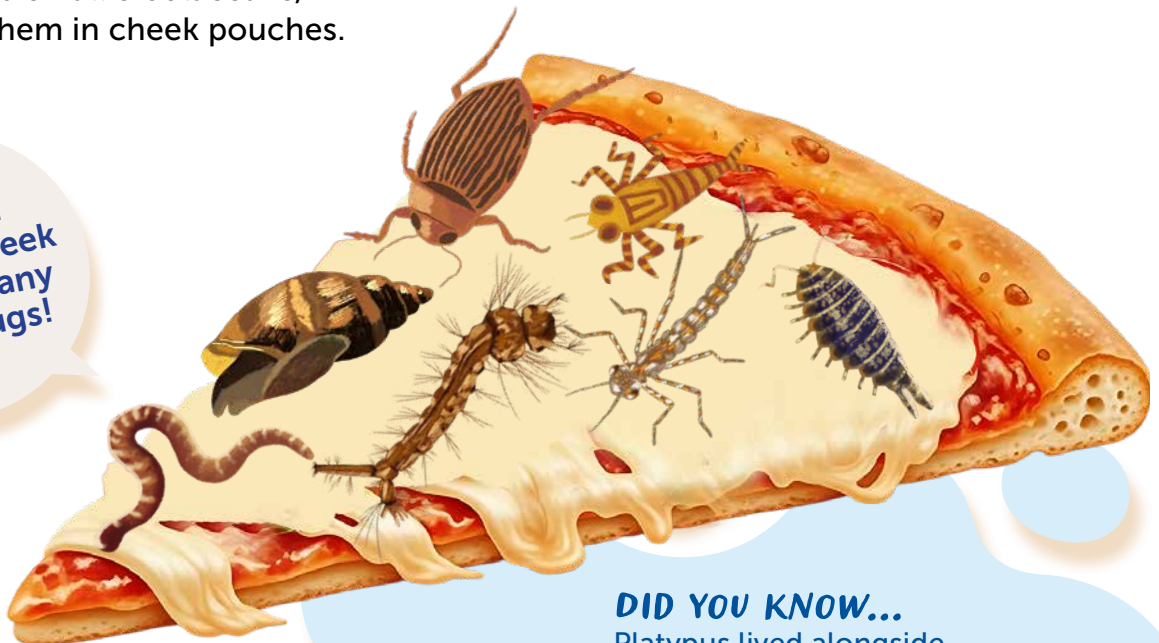
## **Why Waterbugs Matter**

Because platypus need so much food, they depend on healthy waterways full of waterbugs. If waterbugs disappear, platypus struggle to survive.

## **A Sign of a Healthy Creek**

Seeing a platypus is usually a good sign the water is clean and the food web is strong.

Lucky a healthy creek has so many waterbugs!



## **DID YOU KNOW...**

Platypus lived alongside dinosaurs! They have been around for at least 120 million years, and existed long before Kangaroos and Koalas came into the world.

# Pizza Party!

Platypus don't need just one kind of waterbug, they like many different kinds found living on rocks, in mud and among plants in the water. Habitat diversity means the platypus doesn't go hungry.

**Draw as many waterbug species as you can to represent what toppings a platypus might put on their pizza if they came to your pizza party.**



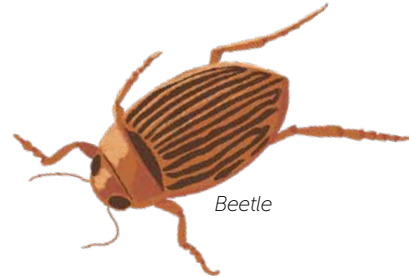
*Water Slider*



*Mosquito Larva*



*Fisher Spider*



*Beetle*



*Caddisfly Stick Larvae*



*Damselfly Larvae*



*Freshwater Shrimp*

"Hawaiian" and "Supreme" are taken...  
**What will you call your new pizza creation?**

# Who are the Waterbugs?



**Crazy fact:** Waterbugs have been evolving in freshwater for over 300 million years, developing amazing adaptations to survive in almost every kind of waterway.

## What Is a Waterbug?

Waterbugs are tiny macroinvertebrates, animals without backbones, that live in creeks, rivers and ponds. They can be found in fast-flowing streams, still pools, muddy creek beds and dense water plants.

## Built to Survive

Waterbugs have evolved many adaptations. Some breathe through gills, bubbles of air or even their skin. Some have strong jaws for hunting, scrapers for grazing algae, or filters for catching tiny food. Others have swimming legs, gripping claws or flat bodies that help them live in fast-flowing water.

## Nature's Health Checkers

Waterbugs are sensitive to changes in their environment. The types found in a creek can tell scientists how healthy that waterway is. That's why programs like Waterwatch study waterbugs to understand and care for freshwater ecosystems.



Invertebrates like me make up most animal life on Earth

## Meet the five main groups

of waterbugs found in freshwater.

**Insects** include dragonflies, mayflies and water beetles, often starting life underwater before growing wings.

**Crustaceans** like shrimp and yabbies wear hard armour and help recycle leaves and organic matter.

**Worms** can be flat, round, smooth or hairy. They all help to break down dead plants and animals.

**Molluscs**, such as snails and mussels, use shells for protection and graze on algae.

**Arachnids**, relatives of spiders, include water mites and fishing spiders that hunt small prey.



## DID YOU KNOW...

Dragonfly nymphs can shoot their lower jaw forward faster than the blink of an eye to grab prey. Diving beetles trap an air bubble under their wings and take it underwater like a portable oxygen tank.

# Superpower Match-up

Look closely at these waterbugs legs, body shape, where it lives and how it breathes.

**Match each waterbug species to its own incredible superpower.**



*Water Strider*



*Freshwater Shrimp*



I use a rough tongue called a radula to scrape algae off rocks like a tiny underwater lawn mower.

I am a...

\_\_\_\_\_



I have a spring-loaded extendable jaw that shoots out to grab prey faster than you can blink.

I am a...

\_\_\_\_\_



I wiggle through mud and recycle dead leaves, turning waste into nutrients for the waterway.

I am a...

\_\_\_\_\_



*Oligochaete Worm*



*Freshwater Snail*



I walk on water using long legs and surface tension like an invisible trampoline.

I am a...

\_\_\_\_\_



I use my legs and antennae to sweep tiny food particles from the water.

I am a...

\_\_\_\_\_



*Fishing Spider*



I can trap bubbles of air on my body and dive underwater to hunt prey.

I am a...

\_\_\_\_\_



*Dragonfly Nymph*

Each waterbug belongs to a different group: Insects, Molluscs, Worms, Crustaceans, and Arachnids  
**Can you tell which is which?**

# What Makes a Healthy Waterway?



**Crazy fact: A creek is never just water.**

## **A Living System**

A healthy waterway is made from many small relationships. Cool shade, rocky creek beds, steady banks, flowing water, fallen branches, soft mud and tangled roots all form a shared home for living things.

Platypus search the creek bed for food. Birds rest and hunt from branches above. Waterbugs graze on algae, recycle fallen leaves and feed the creatures that come after them.

## **The Role of the Banks**

What happens along the banks shapes what happens in the stream. Trees keep water cool, and their roots hold soil in place so the creek runs clear.

When banks crumble, soil washes into the water, making it harder for plants and animals to survive.

## **The Importance of Flow**

Flowing water keeps the system alive. It carries oxygen and nutrients, connecting pools and riffles and the creatures that live within them.

## **Many Parts, One System**

When these elements work together, waterways can support many forms of life. Scientists call this biodiversity.

A healthy waterway grows from the cooperation of water, soil, plants and animals, each playing a role in the life of the creek.

## **DID YOU KNOW...**

Platypus build their burrows in stable creek banks. Without strong roots holding the soil together, their homes can collapse. Trees and plants along the creek help anchor the soil and protect the underground tunnels where platypus rest and raise their young.



**Lots of homes means lots of life**

# Biodiverse Habitats

Here are five animals that all depend on healthy waterways in different ways for their habitat. **Design a river habitat that works for everyone by drawing features like trees, flowers, rocks, logs, muddy banks, plants, shade and flowing water.**



Wombat

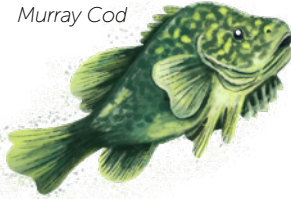


Gang Gang  
Cockatoo

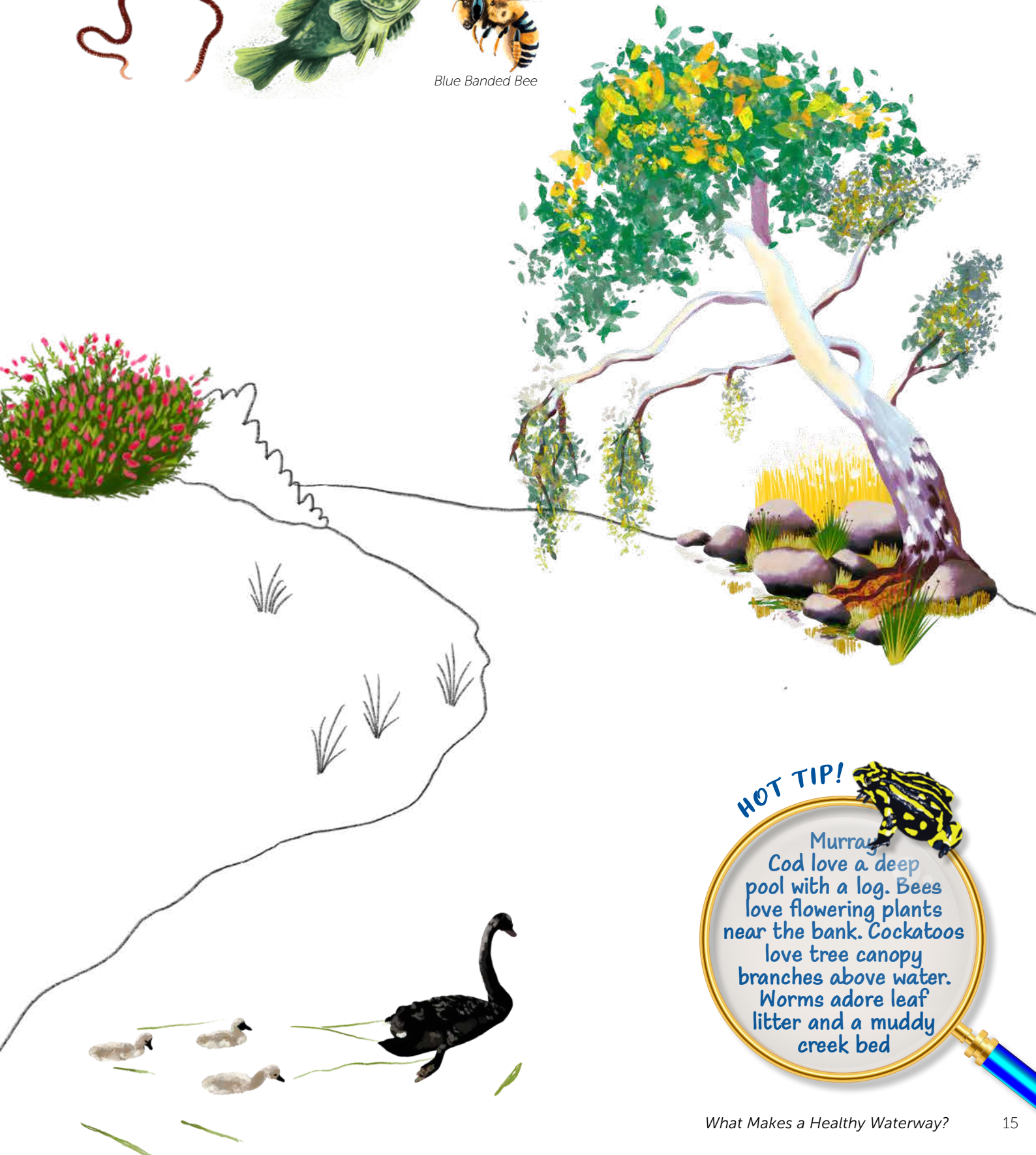
Oligochaete Worm



Murray Cod



Blue Banded Bee



**HOT TIP!**



Murray Cod love a deep pool with a log. Bees love flowering plants near the bank. Cockatoos love tree canopy branches above water. Worms adore leaf litter and a muddy creek bed

# Who Looks After Our Waterways?



**By now you've discovered something important: Healthy waterways are shaped by relationships between water, land, plants, animals and people.**

For thousands of years, Traditional Custodians have cared for rivers and creeks through knowledge, culture and responsibility to Country.

## **Caring for Waterways Today**

Today, care for waterways is shared across many people and roles. Traditional Custodians continue to care for waterways through knowledge, culture and responsibility to Country. Scientists study how systems are changing, volunteers monitor local creeks, communities protect the places they value, and landholders manage the land surrounding waterways.

Many of these people are part of something called citizen science.

## **What Is Citizen Science?**

Citizen science is when everyday people help scientists

understand the natural world. By observing wildlife, testing water and recording what they see, communities can track how healthy a creek really is.

Programs like Waterwatch bring people together to explore their local waterways. Volunteers look for waterbugs, measure water quality and record plants and animals living in the creek.

## **Small Actions Add Up**

Healthy catchments don't happen by accident. They grow from curiosity, care and small actions repeated over time.

Now that you know how waterways work, you can play a part too.

Healthy catchments are shaped by many small actions. **Every time someone notices, cares or speaks up for a creek, the future of that whole waterway changes.**

## **DID YOU KNOW...**

Citizen scientists record millions of wildlife observations across Australia each year using programs like Waterwatch, FrogID and iNaturalist. These records help scientists track how ecosystems are changing over time.

**When you notice us, you help us.**



# What Role Will You Play?

Every person has a role to play to help care for waterways in different ways. **Choose a role that feels right for you.**



## *BUG DETECTIVE*

You look closely at small creatures living in the water to tell us how healthy a creek is.

## *PLATYPUS PROTECTOR*

You care about animals that depend on clean water and safe creek banks.

## *CREEK CARER*

You help keep waterways healthy by protecting habitat and reducing pollution.

## *STORY SHARER*

You help others understand why waterways matter by sharing what you've learned.

## *HERE IS...*

One thing I will notice

One thing I can do

One thing I can tell someone else

## *TO HELP MY LOCAL WATERWAY...*

The name of my local creek, river or lake is

The water in my home comes from

People go to swim, paddle or explore nature nearby in

If you would like to join and contribute to Upper Murrumbidgee Waterwatch, we are always looking to new volunteers to help with water quality measurements and undertake platypus and waterbug surveys.

Head to the Upper Murrumbidgee Waterwatch website to find out about opportunities or chat with your local catchment group.



To learn more about our wonderful waterways visit [www.act.waterwatch.org.au](http://www.act.waterwatch.org.au)

Upper Murrumbidgee Waterwatch is supported by:



Produced in partnership with:



Page 5	"Drain it, or Bin it"	Bottle -> Recycling bin Dog poo -> Garbage Bin Leaf -> Compost / garden (not the drain) Raindrop -> Stormwater drain
Page 7	"Take Action "	Things that don't belong: Shopping trolley, cow, plastic bottle, oil barrel, glass bottle, milk carton, plastic rings, coffee cup, balloon, plastic bag, Loopy-litter (hair tie around branch in bottom right-hand corner)
Page 8	"Food Webs in our Waterways"	Arrows show the flow of energy from food to the animal that eats it: Sun -> Water Plant (Producer) Water Plant -> Dragonfly Nymph (Primary Consumer) Dragonfly Nymph -> Corroboree Frog (Secondary Consumer) Dragonfly Nymph -> Platypus (Secondary Consumer) Corroboree Frog -> Purple Swamphen (Tertiary Consumer)
Page 13	"Superpower Match-Up"	Scrapes algae with a radula -> Freshwater Snail (Mollusc) Spring-loaded jaw for hunting -> Dragonfly Nymph (Insect) Walks on water (surface tension) -> Water Strider (Insect) Traps air to dive -> Fishing Spider (Arachnid) Sweeps food with legs/antennae -> Freshwater Shrimp (Crustacean) Recycles leaves in mud -> Oligochaete Worm (Worm)
Page 15	"Biodiverse Habitats"	This activity is open-ended, but some features that support each species include: Murray Cod -> deep pools, logs/snags in water Blue Banded Bee -> flowering plants near banks Gang Gang Cockatoo -> trees with branches/canopy Wombat -> stable banks, vegetation, burrow space nearby Oligochaete Worm -> muddy creek bed, leaf litter