2014 Enviro-Stories Program

Love Our Lakes Education Kit

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Gippsland Lakes Ministerial Advisory Committee

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About this resource

This resource has been developed for use in the 2014 Love Our Lakes Enviro-Stories program. It has been designed to help raise awareness of the importance of the Gippsland Lakes and its catchment as well as provide some fun and interesting activities that can be conducted in the classroom or out on an excursion.

Enviro-Stories

Enviro-Stories is an innovative literacy education program that inspires learning about natural resource and catchment management issues. This program encourages kids to learn about their local environment and write an illustrated story that incorporates what they have learned. The primary goal is to produce a story worthy of being published for everyone to read in hardcopy and online formats. To find out more about the Enviro-Stories go to: **www.envirostories.com.au**

Love Our Lakes

The Gippsland Lakes are Australia's biggest expanse of inland waterways. They are internationally recognised for their environmental value. The natural environment provides great recreational, lifestyle and tourism opportunities. The Gippsland Lakes are precious. We need to protect them for future generations.

'Love our Lakes' is about a shared responsibility to participate in caring for the Lakes and its catchment.

The Gippsland Lakes Ministerial Advisory Committee has an important role in assisting the Victorian Government and the community to Love Our Lakes. For more information, go to: **www.gippslandlakes.net.au** or **www.loveourlakes.net.au**

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Photos: All photos have been supplied by the Gippsland Lakes Ministerial Advisory Committee, unless otherwise noted, for use in this education package.

Disclaimer: PeeKdesigns has made every attempt to ensure all information is relevant for teaching purposes, however due to the wide variety of information used to write this education resources we make no claim that all information is completely accurate. PeeKdesigns does not hold any responsibility for the mis-use of any activities or information described in this education kit.

Contents

The Gippsland Lakes

The Gippsland Lakes are made up of a series of shallow coastal lagoons separated from the sea by broad sandy barriers. They include Lake Wellington (138 square kilometres) Lake Victoria (110 square kilometres), Lake King (92 square kilometres), Lake Reeve, Lake Coleman and a number of smaller lagoons and wetlands.

There are five main rivers that drain into the lakes; the Latrobe and the Avon rivers flow into Lake Wellington while the Mitchell, Nicholson and Tambo rivers into Lake King.

The catchment

A catchment describes any surface where water falls and drains to an end point. That means that everywhere on Earth is located within a catchment. A catchment can be small like the roof of a house, or huge like the Murray-Darling Basin. The Gippsland Lakes has a catchment that is more than 20,000 square kilometres in area - that is about 11% of the State of Victoria.

The Gippsland Lakes

The Gippsland Lakes catchment is a unique and precious environment that is reliant on the areas natural resources: water, vegetation, soils, minerals and biodiversity. These are the lifeblood of both the natural and human environments and make the Gippsland Lakes a great place to live or visit for people from all walks of life.

The natural environment of the Gippsland Lakes Catchment is incredibly diverse. In a relatively short distance the land changes from some of Australia's highest mountains to the coast. You could spend the morning skiing in the highlands; have a lunchtime trek through the forests and woodlands of the slopes and the afternoon relaxing on the lakes or the ninety-mile beach.

There is a vast network of rivers, streams, lakes, lagoons, creeks and wetlands that make up the catchment. This water brings life to the area and supports the many different ecosystems and land uses that are found here.

Tourism

The catchment has many different landscapes that attract people from all over the world to visit the area. Alpine regions, forests and woodlands, beaches, lakes, wetlands, national parks, state forests and reserves all bring people to experience the flora, fauna and natural environment. Hiking, fishing, cycling, boating, riding and all the other snow and water sports are just some of the activities available.


Photo: K. Coleman

Agriculture

The catchment is largely a rural farming community. The people are highly dependent on agriculture and the area provides some of the most productive lands in the state. Grazing of cattle and sheep is widespread. Dairying is an important activity in higher rainfall areas to the west and in the Macalister Irrigation District dairying. The Mitchell River flats are an important and high value vegetable growing area.


Photo: K. Coleman

Forested areas

Much of the Gippsland Lakes catchment is forested public land. Significant areas are in National Parks and State Parks as well as Flora and Fauna and other reserves. These areas are very important to preserve the habitat and biodiversity of the catchment. Some areas are used for timber production.

Water production

Water is the most import natural resource in the catchment. The streams and rivers bring life to the area, feeding the lakes and wetlands.

Water from the region is also used for households, stock, irrigation and industrial use, such as the water stored in Lake Glenmaggie (pictured) Some water is diverted from the Thompson Dam for use in Melbourne.

It is important that human use of water in the region is balanced with the requirements to maintain a healthy environment.

The Gippsland Lakes

Urban use

As the population in the catchment has increased urban areas have developed to support people living here. Population centres with developing secondary industry include Moe, Morwell, Traralgon, Sale and Bairnsdale. Other coastal centres include Seaspray, Loch Sport, Paynesville, Metung and Lakes Entrance.

Photo: Wikipedia

Mining

The Gippsland Lakes catchment has a wealth of minerals that can be extracted to support its population. Brown coal occurs in thick seams in the Latrobe Valley extending eastward from Yallourn (pictured) to the south of Sale. To date it is used for electricity generation.

International recognition

The Silt Jetties

Of international significance, the Mitchell delta and its silt jetties is one of the finest examples of this type of landform in the world. The silt jetties are formed by sediment deposits from the Mitchell River and persist due a lack of tidal currents in Lake King and the presence of a shoreline reeds fringe able to trap a large proportion of the river sediment whilst protecting the deposits from wave erosion. Changes in vegetation over recent decades have resulted in erosion.

Wetland of International Importance

The Gippsland Lakes are listed as a Wetland of International Importance under the Ramsar Convention. "The Ramsar Convention is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources."

The Gippsland Lakes are recognised for the abundance and diversity of water birds as well as the presence of their breeding grounds. The Lakes provide important feeding, resting and breeding habitat for 86 water bird species and the Lakes and surrounding wetlands regularly support up to 40-50,000 water birds. Many of the birds fly long distances to visit the Lakes, such as from the Arctic and Japan.

Photo: K. Coleman

For more information about the Gippsland Lakes please visit:

www.loveourlakes.net.au

Gippsland Lakes Crossword

Use the following clues to complete the crossword on the following page. Use "The Gippsland Lakes" information sheets to help you find the answers, or go to www.loveourlakes.net.au

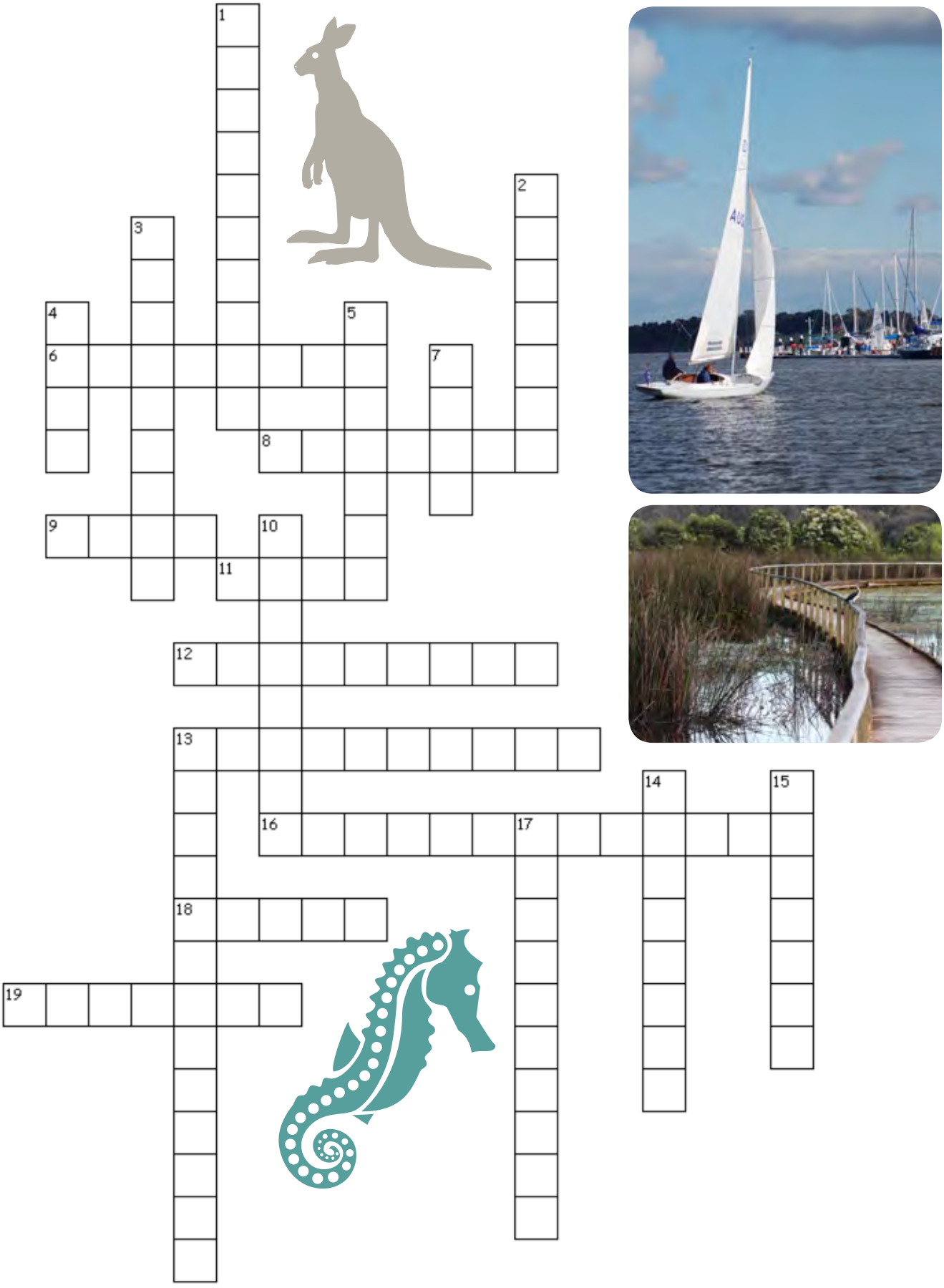
Across

6. The long lake that stretches from Metung, along the back of Raymond Island and all the way down to Hollands Landing is called Lake _____. (8)
8. These places have large trees. Significant areas of these are found in National Parks, State Parks and some Flora and Fauna Reserves. (7)
9. The lake that you would look out onto if you were standing on the Eagle Point Jetty is called Lake _____. (4)
11. How many main rivers drain into the Gippsland Lakes? (4)
12. This river starts in the hills behind Wiseleigh, goes through Sarsfield and Nicholson and then drains into Lake King. (9)
13. An inland lake and water storage that lies on the Macalister River near Heyfield. It is Lake _____. (10)
16. The permanent man-made point where the lakes drain into the sea is located at. (5,8)
18. This river starts up in the hills east of Swifts Creek, goes through Ensay, Bruthen and Swan Reach and then drains into Lake King. (5)
19. Another term for agriculture. It is a major industry of the catchment. (7)

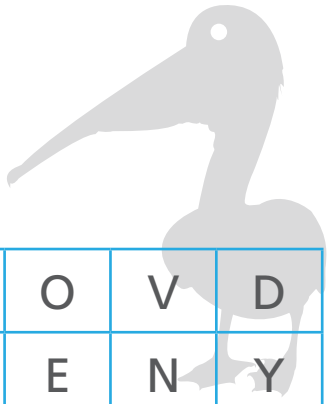
Down

1. The very large, round and shallow lake that is close to Sale is called Lake _____. (10)
2. The special geographical feature the Mitchell River drains through as it reaches Lake King are called the Silt _____. (7)
3. Used to describe the entire Gippsland Lakes area that captures water and drains it into the Lakes. (9)
4. This river starts up in the hills north of Briagolong, goes through Stratford and then drains into Lake Wellington at the Clydebank Morass. (4)
5. This river is the major drainage point for most of Central Gippsland and the Latrobe Valley. The rivers main tributaries are the Macalister and Thompson Rivers. It drains into Lake Wellington near Sale at the Dowd Morass. (6)
7. The name of the body of water that is off the coast of the Gippsland Lakes is called _____ Strait. (4)
10. This river starts up in the mountains around Dargo, goes through Glenaladale, Lindenow and Bairnsdale and then drains into Lake King.(8)
13. The mountain range that makes the entire northern boundary for the Gippsland Lakes catchment is the _____ _____ Range. (5,8)
14. The Gippsland Lakes catchment stretches from near W_____ in the west to Lakes Entrance in the east. (8)
15. The Gippsland Lakes have a number of special sites along its edges called Morasses. What do we more commonly call a morass? (7)
17. The beach that stretches along the barrier between the Lakes and the ocean is called the _____ _____ beach. (6,4)

Gippsland Lakes Crossword



Gippsland Lakes Word Find



Find all the words listed to reveal the hidden message within.

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

BREAM
DOLPHIN
FLATHEAD
GIPPSLAND
KAYAKING
KING
KOALA
MIGRATORY
MITCHELL
NICHOLSON
PELICAN
RAKALI
RIVER
SAILING
SANDPIPER
SEAGRASS
TAMBO
VICTORIA
WELLINGTON
WETLANDS

What is the hidden message? . . . . . .

Step back in time...

Australian History

Prior to European settlement the Aboriginal Australians inhabited nearly every part of Australia. They lived in all climates and across all of the different landscapes throughout Australia.

The Aboriginal people were the masters of the Australian environment. They had an intimate knowledge of how to find food, water and shelter to survive no matter what the conditions. Bush tucker and medicines were harvested from the plants and animals that surrounded the places where they lived.

The Aboriginal people were not all arranged into one nation but were a collection of different family and language groups. At the time of European settlement there are thought to have been as many as 700 different language groups. These different languages formed the basis of the social relationships, land ownership and rights amongst the Aboriginal people.

Gunnaikurnai

Evidence exists of Aboriginal habitation of Gippsland for at least 24,000 years, with estimates of up to 40,000 years of habitation likely. The Lakes are believed to have been formed some 7,000-7,500 years ago when the seas rose during the last glacial period, separating Tasmania from the mainland.

The Krauatungalung clan, one of the five clans of the traditional owners, the Gunaikurnai people, inhabited the lowland coastal area which includes the Gippsland Lakes. When white settlers arrived in the early 1840s, there were about 3,000 Gunaikurnai people living in Gippsland.

The environment was rich in resources for hunter-gatherers, providing an abundance of fresh water, game, fish and plant foods. The surrounding dense forests provided wood to make clubs, spears and tools; the trees provided bark for shields and canoe building (canoe trees pictured). Stones were ground and shaped into tools and weapons for hunting. The women made baskets from reeds and grasses, gathered along the shores of the Lakes. Intricately sewn rugs were made from the skins of possums, joined with sinew by needles made of bone.

Animals were never hunted indiscriminately, they were killed for food and were revered and celebrated in ritual as a continuing source of life. The surrounding forests were regularly burned to create new growth. Everything was carefully balanced. The Gunaikurnai and their environment were as one.

Today, the Gunaikurnai carefully preserve artefacts and culturally significant objects at their Keeping Place in Dalmahoy Street, Bairnsdale, which is open to the public daily with educational tours by arrangement.

03 5152 1891
www.batalukculturaltrail.com.au

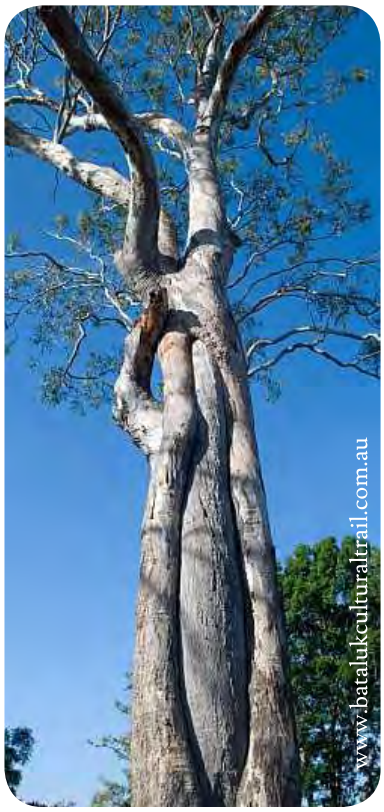
Photo: Canoe trees can be dated (approximately) by the level of scarring on the tree and the development of tree hollows on the outer branches.

Traditional life

When we talk about Aboriginal culture we are referring to the ways Aboriginal people lived in traditional times. It is thought that most family groups consisted of 10 to 50 people.

Movement and camp sites

Most Aboriginal family groups were nomadic - which means they moved around to follow the seasons and availability of food. Moving around also ensured that animals were not over hunted, allowing numbers to recover when people were not around. This lifestyle meant that their living arrangements were not permanent, so shelters were built out of wood, bark and sometimes animal skins. The size and shape of these shelters depended on their location and the number of people living there.



Evidence of occupation

Evidence of human habitation in the Gippsland Lakes are can be found in the form of scarred trees, stone tools, middens, fish traps, artwork and grinding grooves. Scarred trees are still evident in many areas throughout Gippsland, although many have been lost to vandalism, fire and construction developments. The canoe tree at Howitt Park in Bairnsdale (pictured) has been preserved for many years and is located along the Bataluk Cultural Heritage Trail. Scars are the result of bark being cut out to build shelters, canoes, coolamons (carrying containers) and shields. Some trees were scarred when creating footholds for climbing trees to get honey or possums. Other trees were carved with symbols for ceremonial, burial or message purposes.

Trading

Trading was common as not everyone had everything they needed to survive. Items would be traded between groups and archaeological records show that some items move hundreds of kilometres from where they were sourced. Items included tools, weapons, clothing (such as possum skins), shells, seeds and beads for ceremonies and ochre.

Trading was not too much different from what we do today but there was no money, so what did they do? They had to barter. Bartering is where you swap goods that you have for things that you need. How much things were worth would depend on how rare or popular things were.

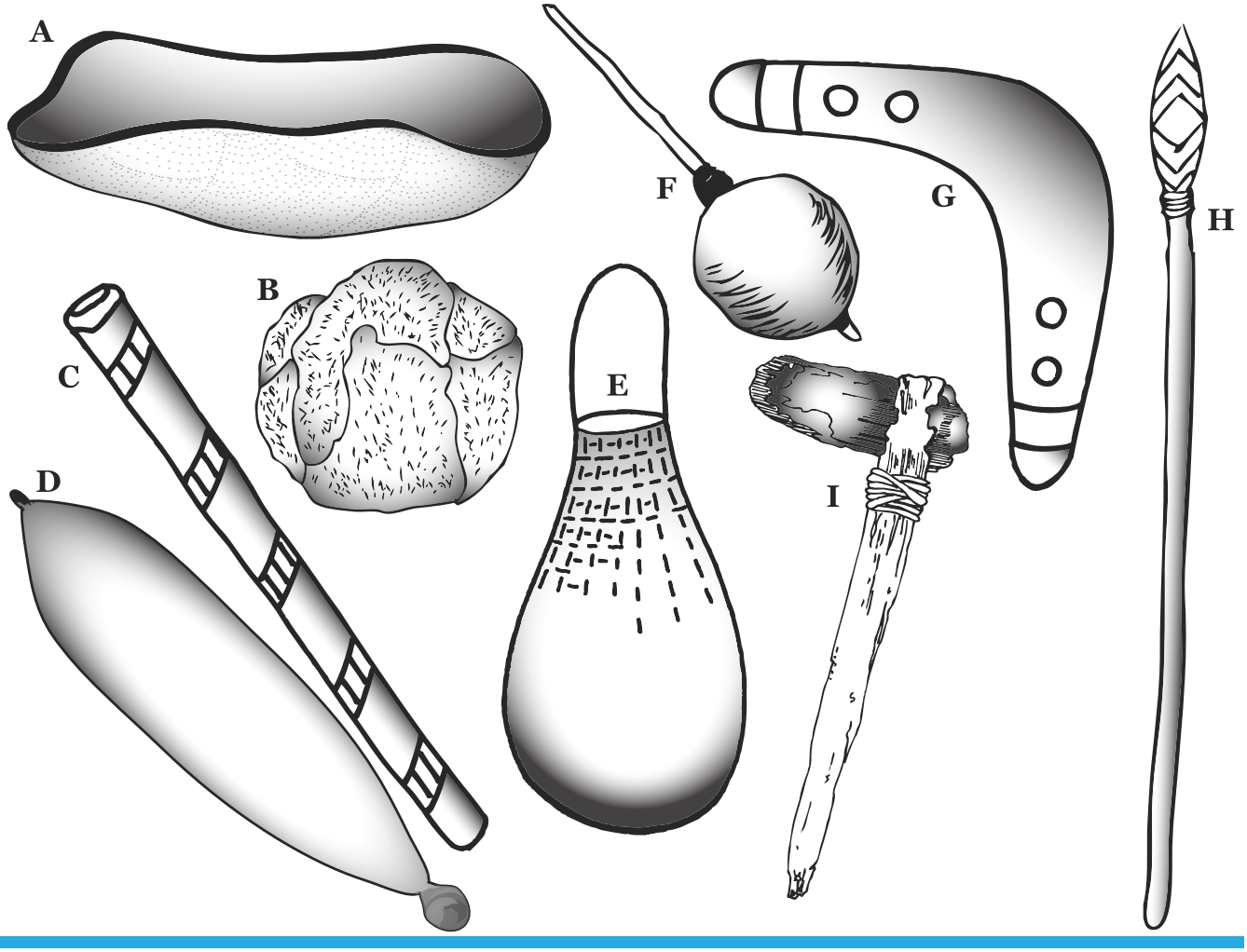
Hunting and Gathering

Generally speaking, the women and young children were the gatherers of the tribe. They would use digging sticks to dig up roots and tubers as well as witchetty grubs. They would also pick leaves, fruits, nuts and seeds and catch small lizards. The men and older boys would go out fishing and hunting, depending on the time of year. Tools, like the pictured eel traps and other fish traps, would be made to make fishing easier - just like we use rods, reels and nets today.

Tools, weapons or toys?

Aboriginal people throughout Australia made tools, weapons, toys and other items from the environment where they lived. Some were made from bark, seed pods, grasses, trees, skin and stones. If they didn't have the right materials, then they traded items with other clans to get those materials. This means that stone from central Australia could have been used by people in the Gippsland Lakes. Identify the following items, what they were used for and made from.

Item	What is it?	What was it used for?	What is it made from?
F	*Spinning top*	*Toy, Games*	*Wood, Seed Pod*
	Axe		
	Ball		
	Boomerang		
	Coolamon		
	Didgeridoo		
	Dilly Bag		
	Spear		
	Woomera		



The water cycle

Get a glass of water and take a good long look at it. Guess how old you think the water is? Discuss this with a friend. You'll find out the answer soon.

A change in state

Water can be found in three different states of matter:

LIQUID - such as rain and rivers

SOLID - such as ice and snow

GAS - such as steam (water vapour)

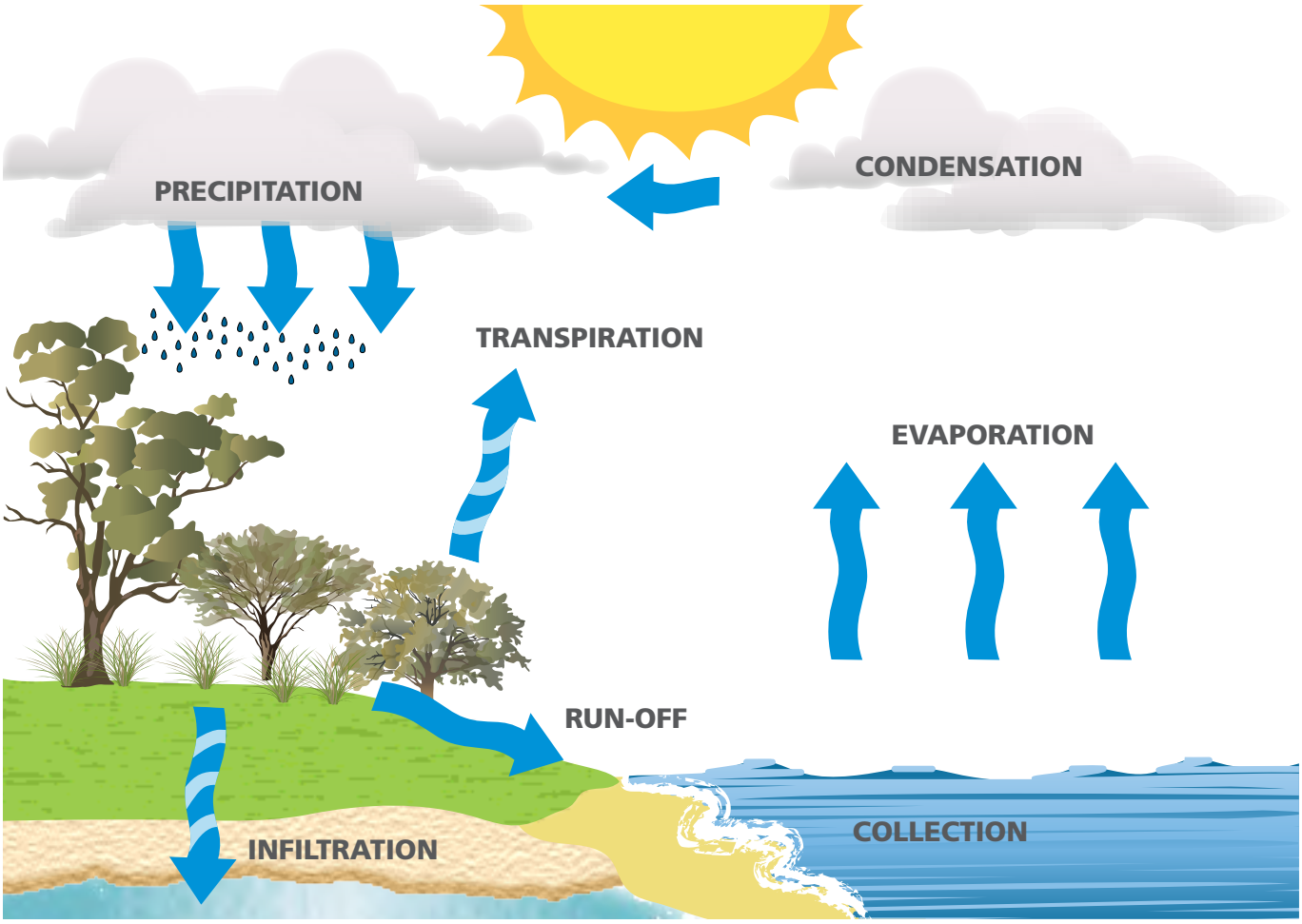
The journey that water takes as it changes in state, travels to new locations and is used, is called the **Water Cycle**. Water on our planet travels through the water cycle continuously. The water keeps moving and changing state as it repeats the cycle millions of times over.

An ancient resource

The water we drink today could have come from lakes in Africa. The heat from the sun causes water to evaporate and wind currents carry the water across the Indian Ocean. The water vapour condenses in our clouds before it falls as rain and we drink it. Some water travels underground or is frozen in ice and snow for millions of years before it continues its journey.

The answer to your question is this...there is only a limited amount of water on the planet, so the water we see today has been cycling around since Earth was formed.

We may not drink the water in the Gippsland Lakes but we do use the water that travels down the rivers that feed the lakes with freshwater. It is important that we conserve and look after our water sources, not only for us, but also for all the other users (both plant and animal) that rely on the lakes for survival.

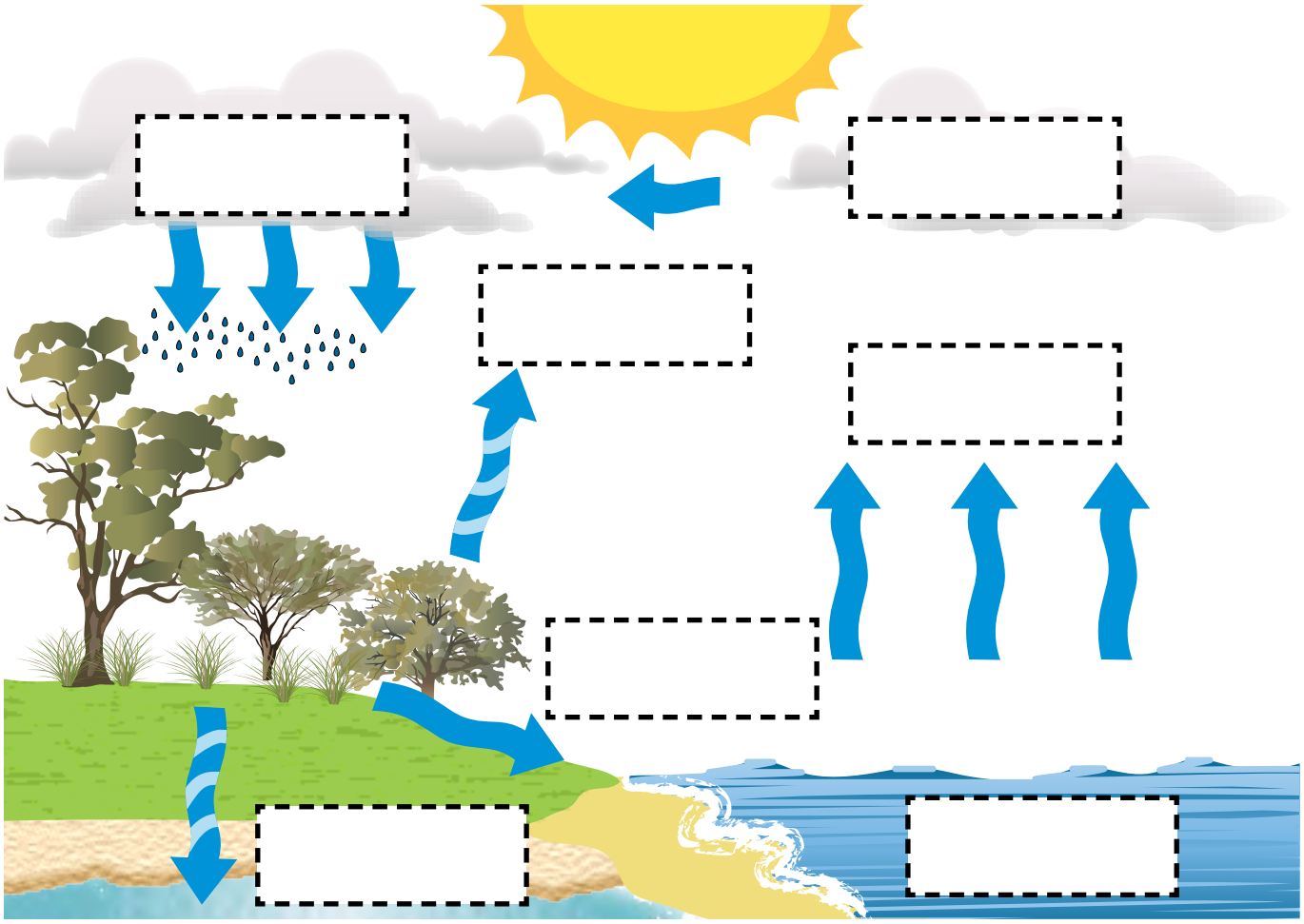


The water cycle

Instructions

1. Cut out the labels and descriptions of the different stages in the water cycle.
2. Try and match up the labels with their descriptions.
3. Paste them on your water cycle diagram in the correct location.

CONDENSATION	**RUN-OFF**	Water vapour (gas) is released into the atmosphere from the leaves of plants and breathing animals.	Cold air causes the water vapour (gas) to condense and form clouds. This can also occur on the ground as dew and fog.
COLLECTION	**TRANSPIRATION**		
EVAPORATION	Water vapour in clouds forms large droplets (liquid) that fall back to Earth in the form of rain (liquid), hail (solid), sleet (solid), or snow (solid).	The sun heats up the water in rivers, lakes or the ocean and turns it into water vapour (gas).	When water (liquid) comes together it forms streams, lakes, oceans and glaciers (solid).
INFILTRATION		When the water runs along the ground.	Water soaks into the soil and into the ground water.
PRECIPITATION			



Full of life

Everywhere on our planet there is life. From the polar-ice caps and deepest oceans to the highest mountain peaks, life has found a way to exist. In fact, on Earth, there are so many different living things that we are yet to discover and identify them all.

BIODIVERSITY (biological diversity) is a term that is used to describe the variety of living things on Earth. The biodiversity of our planet encompasses all life from the smallest microorganism to the largest mammal.

There are considered to be three basic levels of Biodiversity:

1. The number and kinds of species.
2. The Earth's ecosystems (habitats); its savannas, rainforests, oceans, forests, plains, marshes, deserts and all the other environments.
3. The genetic diversity; all the different genetic variations between species.

The biodiversity of the Gippsland Lakes area is extremely important for us to look after. Humans have been the overwhelming cause of the destruction and alteration of the natural ecosystems of creatures we share the planet with. We have a responsibility to try and protect and preserve these environments for future generations to enjoy.

Habitat for biodiversity

The term habitat describes the environment in which an organism lives. When we look at an organism's habitat we look at shelter, food and water. An environment that is "biodiverse" provides habitat for the many different plants and animals that live there.

Looking after the health of our environment helps to:

- Maintain a balance in water tables for productive agriculture.
- Allow clean water flows (locally and regionally).
- Provide clean air.
- Increase soil health.
- Support functioning ecosystems.
- Provide a habitat for wildlife.

Gippsland landscapes

The Gippsland Lakes is a diverse area made up of a number of different landscapes. Each of these landscapes has a function and place within the catchment. Find "The Landscape" page on the Love Our Lakes website to answer the following questions.

www.loveourlakes.net.au

The Landscape

1. What are the 3 largest lakes that make up the Gippsland Lakes?

   . . . . . .

2. Which is the largest lake and what is its surface area?

   . . . . . .

3. What are the five main rivers that drain into the Gippsland Lakes?

   . . . . . .

   . . . . . .

4. What is the deepest part of the Gippsland Lakes?

   . . . . . .

Ecosystems

5. What are the three main factors that determine where vegetation grows in the Gippsland Lakes area?

   . . . . . .

6. What are the types of forests and woodlands that you can find in the Gippsland Lakes area?

   . . . . . .

   . . . . . .

7. Scrub and grasslands exist close to the coastal beaches. What are some species you may find in these areas?

   . . . . . .

8. What type of ecosystem are you likely to find around lake margins?

   . . . . . .

9. What is the one of the important plants that you will find growing in the lages themselves?

   . . . . . .

10. List the main human landuses.

    . . . . . .

    . . . . . .

Wetland wonders

Wetlands play an important role in the environment. They provide the following services or functions:

- Filter nutrients and rubbish out of the water. This is why they are used to hold stormwater run-off in many urban areas.
- Slow water flow down allowing fine sediments to settle. This helps to reduce erosion that might be caused by storm action.
- Protect biodiversity and provide homes to a large variety of animals including birds, insects, frogs, reptiles, small mammals and fish.


Photo: K. Coleman

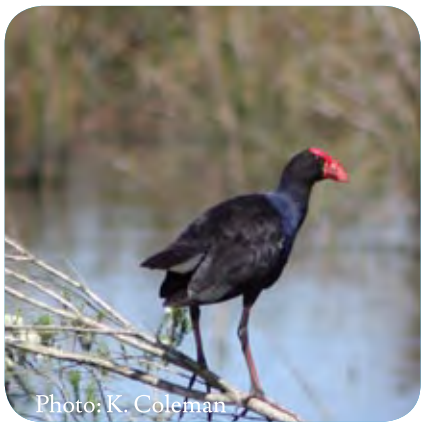
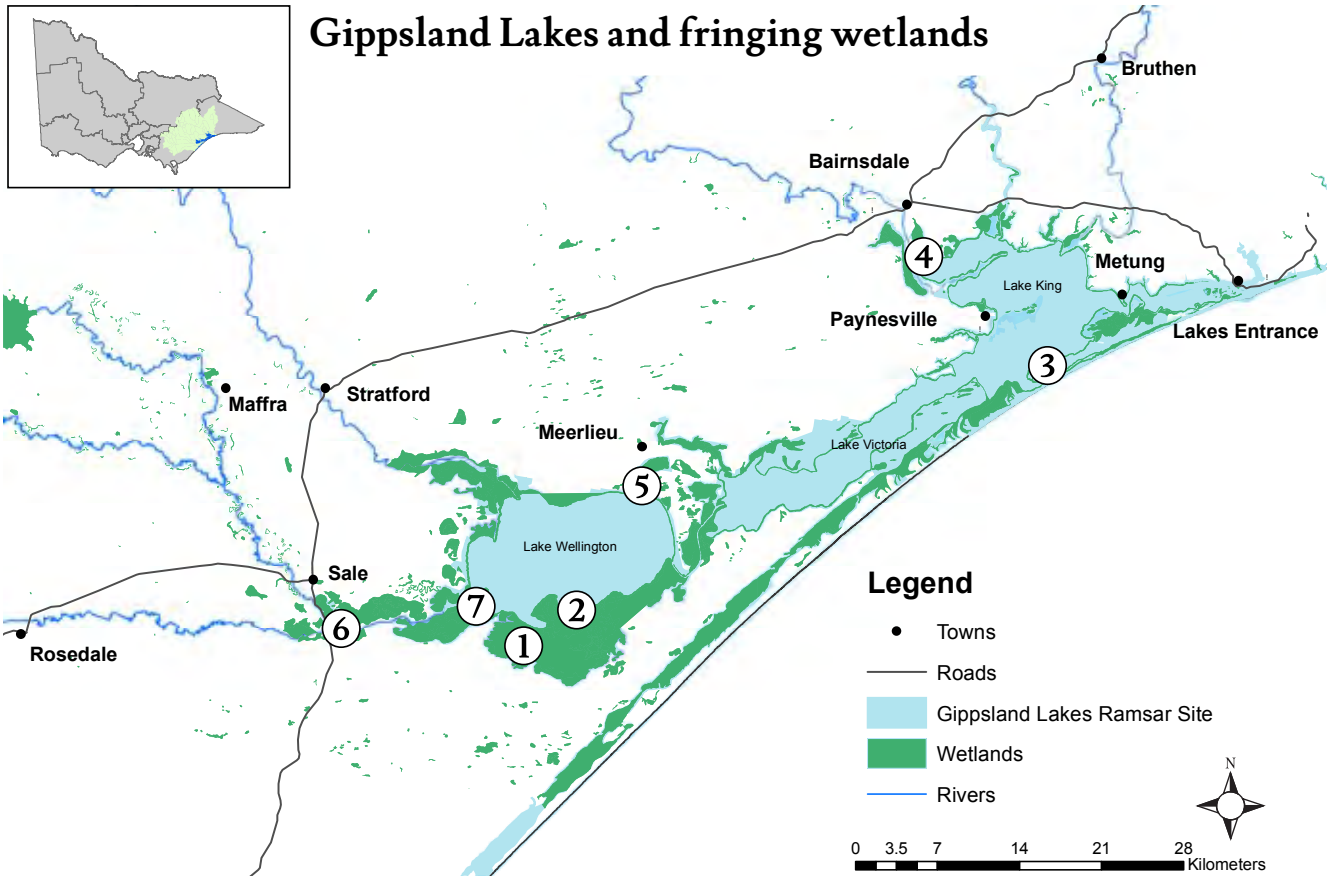


Photo: K. Coleman

The Gippsland Lakes are a Wetland of International Importance under the Ramsar Convention. The Lakes and surrounding wetlands provide important feeding, resting and breeding habitat for 86 water bird species and support up to 40-50,000 water birds. Many of the birds fly from the Arctic and Japan to visit the Lakes each year.

Some significant wetlands around the Lakes include Lake Coleman (1) and Tucker Swamp (2), Bunga Arm (3), Macleod Morass (4), Roseneath Wetlands (5), the Sale Common (6) and Dowd Morass (7). These wetlands have been identified for their ecological importance to breeding water birds.



Impacts on wetlands

Background

This is an *observation* and *inference* activity. You must observe the various users of the wetland. These can be humans, animals and plants. From these observations you need to try and infer what impact they may have on the wetland. This may be good or bad.

To infer means to suggest an answer.
See these examples below.

Example 1: Lots of algae in the water ***infers*** that a lot of extra nutrients are being washed into the wetland.

Example 2: A local Landcare group plants hundreds of trees, shrubs and grasses along a waterway, this ***infers*** that these plants will improve the health of the waterway.

Your task

There are many creatures that use the wetland. They include plants, wildlife and humans. Knowing your users helps you to look after your wetland better.

Have a look at your local wetland or waterway (on a field trip or use photographs), identify the users and find out what impacts they might have on the wetland. These impacts can be good or bad. Write these observations and why they are good or bad impact in the table below. Discuss your answers with the class.

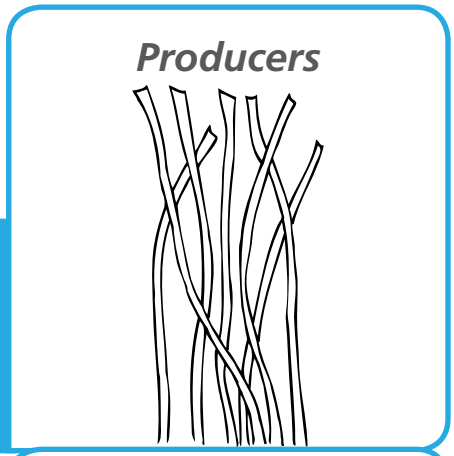
When looking after a waterway we need to understand what is happening around us. This includes how water is treated upstream, downstream and in the surrounding community.

Plants	***Bad Impact***	***Good Impact***
Wildlife	***Bad Impact***	***Good Impact***
Humans	***Bad Impact***	***Good Impact***

Wetland food web

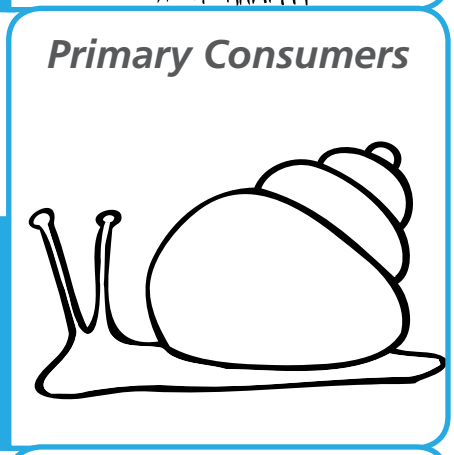
A FOOD CHAIN is a 'chain' of organisms, through which energy is transferred. Each organism in the chain feeds on and obtains energy from the one preceding it. We can combine multiple chains to create a FOOD WEB.

A food chain always starts with a PRODUCER. They produce the first level of energy in the chain. These are usually always plants, but can include microscopic organisms like plankton and diatoms.



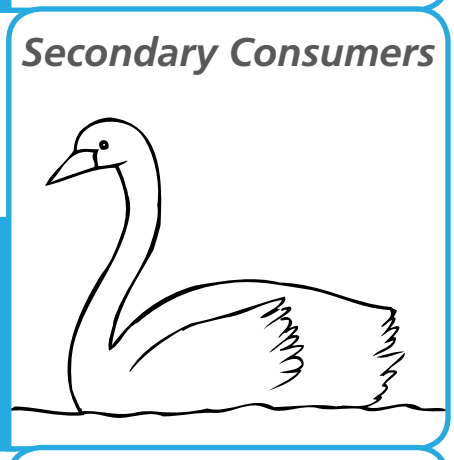
Energy is always shown in a food chain or food web as a one-directional arrow.

PRIMARY CONSUMERS are generally the vegetarians (herbivores) of the animal world. These animals eat the producers and get energy from them. Just like when we eat an apple or banana; it gives us energy.



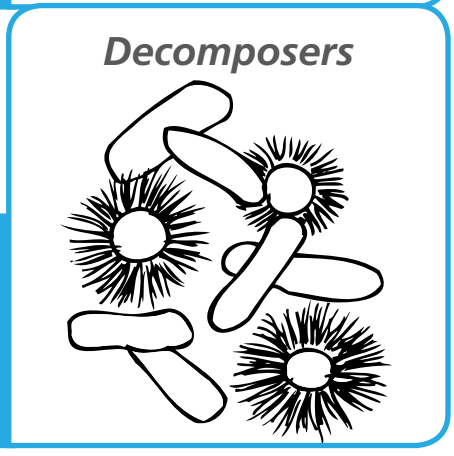
Animals that can be both primary and secondary consumers are called onmivores.

The Next level are the SECONDARY CONSUMERS. These are generally the carnivores as they eat other animals. They get lots of energy from eating the primary consumers.



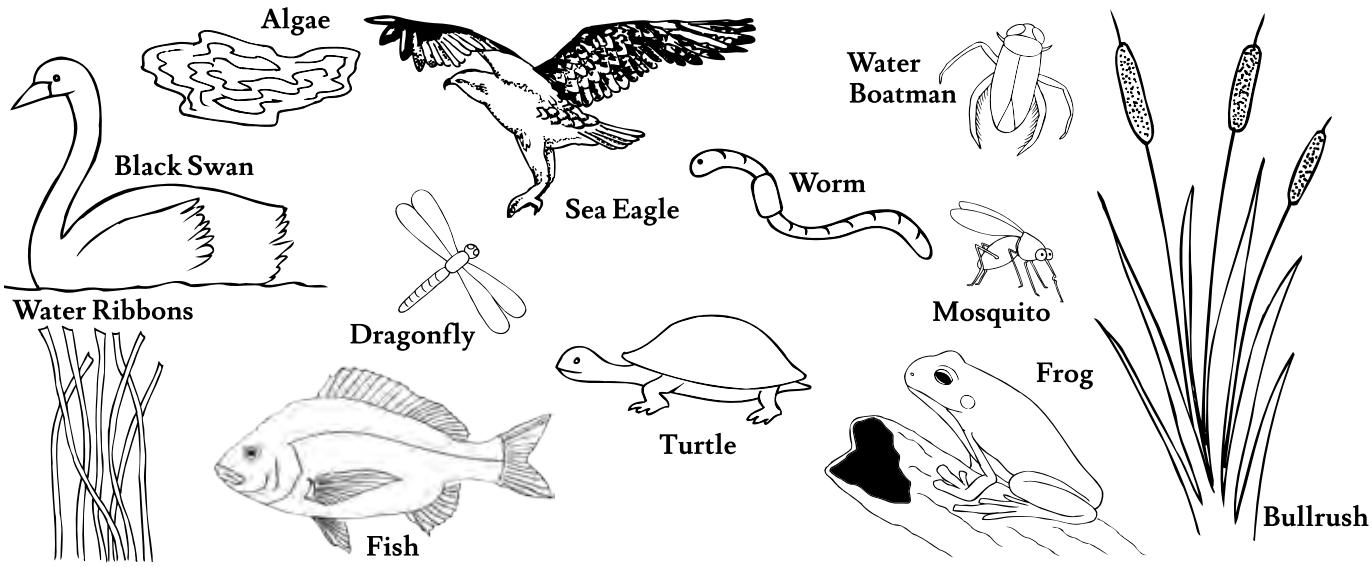
There can be higher levels of consumers, and this depends on how complicated your food chain is.

Lastly, we have DECOMPOSERS. These are the bacteria, fungi and insects that break down dead organic material (plants or animals) and return that energy back to the soil for producers to use.



Wetland food web

Using the wetland diagram, write the names of the plants and animals into their correct category. See how many food chains can you make using arrows to show who eats what. After you have finished creating your food chains, answer the questions provided.



Secondary Consumers

Primary Consumers

Producers

1. Can you find any Tertiary Consumers (they eat the Secondary Consumers)? If so, what are they?

2. Are there any species that can fit in both the Primary and Secondary Consumer categories? If so, what are they?

3. Can any of these be a Decomposer? If so, what are they?

Birds of a feather...

Variety of waterbirds

Waterbird abundance and diversity is one of the most important aspects of the Gippsland Lakes. The Lakes provide important feeding, resting and breeding habitat for 86 waterbird species, many of which are listed under international conservation agreements.

Important breeding sites for waterbirds in the Gippsland Lakes include Lake Coleman, Tucker Swamp, Bunga Arm, Macleod Morass, Roseneath Wetlands, Sale Common and Dowd Morass.

It is important also that breeding waterbirds are not disturbed or they can abandon their nests leaving eggs or chicks to die. Some species, such as the fairy terns and little terns that breed at Bunga Arm are particularly vulnerable. These little birds make scrapes on the sand that they lay their eggs in. This leaves them vulnerable not only to predators, but disturbance by people and unleashed dogs.

A long way to travel

Migratory birds that enjoy our Australian summer include snipe, sandpipers and terns whilst birds that winter here include the cattle egret and double banded dotterel.

The international birds that visit Australia are part of the East Asian-Australasian Flyway and most of them migrate from breeding grounds in North-east Asia and Alaska to non-breeding grounds in Australia and New Zealand, covering the journey of 10,000 kilometres twice in a single year.

The lifecycle of many international migratory shorebirds involves:

- breeding in northern hemisphere (May to August);
- migrate to the southern hemisphere (August to November);
- feeding and foraging in the southern hemisphere (August to April); and
- migrate back north to breed (March to May).

Note: Some species will feed and forage in the northern hemisphere and travel south to breed in the southern hemisphere.

Sharp-tailed Sandpipers fly to the Gippsland Lakes from the Russian Artic. They feed in the Lakes during summer. Restoration works are happening at Marlay Point to make the area more attractive to them.

On the move

The Gippsland Lakes are home to important breeding sites for waterbirds. The local Gippsland BirdLife volunteers have recorded breeding pairs of a number of waterbirds. Their results are below.

1. Lake Coleman: Australian pelican (50 pairs); Australian white ibis (400 pairs); Straw-necked ibis (320 pairs); Black swan (125 pairs); Little black cormorants (75 pairs).

2. Tucker Swamp: Australian pelican (200 pairs); Little pied cormorants (750 pairs); Australian white ibis (730 pairs); Straw-necked ibis (610 pairs); Black swan (275 pairs); Large egret (20 pairs); Little black cormorants (275 pairs).

3. Bunga Arm: Australian pelican (200 pairs); Little tern (25 pairs); Fairy tern (3 pairs); Hooded plover (2 pairs).

4. Macleod Morass: Australian white ibis (300 pairs); Little pied cormorants (250 pairs); Straw-necked ibis (300 pairs); Large egret (25 pairs); Little black cormorants (100 pairs).

5. Roseneath Wetlands: Australian pelican (125 pairs); Fairy tern (2 pairs); Australian white ibis (275 pairs); Straw-necked ibis (450 pairs); Black-winged stilt (130 pairs).

6. Sale Common: Australian white ibis (350 pairs); Straw-necked ibis (500 pairs); Black swan (500 pairs); Royal spoonbill (140 pairs); Black-winged stilt (30 pairs).

7. Dowd Morass: Australian pelican (150 pairs); Little pied cormorants (1000 pairs); Little tern (20 pairs); Australian white ibis (1500 pairs); Straw-necked ibis (1500 pairs); Black swan (350 pairs); Large egret (50 pairs); Little black cormorants (500 pairs); Royal spoonbill (250 pairs).

Your Task

Your task is to catalogue the number of breeding pairs of each bird at the different locations. Create a table like the one below in your workbook.

Bird Species	Locations							Total Pairs
	1	2	3	4	5	6	7	
Australian Pelican	50	200	200		125		150	725

When you have completed your table, answer the following questions.

1. Which bird species has the most breeding pairs? . . . . . .

2. Which bird species has the least breeding pairs?. . . . . .

3. Based on your answers, which of these two bird species is the most vulnerable to human impact?

   . . . . . .

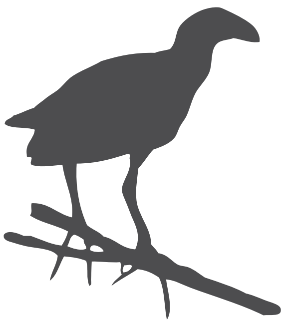
4. Which species appears at the most different locations? . . . . . .

5. Which location has the greatest variety of species? . . . . . .

You can be a citizen scientist

A citizen scientist records animal sightings and sends their results to another scientist. Using the following list, correctly identify the silhouettes below. Use the Internet or a bird identification book if you need help. If you go on a trip near a waterway, record any sightings of your waterbirds.

Swan, Cormorant, Pelican, Sea eagle, Sandpiper, Fairy tern, Swamp hen, Duck, Oystercatcher



Species: ....

Where: ....

Date: ....

Species: ....

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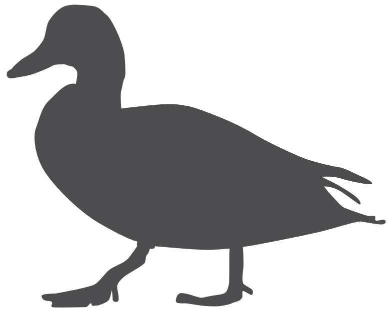
Date: ....



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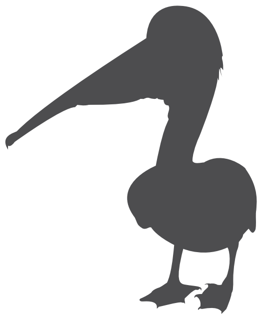

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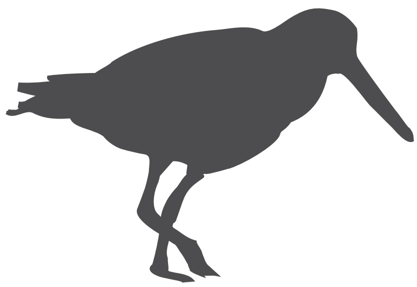

Species: ....

Where: ....

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Species: ....

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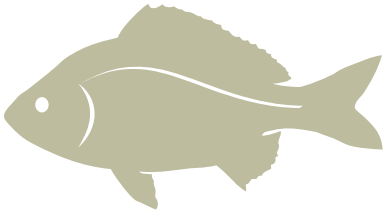
A fishy haven



Recreational fishing is a major attraction for visitors and residents of the Gippsland Lakes. With over 350,000 square kilometres of navigable water, as well as small lagoons, wetlands and river estuaries, there are plenty of opportunities to catch a variety of fish and crustaceans. Some of the most popular fish to catch include black bream, flathead, trevally, luderick, tailor, mulloway, whiting, perch and salmon as well as prawns, abolone and scallops.

Know your limits

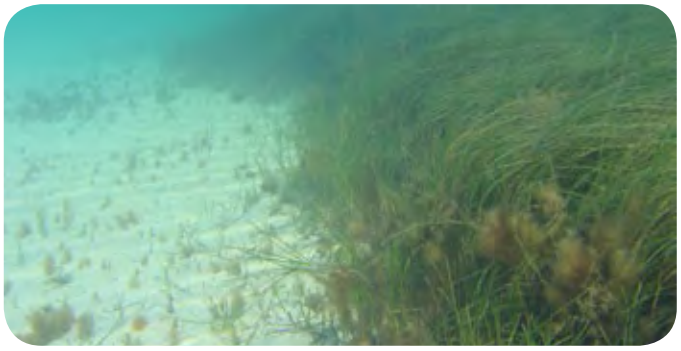
There are a number of regulations that exist to protect and preserve our fish stocks for future generations.

- Minimum size limits protect the juvenile fish and give them a chance to reach breeding age. Maximum size limits also exist and protect large breeding fish that are essential to maintaining fish numbers.
- Bag limits are the maximum number of a particular type of fish that a person may take on one day. Possession limits are the maximum number of a particular type of fish that a person can have in their possession (even in eskies, fridge and freezers).
- Closed seasons are times when it is illegal to take a particular type of fish at all. These are usually in place during breeding times to give the fish a chance to spawn and repopulate.
- Protected species are particular types of fish that you may never take. This is usually because their numbers have decreased and their populations are threatened.

Fish homes

Fish, like all other animals, need homes to live in, food to eat and places to reproduce. This is called their habitat. They may need a variety of different conditions during the different stages of their lives so a healthy ecosystem will provide a range of habitats. The water must be the right type (freshwater, estuarine or saltwater) and have the right temperature, depth, flow and quality. Different types of waterways like pools, billabongs, creeks, streams, rivers, floodplains, lakes and estuaries all provide different habitats for fish to thrive and survive.

Rocks, coral, gravel, sand and mud provide underlying structures that can provide fish with somewhere to shelter from the elements and predators. Vegetation is extremely important to fish habitat. Mangroves, reeds, seaweed, water plants, seagrasses (below left), algae, saltmarsh, overhanging vegetation and even dead wood (snags - below right) provide shelter. Although to us things like snags may look messy, it is important to leave these structures alone to maintain a healthy fish habitat.



K. Coleman

A fishy haven

Case study - Black bream

The black bream is a common species in coastal waters and estuaries across southern Australia and is popular with recreational fishers. The Gippsland Lakes is the largest recreational fishery in Victoria for black bream, producing between 20% and 50% of the total recreational bream catch in Victoria.

Due to its sweet, white flesh and low oil content, the black bream is the most important recreational (and commercial) species in the Gippsland Lakes. This species is widespread in the estuarine waters of the Lakes system however their population was hit hard by the 1997-2009 drought.

Estuary health

Black bream rely on a healthy habitat, a productive food chain and good water conditions to maintain healthy populations within a particular estuary. Hardy as black bream are, they can be seriously affected by water temperature and salinity (salt) changes.

In many estuaries, the impacts of environmental factors are just as important as on stock numbers as pressures from over fishing. These environmental factors include loss of bankside vegetation, increased salinity, acid sulphate soils and increased pesticide, herbicide and fertiliser run-off. That's why maintaining healthy catchments and estuary ecosystems is essential to ensure the sustainability of black bream stocks in the future.

When things go wrong

In summer and autumn, estuaries can get be affected by harmful algal outbreaks that have been caused by excessive nutrients in the warm, still water. During this time a large proportion of black bream eggs, larvae, juveniles and adults are still present in upper estuaries until they are flushed down with the first heavy rains in late autumn. Some algal blooms can be toxic and lead to fish kills as the decaying algae uses up the dissovled oxygen in the water (which the fish breathe).

An ESTUARY is an area of partly enclosed brackish water that forms at the end of a river(s) before it opens to the sea. The Gippsland Lakes and the lower reaches of its feeder rivers are an estuarine environment.

Estuaries form a transition zone between rivers and the oceans. They are influenced by marine action, such as tides, waves and saline water; and riverine action, such as flows of fresh water and sediment.

A healthy underwater home

Below is a diagram of a river ecosytem that is being used not only by the local wildlife that call it home, but also for agriculture and tourism. Look closely at the diagram and answer the following questions.

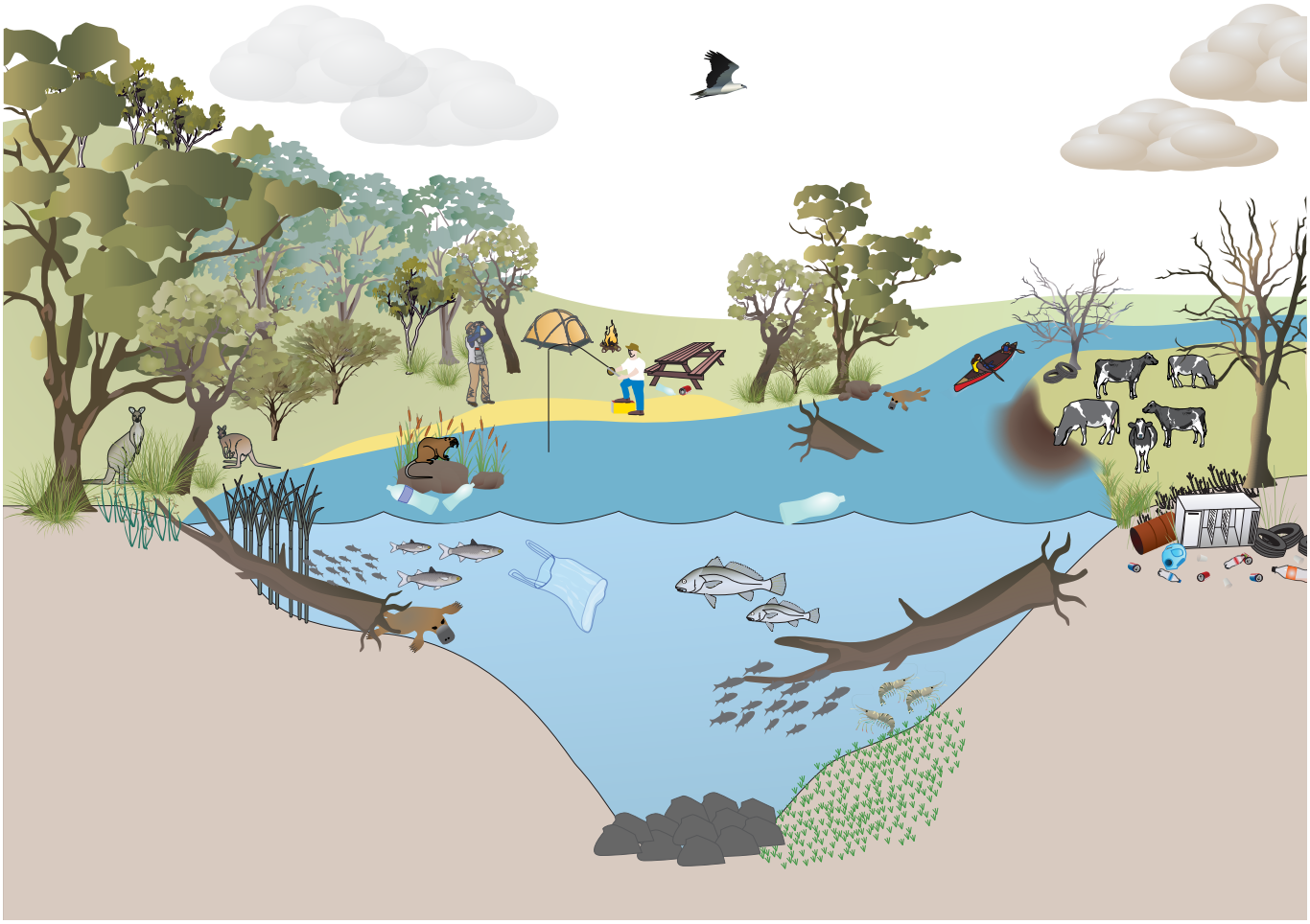
1. How many human impacts can you find? . . . . . .
2. What is happening to the water near the dairy cows? . . . . . .
3. How do you think this could be prevented? . . . . . .

   . . . . . .
4. How many fish habitat elements can you find? . . . . . .
5. Why should we leave dead trees on land or in the water? . . . . . .

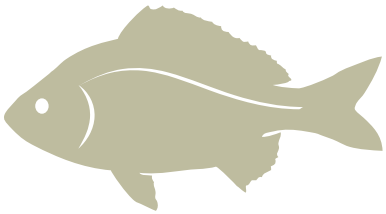
   . . . . . .
6. What should we do to look after our rivers and lakes if we go camping, fishing, bike riding, boating or picnicking along our waterways?

   . . . . . .

   . . . . . .



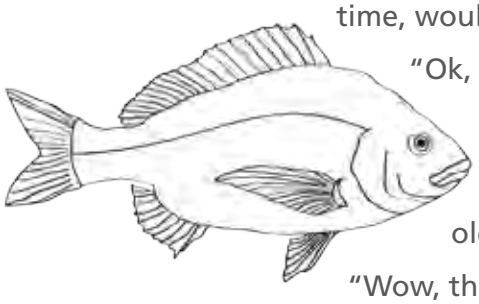
Black bream life cycle



Benny and Belinda's story

Benny and Belinda were black bream who lived in the Nicholson River estuary and on the edges of Lake King. They had been happily living there for about 5 years. It was near the end of the snow melt season in October when Benny asked Belinda an important question.

"Hey Belinda, it looks like all the other fish are heading upstream to spawn. Since this is our first time, would you like to swim with me to join them?" he asked hesitantly.



"Ok, lets go then", she replied to his relief.

Belinda produces tens of thousands of eggs which are covered with Benny's sperm. They can do this several times. When Belinda grows to a large, mature bream (maybe even 29 years old) she could lay up to 6 million eggs per year.

"Wow, that was really exhausting. Let's leave these eggs and go find some food on the seagrass beds before heading deeper into the Lake," Belinda says.

"I totally agree. Let's hope nothing happens to us and we can do this next year," Benny replies.

Belinda, Benny and all the other adults leave their spawn to fend for themselves. In about 2-3 days the fish larvae hatch from their tiny eggs. They grow to around 10mm long after 4 weeks. They are now juveniles. The juveniles "settle" to the bottom of the estuary for protection as they slowly grow. Juveniles can stay in schools among the estuary seagrass beds for four years until they reach maturity.

Create a life cycle

Using the above story you need to create a life cycle of the Gippsland Lakes black bream in your workbook. Include on your life cycle diagram the approximate time between each stage.

Once completed, answer the following questions:

1. Why would juvenile bream stay among the estuary seagrass beds?

   . . . . . .

   . . . . . .

2. If nothing happens to them, how long can bream live for? . . . . . .
3. What other River estuaries would be good spawning ground around the Gippsland Lakes?

   . . . . . .

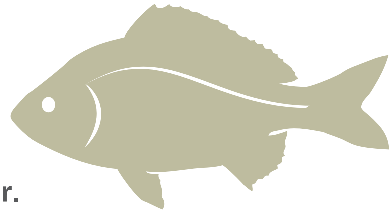
   . . . . . .

4. What do you think could happen to Benny and Belinda that would stop them from spawning next year?

   . . . . . .

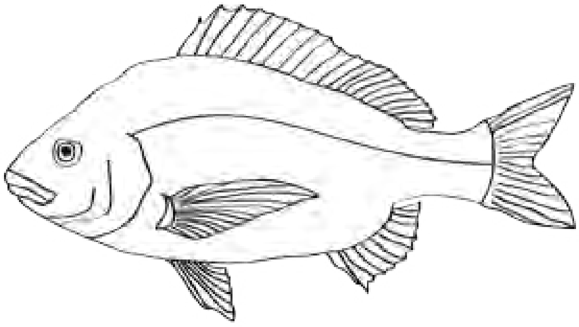
   . . . . . .

Know your fish



Name these common recreation estuarine fish from the following list:
Australian Salmon, Bream, Dusky Flathead, Mullet, Silver Trevally, Tailor.

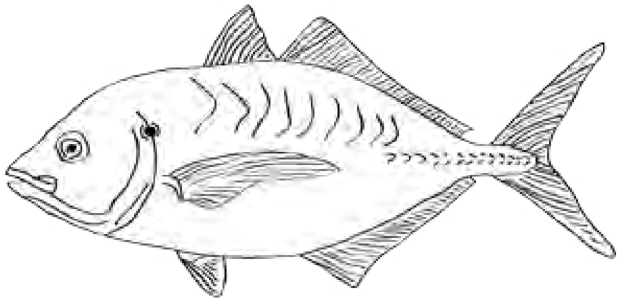
Using the Victorian Recreational Fishing Guide website, identify the minimum size and bag limits.
www.dpi.vic.gov.au/fisheries/recreational-fishing/catch-limits-and-closed-seasons/marine-and-estuarine-scale-fish



Name:. . . . .

Minimum Size:. . . . .

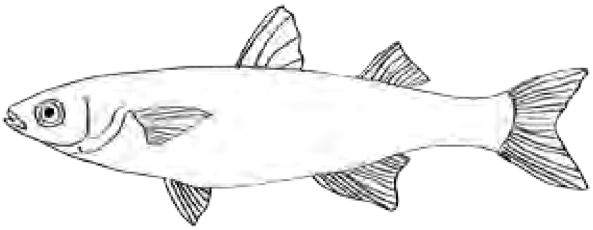
Bag Limit:. . . . .



Name:. . . . .

Minimum Size:. . . . .

Bag Limit:. . . . .



Name:. . . . .

Minimum Size:. . . . .

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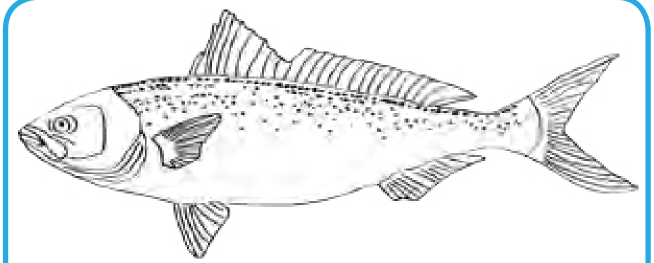

Name:. . . . .

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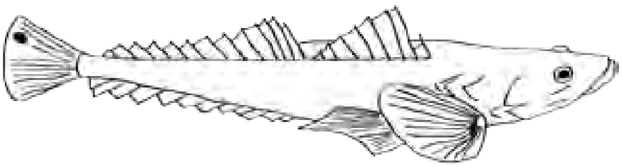
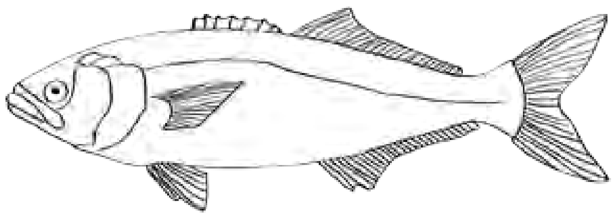
Bag Limit:. . . . .



Name:. . . . .

Minimum Size:. . . . .

Bag Limit:. . . . .



Name:. . . . .

Minimum Size:. . . . .

Bag Limit:. . . . .

On land and in water

Platypus

Description

The platypus (*Ornithorhynchus paradoxus*) is a monotreme, or egg-laying mammal. They have thick brown fur that traps air next to their skin. Males grow to a length of about 60cm, females 50cm. Males have a venomous spur on the inside of their hind leg.

The bill is covered with soft, leathery skin that contains sensitive nerves used for detecting faint electrical fields generated by small aquatic animals that they prey on.

Habitat

Platypus live in freshwater bodies along the eastern seaboard of Australia (including Tasmania). The occurrence of platypus in a water body is limited by available food (water insects and crustaceans) and suitable streambanks for creating burrows. Research suggests that Platypuses prefer native vegetation cover over the water (like eucalypts and wattles).

Quick Facts

Adult platypuses do not have teeth. They have horny plates in their mouth to crush food. Young platypuses have molar teeth, which they lose as they mature.

Platypuses don't have teats, releasing milk through pores in the skin instead.

Water Rat (Rakali)

Description

The water rat (*Hydromys chrysogaster)*, also called the yellow-bellied water rat, Rakali or Australian Otter, is the largest aquatic mammal carnivore in Australia. Their bodies can be up to 35cm long and weigh up to 1.3kg (600-800 grams is more common). They can vary in colour from black to brown-grey and have a distinctive white tip on their tail.

A water rat will come out of the water to feed on insects, fish or crustaceans they have caught.

Habitat

Water rats are widely distributed on both the mainland and Tasmania and on offshore islands. They occupy a wide variety of natural and manmade freshwater habitats, including swamps, ponds, lakes, rivers, creeks and irrigation channels. They also inhabit brackish estuaries and sheltered ocean beaches. Water Rats build burrows in streambanks, or shelter in large hollow logs lying near the water.

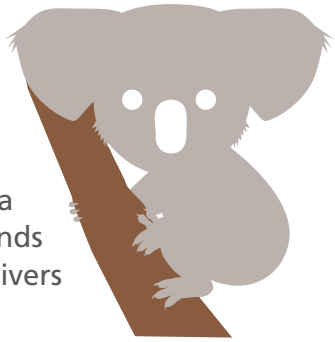
Quick Facts

Water rats will drown if caught in an "opera house" yabby trap. These nets are known to kill large numbers of platypuses and turtles as well.

Water rats will harvest fresh mussels, then leave them in the sun to open before eating them.

www.platypus.asn.au

Mammalian habitat



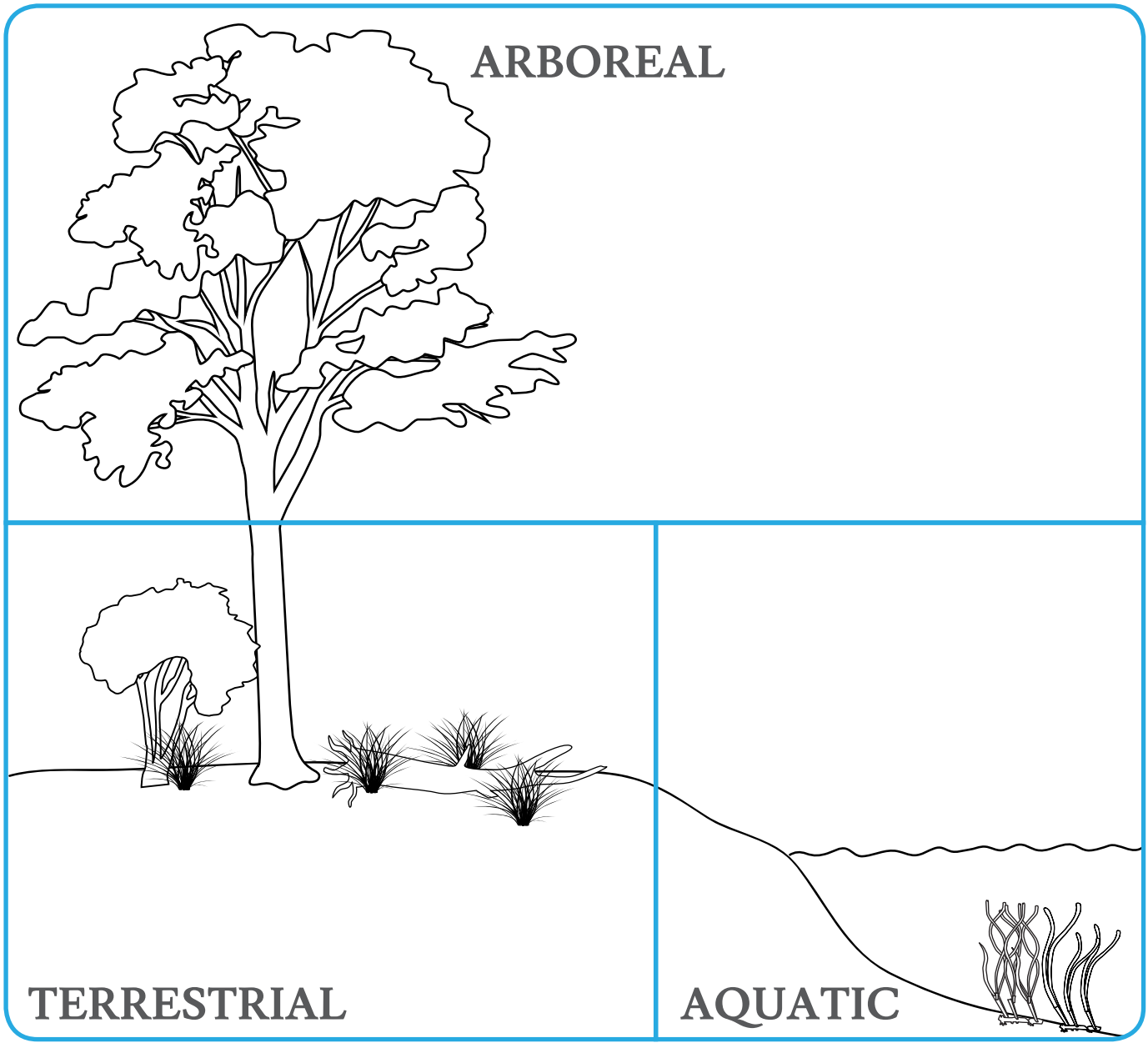
Mammals are a family of animals that are warm blooded, grow hair, have a backbone, breathe air and produce milk to feed young. Mammals live in a variety of habitats. A habitat is where an animal lives, eats, breeds and spends lots of time. Some live in rainforests, others in grasslands and some live in rivers or oceans.

At a broader scale, we can say that mammals are either **AQUATIC** (live mainly in the water), **TERRESTRIAL** (live mainly on the land) or **ARBOREAL** (live mainly in trees).

Sort out the following mammals into their preferred habitat category.

Kangaroo, Seal, Flying-fox, Dolphin, Koala, Water Rat, Echidna, Possum, Platypus, Wombat, Micro-bat, Rock-wallaby, Whale, Antechinus, Seal, Quoll, Sugar Glider, Bandicoot

Choose one mammal from each category, research it and report back to the class. Include its name, conservation status (threatened or common), where it lives, what it eats and its predators.



Dolphin discovery

The Burrunan Dolphin

Dolphins have lived in the Gippsland Lakes for as long as local people can remember. They were mistakenly assumed to be the common bottlenose variety. In 2011, these dolphins were recognised as a new species, the Burrunan dolphin.

Burrunan is an Aboriginal word used in the Boonwurrung, Woiwurrung and Tauurung languages that means 'large sea fish or the porpoise kind'. The scientific name for this species is *Tursiops australis*.

Small populations of these dolphins occur in the Gippsland Lakes and in Port Philip Bay. The Gippsland Lakes currently have 50 resident individuals, meaning that they are in the Lakes all year round. They do not venture beyond the entrance into the open ocean. However, this population does increase over the winter months as other dolphins enter the Lakes system. Further research is needed to determine why this occurs.

The Burrunan dolphins are the only dolphins in the Gippsland Lakes and are seen anywhere from Lake Wellington to Lakes Entrance.

Physical description

The Burrunan dolphin is approximately 2.5m in length and has a distinct tri-coloration pattern, from dark grey on the upper side of the body, a paler grey midline and cream underside. The cream underside can extend over the eye, whilst the grey mid-line forms a shoulder blaze (a brush-stroke pattern) below the falcate (curved) dorsal fin. The Burrunan has broad tail flukes, a prominent rounded head and a short stubby rostrum (nose). Burrunan dolphins are social animals are most commonly seen in pods of 2-30 animals.

For more information go to:

www.ammcf.org.au/burrunan-dolphin

Do you know your dolphins?

Use the information sheet to help you answer these questions.

What does Burrunan mean?

. . . . . .

What is the scientific name of the Burrunan Dolphin?

. . . . . .

Where can the Burrunan Dolphin be found?

. . . . . .

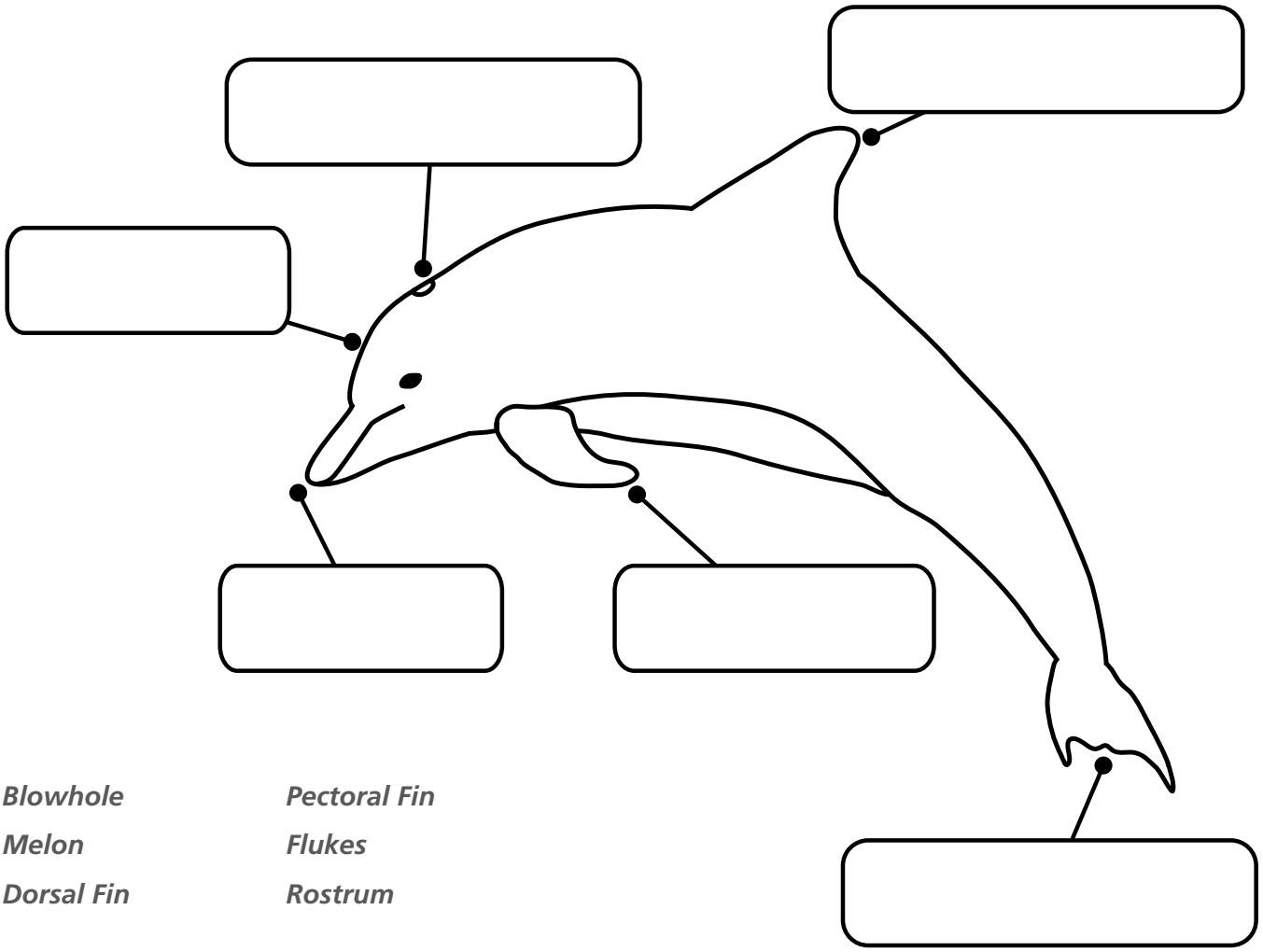
How long is the Burrunan Dolphin? . . . . . .

How many of these dolphins are permanent residents of the Gippsland Lakes? . . . . . .

What is the other dolphin species that these are commonly mistaken for?

. . . . . .

Correctly label the physical features of the dolphin using the clues below.



Blowhole
Melon
Dorsal Fin
Pectoral Fin
Flukes
Rostrum

Threatened species

What is a threatened species?

Australia has been separated from the other continents for millions of years and it has developed a unique biodiversity. There are many species here that cannot be found anywhere else in the world. Unfortunately, some these species numbers have dropped to a point where they are struggling to flourish or survive at all. These species are called "Threatened Species."

Some reasons that plant and animal species become threatened are:

- Predation and competition from invasive plants and animals
- Loss or destruction of habitat
- Alteration of habitat
- Fragmentation of habitat
- Disease
- Food shortage
- Pollution
- Competition from human processes
- Competition from competing species

Green and golden bell frog, Vulnerable

Levels of threat

The Gippsland Lakes area has many plants and animals that have so few numbers they are considered a threatened species. When we talk about threatened species they can be put into a range of different categories depending on the severity of their situation. These levels are identified and enforced by government legislation.

Vulnerable	A species numbers have dropped significantly but it is not yet classed as endangered.
Endangered	A species numbers are so low that it is severely threatened.
Critically Endangered	A species numbers are so low that it is very close to becoming extinct.
Extinct in the wild	There are no more of a species left in their native habitats but there are some in captivity.
Extinct	There are no more of a species left anywhere in the world.

How can we help?

If we all make an effort we can help preserve the biodiversity of our local environment and save many species from becoming extinct. Some ways to help are:

- Conserve/protect existing habitat
- Control introduced plants and animals
- Do not dump weeds or pets in the bush
- Control cats and other pets
- Reuse or recycle whatever you can
- Make compost
- Help provide wildlife corridors

Species under threat

The Gippsland Lakes catchment contains a number of threatened species. Below is a list of some of these threatened plants and animals. See if you can put them under their correct umbrella (on the following page) containing the types of species.

If you are unsure about any of these species ask your teacher or research them in the library or on the internet.

Mammals = 7 Birds = 10 Fish = 3 Plants = 4 Reptiles = 3 Frogs = 3

Alpine she-oak skink (9)
Australasian bittern
Australian Grayling
Australian painted snipe
Brush-tailed phascogale
Colquhoun grevillea
Dwarf galaxias
Dwarf kerrawang (5)
Fairy tern (8)
Gaping leek-orchid (7)
Giant burrowing frog (6)
Green and golden bell frog
Grey-headed flying-fox (1)
Growling grass frog
Leatherback turtle
Long nosed potoroo
Maquarie perch
Masked owl
Mountain pygmy possum (2)
New holland mouse
Powerful owl
Regent honeyeater
Southern brown bandicoot (4)
Southern giant-petrel
Spotted-tailed quoll
Swamp everlasting
Swamp skink
Swift parrot
Wandering albatross
White bellied sea-eagle (3)


1 K. Coleman


2 Zoos Victoria


3


4 Biosphere Bandicoot: biosphere.org.au


5 Gippsland Water

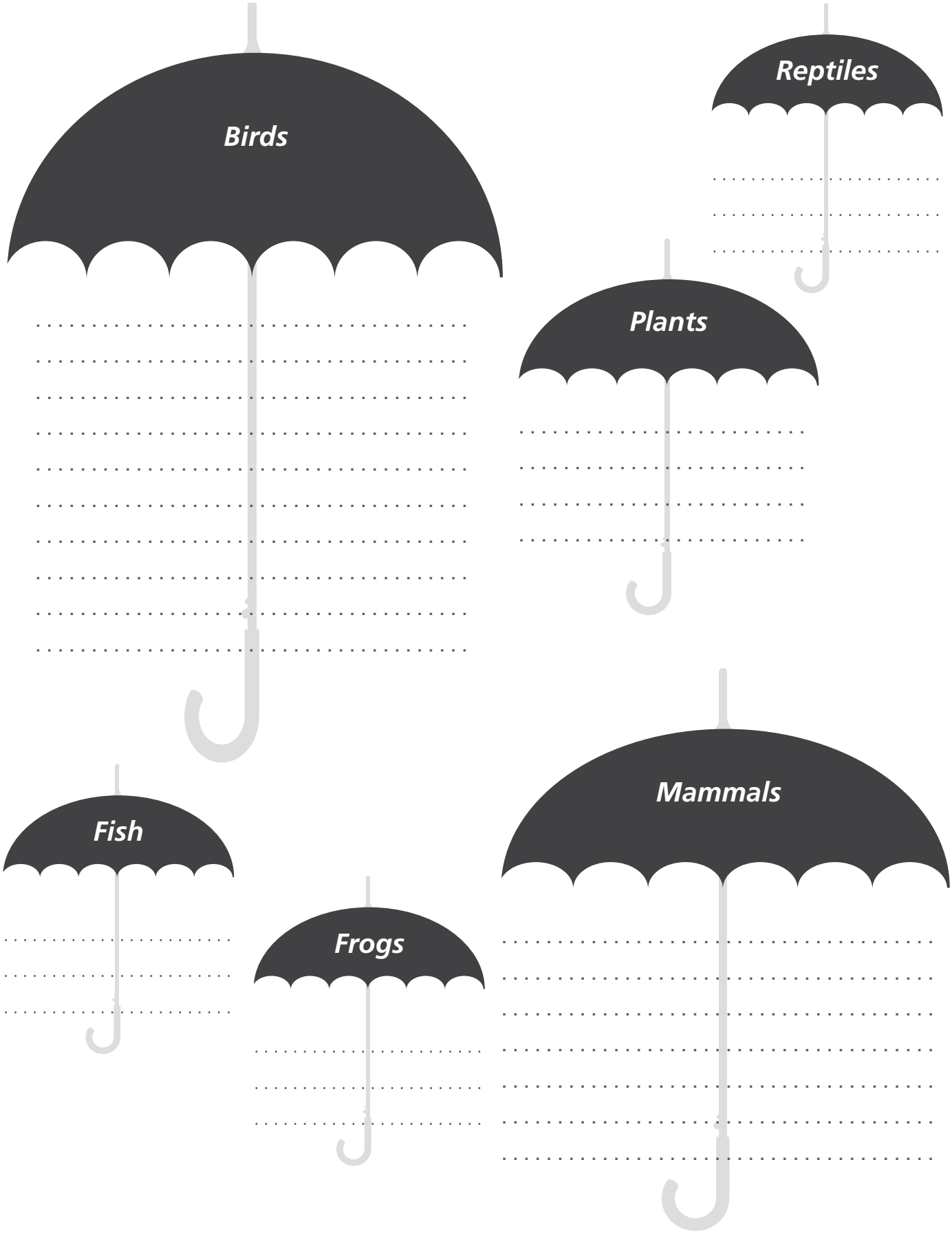

6


7 DEPI


8


9 Zoos Victoria

Species under threat



Species under threat

Choose 5 species from the "Species Under Threat" Powerpoint presentation. Fill in the details below and research where it can be found.

www.envirostories.com.au/wp-content/uploads/2014/01/ES2014-LOL-PPT.ppsx

SPECIES 1

Species name: . . . . . .

Type of species: . . . . . .

Where does it live?. . . . . .

Why is it under threat? . . . . . .

SPECIES 2

Species name: . . . . . .

Type of species: . . . . . .

Where does it live?. . . . . .

Why is it under threat? . . . . . .

SPECIES 3

Species name: . . . . . .

Type of species: . . . . . .

Where does it live?. . . . . .

Why is it under threat? . . . . . .

SPECIES 4

Species name: . . . . . .

Type of species: . . . . . .

Where does it live?. . . . . .

Why is it under threat? . . . . . .

SPECIES 5

Species name: . . . . . .

Type of species: . . . . . .

Where does it live?. . . . . .

Why is it under threat? . . . . . .

People and the Lakes

Enjoying the Lakes

The reason so many people wish to live near or visit the Gippsland Lakes catchment is that it is a beautiful area where you can participate in any number of outdoor activities. Fishing, boating, riding, swimming, water sports (such as diving, skiing, tubing, surfing, kayaking and sailing), hiking and hunting are just some of the numerous activities that people enjoy in the area.

The Lakes catchment supports this wide array of activities due to the variety of different landscapes that it contains. From the mountains to the sea the entire region supports a country lifestyle that everyone can enjoy.

The people, whether living there or visiting, have a responsibility to protect and preserve the local environment so everyone can enjoy this wonderful area for generations to come.

Photo: K. Coleman

Working together

Within the Gippsland Lakes catchment there is a strong sense of community with many people dedicating their time to ensure the Lakes system remains healthy. Community groups inlcude Landcare, Greening Australia, Waterwatch, Fishcare, Coastcare, Trust for Nature, Friends of the Gippsland Lakes Parks and Reserves, Trust for Nature, Conservation Management Network, Field Naturalists Club of Victoria and Birdlife Australia. These organisations are always looking for new members to help their tireless work.

What you can do

Here are a few helpful tips that you can use to keep the Lakes healthy.

- Around the home or office, try and recycle glass, plastics, paper, oils and metals whenever you can as this reduces the amount of waste that goes to landfill.
- Save water by setting up systems to reuse grey water, fix dripping taps and washing your car, bike or boat on the lawn.
- Use biodegradable detergents in the house, office and on the car. Biodegradable products are very common and they are identified by an NP (No Phosphorus) symbol on the packaging.
- Remember to put your rubbish in the bin or, if there isn't a bin near you, take you rubbish home and then put it in the bin – use your brain and not the drain!
- If you're going fishing, then make sure you stick to bag and size limits so that you can enjoy more fishing trips in the future.

Human impacts

A little bit of litter goes a long way

Have you ever noticed the rubbish that washes up around the lake shore, or maybe you've seen rubbish blowing around the streets in your town or along the highways? Next time, stop and think about how long that rubbish will stay around for and where it will end up. If rubbish can be transported by water (down rivers), then it will end up in the Gippsland Lakes.

All this rubbish doesn't just magically disappear, it will often site around leaching chemicals into the environment, or sometimes they get caught in animals (such as fishing line and hooks) and some rubbish is even eaten by animals such as birds, whales, dolphins, seals and sea turtles.

Wherever you are in the Gippsland Lakes catchment, or anywhere else, always put your rubbish in the nearest bin. If there is no bin around, be responsible and take your rubbish with you and put it in a bin at home. If you see rubbish blowing or lying around, be a good citizen, pick it up and put it in the bin.

Algae is part of the system

Algae are a diverse group of plants and mostly microscopic. In low numbers they are not highly visible and are an important part of the food web. They produce oxygen and are an important food and habitat source for fish, water birds and invertebrates.

We generally see algae as 'algal blooms', which are made up of millions of alga. A bloom may suddenly appear as a thick, smelly, green, paint-like scum on the surface of a river, lake or dam. Blooms appear quickly as algae are capable of dividing and doubling in number every 2 or 3 days.

Algal blooms

Some algal blooms can cause problems. They can look unattractive, smell horrible and make the water taste unpleasant. Also some species produce toxins which, following contact, can cause skin irritation, diarrhoea and vomiting as well as other more serious side effects. When an algal bloom dies, the decaying algal cells use up the available oxygen in the water which can result in fish kills.

Reduce the bloom and look after the lakes

Some of the main factors that contribute to algal growth are abundant nutrients, warm weather and relatively still, calm conditions. Limiting the nutrients entering our waterways and lakes may assist in controlling algal growth. Protecting and revegetating our lake foreshore and riverbanks is one way to help minimise algal blooms. For more information go to www.gippslandlakes.net.au or www.water.vic.gov.au

Just bin it!

People use the rivers and lakes for many different reasons. Some people look after the environment by correctly putting their rubbish in the bin or taking it home, while others do not. Your job is to find a spot in the Gippsland Lakes region and conduct a quick rubbish survey.

Rubbish survey

Where is my area? . . . . . .

Describe the size of the area. . . . . .
(For example, the size of a house, sports oval)

Date of my survey. . . . . .

Weather conditions for the past 7 days.

☐ Rain ☐ Wind ☐ Dry ☐ Sunny ☐ Cloudy

Why would the weather conditions affect the amount of rubbish found?

. . . . . .

Are there any rubbish bins in or near the area? Tick what type and record how many.

☐ General rubbish bin . . . . . ☐ Recycling bin . . . . . .

Count up the number of rubbish items you found and record them on the table below.

Types of items	Tally of items	Can this be recycled?
paper & cardboard		
plastic (bottles, plates)		
metal (cans)		
glass		
food scraps		
other (shopping trolleys, fishing gear)		

Remember to collect any rubbish wearing gloves (if you have them) and always wash your hands with soap and water after picking up rubbish. Always ask an adult to help with dangerous items like broken glass. Never pick up items like needles.

What can we do?

Talk to your local Council about getting an extra bin put in the area.

If you can identify the supplier of the rubbish, such as a takeaway store, present them with your findings and ask if they could help the Lakes by reducing the amount of packaging they use.

Further information

Love Our Lakes . . . . . www.loveourlakes.net.au

Gippsland Lakes Ministerial Advisory Committee . . . . . www.gippslandlakes.net.au

Bataluk Cultural Trail . . . . . www.batalukculturaltrail.com.au

Ramsar Convention on Wetlands . . . . . www.ramsar.org

Gippsland Lakes Ramsar Site Ecological Character Description . . . . . www.environment.gov.au/resource/gippsland-lakes-ramsar-site-ecological-character-description

Environment & Wildlife (DEPI) . . . . . www.depi.vic.gov.au/environment-and-wildlife

Australian Marine Mammal Conservation Foundation . . . . . www.ammcf.org.au

Australian Platypus Conservancy . . . . . www.platypus.asn.au

Birdlife Australia - Education . . . . . www.birdlife.org.au/education-publications/education

ResourceSmart AuSSI Vic . . . . . www.sustainability.vic.gov.au/Services-and-Advice/Schools

Gippsland Water . . . . . www.gippswater.com.au/CommunityandEducation.aspx

Yarra Valley Water . . . . . www.yvw.com.au/Home/Inyourcommunity/Education/index.htm

Gippsland Regional Waste Management Group . . . . www.grwmg.vic.gov.au/how-can-we-help.html