

# Module 2: 3-4

---

Meet the frogs



Melbourne Water Frog Census

 **Melbourne  
Water**  
Enhancing Life and Liveability



## Module 2: 3-4

Meet the frogs

### Meet the frogs (Years 3–4)

*Lesson plan*

#### Introduction

Each waterway in Melbourne is a distinct ecosystem, home to different species of frogs to discover. Students will learn about these species and explore the life strategies of these frogs to determine how they have evolved to survive in the habitats they live in.

These activities use digital applications such as Melbourne Water's Frog Census and Google My Maps to develop students' ICT skills.

The Frog Census app is a powerful citizen science tool that enables students, their families and the wider community to contribute to understanding the biology and distribution of frog species in Melbourne; information that will help to develop effective policy and management strategies to conserve and enhance these populations.

#### Activity 1: What is alive?

Students distinguish between living and non-living things, vertebrates and invertebrates.

#### Activity 2: A frog's life

Students discover life strategies of different species of frogs.

#### Activity 3: Know your frog

Students use the Frog Census app to make predictions about why different life strategies assist their survival and appreciate the importance of good habitat for their survival. Students research one frog and present their information to the class.

#### Activity 4: Frog census data mapping

Students participate in a frog census simulation to experience how it works.

Students plot frog census data on a hand-drawn map and then digitally using an app such as Google My Maps.

#### Victorian Curriculum F–10<sup>1</sup> links:

##### Science

##### Levels 3 and 4

##### Science Understanding

##### Science as a human endeavour

Science knowledge helps people to understand the effects of their actions (VCSSU056)

##### Biological sciences

Living things can be grouped on the basis of observable features and can be distinguished from non-living things (VCSSU057)

Different living things have different life cycles and depend on each other and the environment to survive (VCSSU058)

##### Digital Technologies

##### Digital Systems

Explore a range of digital systems with peripheral devices for different purposes, and transmit different types of data (VCDTDS019)

##### Data and Information

Recognise different types of data and explore how the same data can be represented in different ways (VCDTDI020)



<sup>1</sup> Victorian Curriculum and Assessment Authority (VCAA)  
<<http://victoriancurriculum.vcaa.vic.edu.au/>> Accessed 5 February 2017.





## Module 2: 3-4

Meet the frogs

### **Activity 5: Conducting a frog census in our local area—excursion or at-home activity**

Students use the Frog Census app or datasheet to find frogs in their local area and discover how frogs have adapted to their environment.



Melbourne Water Frog Census





## Module 2: 3-4

Meet the frogs

### Activity 1: What is alive?

Students distinguish between living and non-living things. They also discover what makes an animal a vertebrate or an invertebrate and explore how vertebrates are grouped—focussing on amphibians (frogs).

### Equipment

Digital or printed pictures of living things (e.g. plant, worm, frog, dog, elephant, butterfly)

Non-living items (e.g. pencil, book, rock, necklace, table)

Online word cloud generator e.g. Wordle <[www.wordle.net](http://www.wordle.net)>

A3 paper to print to print the word cloud

### Preparation

Find pictures of living things and print or insert into a PowerPoint file or other display.

Find some non-living items in the classroom that students are familiar with.

### Activity steps

#### Comparing living and non-living

1. Ask students how they tell the difference between living and non-living things. Students rule up a chart as pictured below or create a class chart.

Living	Non-living	Why?

2. Display digital or printed pictures of living things and ask students to name each one. Students add the name of the thing into one of the first two columns. Next, ask them to explain why they think the thing is living or non-living.
3. Show students items of non-living things. As above, students list them under one of the first two columns and explain why.
4. Review the answers as a class to see which ones might have made students think twice.
5. Based on these answers, students predict what makes something living. For instance:
  - living things need food and water
  - living things reproduce
  - non-living things don't move on their own.





## Module 2: 3-4

### Meet the frogs

6. Students suggest other things and discuss whether they are living or non-living.
7. Ask students if all living things are the same. How are they different?

#### **Vertebrates and invertebrates**

8. Students compare a frog with a worm. They are both slippery and soft but frogs have bones and worms don't. A frog is a vertebrate (has a backbone or spinal column) while worms are invertebrates (no backbone).
9. Within the group of vertebrate animals, there are different types. Ask students to name some animals they know and predict whether they are vertebrate animals or invertebrate animals. Ask students what group frogs belong to.
10. Students to write down words they associate with frogs. For example:
  - four legs
  - webbed toes
  - call
  - tadpole
  - egg
  - nocturnal
  - living
  - vertebrate
  - water
  - amphibian.
11. Add the words into a word cloud generator such as Wordle <[www.wordle.net](http://www.wordle.net)>: this creates a word cloud of all the words associated with frogs. Type each word as it is suggested, even if it appears multiple times. The greater the number of repetitions, the bigger that word appears in the word cloud. Please note that some word cloud generators only detect single words (e.g. webbed toes would not stay together when the word cloud is created).
12. Print an A3 copy of the word cloud and display it in the classroom. This can be used as a starting point for future lessons on frogs or as a summary of students' understanding.

#### **Additional activity**

Investigate an invertebrate animal that frogs eat, such as a mosquito or a fly.





## Module 2: 3-4

Meet the frogs

### Activity 2: A frog's life

Students explore the fact that every animal has a life cycle. In this activity, students investigate the life cycle of a frog—from egg to tadpole to froglet to frog. They explore how their life cycle is related to growth and survival.

#### Equipment

*Life cycle of a frog* (Worksheet 1) for class display

Butterfly life cycle

Lizard life cycle

*A beginners guide to frog identification*

<<https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Pages/Frog-Census.aspx>>

*Know your river* booklets

<<https://www.melbournewater.com.au/getinvolved/education/educationalresources/Pages/teacher-resources.aspx>>

Pictures books e.g *From tadpole to frog* by A Ganeri (Appendix—Resources)

For each group:

one set of *Life cycle of a frog* (Worksheet 1) stages

#### Preparation

Find diagrams of butterfly and lizard life cycles.

Cut up one *Life cycle of a frog* (Worksheet 1) per group to make a set of frog life cycle stages; you could laminate them.

#### Activity steps

##### The life cycle of a frog

1. Discuss the idea that, like all animals, frogs have a life cycle. Think about a human's life cycle. We are born as a baby, grow into a toddler, child, adolescent then adult. Some animals look similar during their life cycle (*humans, dogs*) but others transform. Can you think of such an animal?
2. Display the butterfly life cycle on the whiteboard and discuss the stages. Likewise, display a lizard life cycle on the whiteboard and discuss its stages. Briefly compare the two life cycles. What are the differences and similarities?
3. Working in groups, students put the frog's life cycle in the correct order.
4. Display the frog life cycle on the whiteboard. Students check the order of their pictures and correct if necessary. Discuss each stage and compare it with the butterfly and lizard life cycles.

##### Growth and survival

5. Ask students what aspects of a frog's life cycle they would like to know more about.

For example:

How many eggs do frogs lay? Why do they lay so many eggs?



Melbourne Water Frog Census





## Module 2: 3-4

### Meet the frogs

What advantage is there in having a tadpole stage?

Why do they change so much in their life?

Why do they change from living in water to living near water?

Use these inquiry questions as a starting point to learn more about the frog's growth and survival.

#### Life strategies

6. Frogs have many adaptations that aid their growth and survival. Display some or all of the following adaptations and briefly discuss how the particular life strategy assists their survival.
  - Frogs call at different times of the year.
  - Some frogs call during the day and some at night.
  - Some frogs burrow.
  - Only males call to attract females.
  - Frogs lay hundreds of eggs.
  - Tadpoles eat algae.
  - Frogs are camouflaged.
  - Some frogs can change colour.
  - Some frogs have bright colours.
7. Students choose a particular life strategy and represent it visually. This could be in the form of a drawing, a craft project or a story.

#### Example 1

Frogs lay hundreds of eggs. How does this aid their growth and survival? Not all of the eggs survive so the chances of survival are greater with a larger number of eggs.

This could be represented by a picture of the eggs being eaten by a predator, the frog moving on and only some eggs making it to adulthood. It could also be represented by a story.

#### Example 2

Some frogs burrow. How does this aid their growth and survival? Burrowing helps frogs survive in Australia's hot and dry conditions.

This could be represented by a drawing of a frog in a burrow with the sun shining hotly in the sky. It might also be represented by a paper mache or felt frog hiding in a burrow.

#### Example 3

What is the advantage of the tadpole stage? Tadpoles live in water and eat algae so don't compete with adult frogs for food. This could be represented by a drawing, animation or story of a tadpole eating algae and a frog eating insects.

#### Example 4





## Module 2: 3-4

Meet the frogs

What is the advantage of camouflage? It makes it harder for predators to find. Create origami frogs to demonstrate camouflage. Colour in and stick on the background (habitat).

8. Make a classroom display of the students' work and invite other classes to view it.



Melbourne Water Frog Census





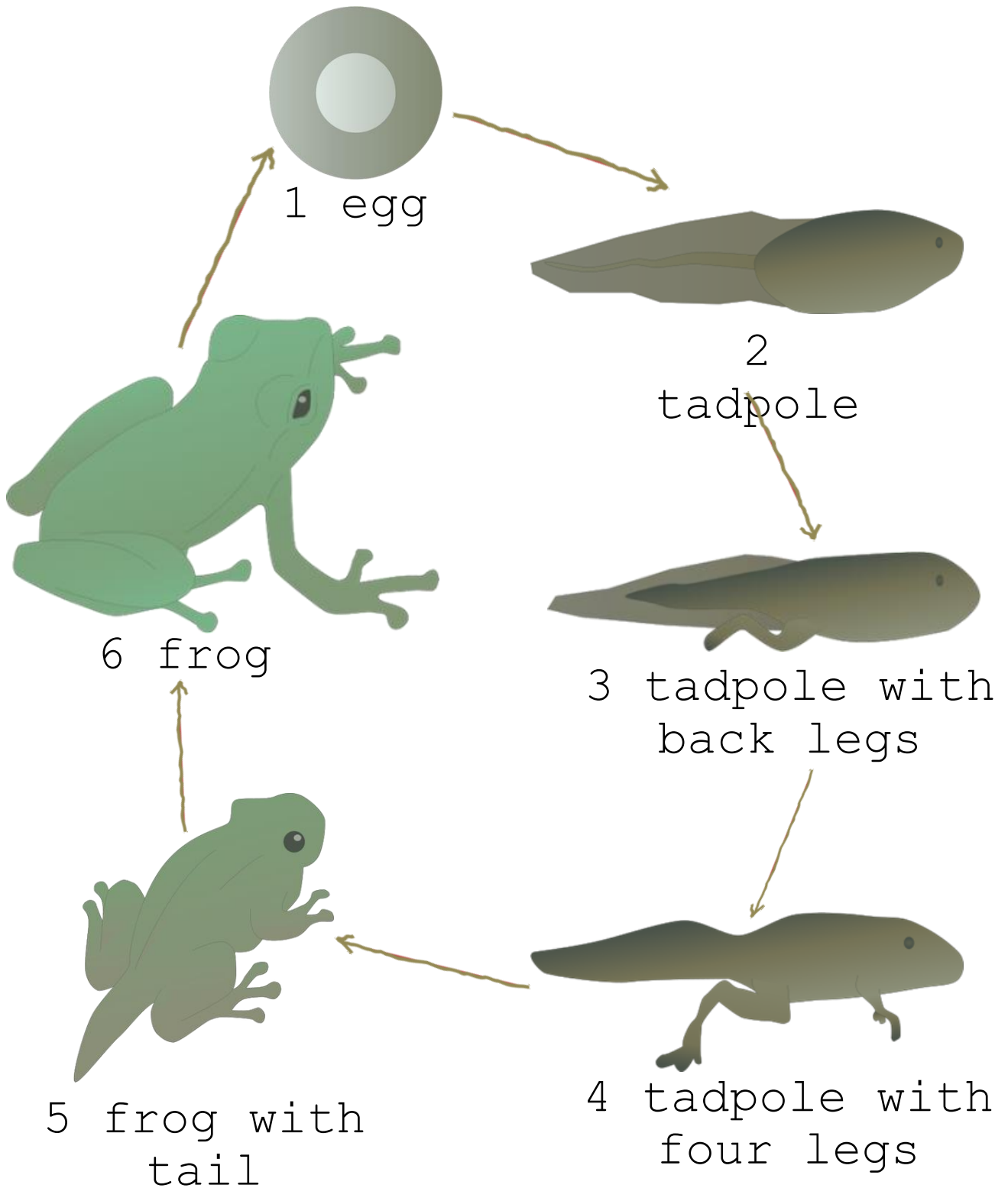


## Module 2: 3-4

Meet the frogs

### Worksheet 1

#### Life cycle of a frog





## Module 2: 3-4

Meet the frogs

Source: Tracey Saxby, Integration and Application Network, University of Maryland Center for Environmental Science ([ian.umces.edu/imagelibrary/](http://ian.umces.edu/imagelibrary/))



Melbourne Water Frog Census





## Module 2: 3-4

Meet the frogs

### Activity 3: Know your frog

Students use the Melbourne Water Frog Census app and other resources to make predictions about why different life strategies assist frogs' survival and appreciate the importance of good habitat for their survival.

#### Equipment

Frog Census app (available from the App Store for Apple and Play Store for Android devices) <<https://www.melbournewater.com.au/frogcensus>>

*A beginners guide to frog identification*

<[https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Documents/Frog%20Guide\\_Online.pdf](https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Documents/Frog%20Guide_Online.pdf)>

*Know your river* booklets

<<https://www.melbournewater.com.au/getinvolved/education/educationalresources/Pages/teacher-resources.aspx>>

*Creating a frog friendly habitat*

<<https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Documents/Frog-friendly-habitat-guide.pdf>>

Pictures books e.g. *From tadpole to frog* by A Ganeri (Appendix—Resources)

#### Activity steps

##### Find out about frogs

1. Students choose a frog they are interested in from the resources listed above and research that frog. (Refer to the Appendix—Resources for additional websites and field guides.) Students devise focus questions for their research. They should aim to find out where the frog lives, what it eats, where it lays its eggs, its colour and other significant facts. From these facts, students discover their frog's life strategies. Students can investigate: why it lives where it lives, why it eats what it eats, why it lays its eggs there, how its colour helps it live.
2. A mind map, concept map or web thinking tool can help to organise students' ideas. In the centre of a large piece of paper, students can draw a shape such as a box, triangle or circle or just place a sticky note. In the main shape, students place the name of the frog they have chosen. Topics (such as colour, habitat, diet) can be written in the shapes that come out of the main shape. From that, students write facts or questions—what they need to find out about each life strategy. How does the life strategy help the frog's growth and survival?
3. After students have gathered all of their information, they create a presentation focussing on three key points (e.g. What is their habitat? Why? What colour is the frog? Why? What does it eat?). The key points can be general facts about frogs or specific information about their chosen frog. They should include a picture of the frog.
4. Students present their information, focussing on the reasons why a frog's life strategy aids its growth and survival. The presentation could be a fact sheet, slide show, rhyming song, story read aloud, poem, or song.

#### Extension activity

Explore the chosen frog's tadpole to see if you can find out any more interesting facts.



Melbourne Water Frog Census





## Module 2: 3-4

Meet the frogs

### Activity 4: Frog census data mapping

Students practise using the Frog Census app to find frogs with an in-school simulation activity. They plot their findings on a hand-drawn map then digitally using an app such as Google My Maps.

Recreating a simulation Frog Census activity in the school grounds, gymnasium or multipurpose room provides valuable practice for students before they go on a Frog Census excursion. It is also useful if you can't go on an excursion.

#### Equipment

Frog Census app (available from the App Store for Apple and Play Store for Android devices) <<https://www.melbournewater.com.au/frogcensus>>

*A beginners guide to frog identification*

<[https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Documents/Frog%20Guide\\_Online.pdf](https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Documents/Frog%20Guide_Online.pdf)>

*Know your river* booklets

<<https://www.melbournewater.com.au/getinvolved/education/educationalresources/Pages/teacher-resources.aspx>>

*Frog calls of Melbourne* (audio only) PowerPoint files

*Melbourne's Water Story* <<http://waterstory.melbournewater.com.au/>>

Computer or digital device with a digital projector or interactive whiteboard for whole class discussions

Five or six separate laptops or tablets, possibly with headphones

For each student:

*Guide to frog calls of Melbourne* (Worksheet 2)

Optional: for each student: a copy of a worksheet with thumbnail images of the five or six frogs chosen for this activity for Step 10.

#### Preparation

For the Frog Census simulation, upload one of the *Frog calls of Melbourne* (audio only) PowerPoint files per laptop or tablet. When you play each file, the call will loop continuously.

Find locations for five or six workstations in the school grounds, gymnasium or multipurpose room to place a laptop or tablet device. Number the workstations. Students need to find the frogs by sound rather than sight.

Before the activity, start playing the PowerPoint presentations on each device when the students are not in the area. You might need an accomplice to do this for you and to supervise the space until you are ready to play.

You and your students will need a Google account to create a custom Google map.

#### Activity steps

##### Identifying frog calls

1. Some frogs are named after their calls. Open the Frog Census app, select Frogs and play the following calls:



Melbourne Water Frog Census





## Module 2: 3-4

### Meet the frogs

Growling grass frog—Listen to them growl!

Whistling tree frog—Can you whistle like that?

Eastern banjo frog—It sounds like someone playing a banjo. (They are also known as pobblebonk frogs. You can hear the distinct pobble-bonk.)

Melbourne Water encourages the community to get involved in their monitoring projects such as the Frog Census. The best way to collect data about frogs is by recording their calls. From these recordings, experienced scientists can estimate the number of frogs calling and identify the species.

For background information about Melbourne Water, its history, responsibilities, current and future programs watch the video *Melbourne's Water Story* [2:29].

2. Explain that you don't need to be an expert in frog call identification. Simply record the call using the app and follow prompts to submit your recording to the Melbourne Water Frog Census. If you don't have access to the app, you can use the voice recorder on your mobile phone, fill out the datasheet found on the Melbourne Water website, and email it to the address on the web page. The species in your recording will be professionally identified and the records will be added to Victorian Biodiversity Database and the Atlas of Living Australia database. This will help to protect these vocal little members of the community.

#### Frog census simulation

3. In the classroom, ask students to draw a table as below.

Station	Frog	Call (using sounds)
1		
2		
3		
4		
5		
6		

4. Students begin their 'frog census' and use a recording device (e.g. iPad voice memo) to record each call. Students listen to the calls—perhaps with headphones—and identify the frog calls using the *Guide to frog calls of Melbourne* (Worksheet 2).
5. Ask students to share their answers with the class and discuss. Provide the common names for the frog calls heard at each workstation. Explain that the Frog Census relies on accurate identification of frog calls.
6. By listening to frogs call at night (and some during the day), we can tell which areas frogs are living in. Ask students to predict why frogs choose these areas and why it is important to have habitat for frogs.

#### Map your data by hand





## Module 2: 3-4

### Meet the frogs

7. On a large piece of paper, draw a map of the area you conducted your Frog Census or practice census.
8. Mark and number the points at which frogs were found on the map. This is the first step of gathering the information needed for the Frog Census app.
9. Draw a picture or stick on a cut-out thumbnail image of each frog found at each point. You will now have a visual representation of where the frogs were found.

#### Map your data digitally

10. Google My Maps can be used to plot your information digitally. You need to have a Google account to access Google My Maps <<https://www.google.com/maps>>. If students don't have a Google account, or are not permitted one, this activity could be done as a class demonstration. Display the Google My Maps homepage and select 'Create a new map'.
11. Type the name of your site (school, address, reserve) into the search bar.
12. Zoom in to find the area you conducted your census. Use the 'Draw a line' tool (under address search bar) to draw an outline of the location where your census was conducted. Click at each corner and when you complete the shape, a 'Polygon 1' dialogue box will appear. You can name this if you plan to conduct another census at a later date.
13. Use the 'Add marker' tool to insert the places where each frog was found. These can be labelled with number of the workstation and the name of the frog. You can also add a photo of the frog.
14. Click the 'Base map' drop down arrow to see the map in different views (e.g. satellite or terrain).
15. Give the map a title.
16. Save or print and display next to the paper maps in the classroom.





## Module 2: 3-4

Meet the frogs

### Worksheet 2

#### Guide to frog calls of Melbourne

The following information is taken from page six of A beginners guide to frog identification <[https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Documents/Frog%20Guide\\_Online.pdf](https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Documents/Frog%20Guide_Online.pdf)>

Frogs can be very hard to find. They are usually highly camouflaged and blend into their environment. So it is most likely that you will hear a frog before you see one.

When you hear a frog, listen very carefully to the call. Are you sure it's a frog? What does

Call	When	Frog	Pg.
------	------	------	-----

the call sound like? See if you can imitate the call or think of something to compare it to. Use the table below to see if any of the call descriptions sound like the frog call you hear.





## Module 2: 3-4

### Meet the frogs

Crick, crick, crik, crik, crick	All year	Common Froglet	9
To-to-to-to-tik-tik-tik—tik—tik	All year	Common Spadefoot Toad	10
Bonk...bonk...pobble-bonk	All year	Eastern Banjo Frog	11
Reee bip bip, ree bip bip bip	All year	Eastern Dwarf Tree Frog	12
Nyeeah...nyeeah...aank-nyeaah	All year	Eastern Sign-bearing frog	13
Grrruh-uh-uh-urk. Grrruh-uh- uh-urk. Grrruuurk.	Aug – Apr	Growling Grass Frog	14
Nyuh-gruh-gruh-gruh	Aug – May	Leseur's Frog	15
Grah-a-a-a-ah-ah-ah-ah-aah- aah-aah- aaaah-aaaah	Sept – Jan	Peron's Tree Frog	16
Gr-ank...Gr-ank...Gr-ank	All year	Red-groined Froglet	17
Cree-cree-cree-cree-cree	All year	Southern Brown Tree Frog	18
Uhk...ahk...Uhk...ahk...	Autumn	Southern Toadlet	19
Click...Click...Click...Click...	All year	Spotted Marsh Frog	20
Bok...bok...bok...	All year	Striped March Frog	21
Grrraawk pip pip pip pip pip	Sept – June	Victorian Smooth Froglet	22
Weep-weep-weep-weep-weep	All year	Whistling Tree Frog	23







## Module 2: 3-4

Meet the frogs

### Activity 5: Conducting a frog census in our local area—excursion or at-home activity

Giving students the opportunity to explore their local environment provides benefits on many levels. There is an increasing volume of literature which suggests that interaction with the natural environment—even impacted urban environments—leads to improved well-being and both cognitive and behavioural function and development<sup>2</sup>.

In this activity, teachers and students have the opportunity to be citizen scientists: collecting meaningful and useful data for the Frog Census, an initiative managed by Melbourne Water.

Conducting a Frog Census excursion to a local frog habitat site is a great way to interact with your local environment. Students gain an appreciation of frogs' habitat and experience the impacts of humans on urban wetlands. While the frogs themselves may be difficult to find, in breeding season they are easily heard.

Information about how and when to conduct a frog survey, organise a school monitoring program, prevent the spread of frog disease and stay safe are included in the *Frog Census Handbook for Schools* available from:

<<https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Pages/Frog-Census.aspx>>

#### Equipment

*Know your river* booklets

<<https://www.melbournewater.com.au/getinvolved/education/educationalresources/Pages/teacher-resources.aspx>>

*A beginners guide to frog identification*

<[https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Documents/Frog%20Guide\\_Online.pdf](https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Documents/Frog%20Guide_Online.pdf)>

Frog Census app (available from the App Store for Apple and Play Store for Android devices) <<https://www.melbournewater.com.au/frogcensus>>

The Frog Census app, developed by Melbourne Water, makes frog monitoring easy and provides a great opportunity for Melbourne students to contribute to this important citizen science project.

Alternatively, you can download resources from the Melbourne Water Frog Census web page above. Students can record frog calls and send the Frog Census datasheet and sound files to Melbourne Water as per the instructions on the web page.

#### Preparation

Print out A4 pictures of frogs that could be found in your area.

---

<sup>2</sup> This paper is just one of many available online:

De Young, R. et.al. 2017. Some psychological benefits of urban nature: Mental vitality from time spent in nearby nature. In A. M. Columbus (Ed.) *Advances in Psychology Research* 116. Chapter 4 (Pp. 93-120) Hauppauge, N.Y.: Nova Science Publishers. Available from <<https://deepblue.lib.umich.edu/handle/2027.42/136087>>





## Module 2: 3-4

### Meet the frogs

Laminate or display the frog pictures in a clear plastic pocket folder. Alternatively, take along an iPad with the Frog Census app on it.

#### Activity steps

##### The frog census

1. Once you are onsite, outline safety guidelines (see *Frog Census Handbook for Schools* <<https://www.melbournewater.com.au/getinvolved/protecttheenvironment/Pages/Frog-Census.aspx>>).
2. Discuss with students that you're in frogs' habitat. Where do the frogs breed? What can you see that might help them survive here? What might eat them? What do they (and their tadpoles) eat? How does the environment support this? How might it be improved to support frogs better?
3. Show printed or iPad pictures of frogs from the Frog Census app. Give students a brief description of the frog and its habitat. Play its call so they know what to listen for.
4. Conduct the frog census. Using the Frog Census app or another recording device, students record frog calls and identify the frogs.
5. To conclude, discuss with students what you heard, where you heard it and where the information will go now.





## Module 2: 3-4

Meet the frogs

### Appendix

#### Teacher background

##### Key messages

The key messages for students are:

- there are ways we can distinguish between living and non-living things
- different species of frogs have different habitats and life strategies
- the Frog Census app is a great tool to map a frog's location
- frogs are a good indicator of a healthy environment
- data can be plotted by hand and digitally.

##### Frog Census

The Frog Census is a way for anyone to contribute to monitoring which frogs are living where in Melbourne. For more information, go to:

<http://www.melbournewater.com.au/getinvolved/protecttheenvironment/Pages/Frog-Census.aspx>

##### Frog facts

###### Reproduction

Frogs call during their reproductive season. The calling frogs are males who are trying to attract females and warn other males to keep their distance.

Frogs can lay as many as 4000 eggs in frogspawn.

###### Species

There are more than 4000 types of amphibians in the world, but Europe has very few—only 45 species.

Australia has 216 species of frogs and over 30 species are found in Victoria.

###### Body features

The eyes and nose of a frog are on top of its head so it can breathe and see when most of its body is under the water. Frogs can breathe through their skin as well as with their lungs.

Frogs have long back legs and many species have webbed feet for jumping and swimming.

Certain frogs can jump up to 20 times their own body length in a single leap.

Frogs have excellent vision and hearing. They don't have external fleshy ears like we do, but a large eardrum just behind the eye. As well as using their eyes to see, frogs use their big, bulgy eyes as part of the feeding process. A frog's tongue is used for catching prey rather than eating, so when a frog catches something they close their eyes tight and push the food down their throat with their eyeballs.

###### Diet

Frogs absorb water through their skin so they don't need to drink.





## Module 2: 3-4

### Meet the frogs

All frogs found in the Melbourne area are carnivores. Different species of frogs prey on different types of animals, but in general they will eat anything living that fits in their mouth. Smaller species live on small insects like flies and other invertebrates, while larger species eat large insects, small lizards and other frogs.

#### Threats

Frog species are in decline globally. Four species have become extinct in Australia. Threats include:

- invasive plants and animals
- land clearing
- pollution
- diseases, such as the deadly Chytrid fungus (an infectious disease contaminating frogs worldwide). This disease also affects many vulnerable species.
- Climate change

#### Habitats

Frogs are typically found in and around aquatic environments such as swamps, lakes, dams, creeks, streams, rivers and occasionally even backyard swimming pools. They are more likely to be found in areas with different types of native plants, particularly those that grow into the water like reeds, grasses and sedges. They are also often found in bodies of water with shallow sections which the frogs use to call from and lay their eggs.

#### Adaptations

Some adaptations of frogs:

- nocturnal behaviour so as not to attract predators
- soft skin that must stay moist, making them susceptible to foreign substances in waterways
- produce toxic secretions to deter predators
- highly camouflaged to blend into their environment
- bright colours to warn of toxins
- require damp conditions or water to breed
- lay eggs in water which hatch into gilled tadpoles
- tadpoles use gills to breathe oxygen in water
- gills develop into lungs
- tadpoles develop legs
- frogs breathe air
- frogs live in areas that shelter them.





## Module 2: 3-4

### Meet the frogs

#### Calls

Frogs have a wide range of calls—some of which sound like ‘typical’ frog calls and other which are often confused with insect or bird calls.

Only male frogs call. They call to find a mate and to warn away other competing males. Frogs make calls by passing air through the voice box and using their puffed out throat pouches to amplify the sound. The calls of closely related species are sometimes similar.

#### Useful links

##### Melbourne’s water story—Melbourne Water

This video explains the history of water supply in Melbourne and the vision that Melbourne Water has for a sustainable water future <<http://waterstory.melbournewater.com.au/>>

##### Frog Census—Melbourne Water

This link describes how the Frog Census app is used to help monitor frog species in the Melbourne region and manage the health of Melbourne’s waterways <[www.melbournewater.com.au/frogcensus](http://www.melbournewater.com.au/frogcensus)>

##### Frogs of Australia—The Amphibian Research Centre

This web site contains a wealth of information about frogs <<http://frogs.org.au>>.

##### Google My Maps—Google

This online application is an easy introduction for students to explore the world of spatial technologies and the importance of these technologies in effectively managing natural environments <<https://www.google.com/mymaps>>

#### Resources

Taylor, MJ & Knight, F 2009, *Field Guide to the Frogs of Australia*, CSIRO Publishing.

Robinson, M 1998, *A field guide to the frogs of Australia: from Port Augusta to Fraser Island including Tasmania*. Reed Books.

Anstis, M 2002, *Tadpoles of South-Eastern Australia: a guide with keys*, Reed New Holland.

Ganeri, A 2006, *From tadpole to frog*, Harcourt Education.

