

Winter June to August 2011



# xplorer

experiment discover create

## liftout for young scientists



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# WHAT ARE YOU LOOKING AT?

# FROG CYCLES



**Australia has around 230 species of native frogs.**

Frogs breathe air using their lungs and live in water and on land. Most frogs like to live in damp swampy places near water, but some live in the desert where they burrow deep in the soil to prevent drying out while they wait for rain or floods.

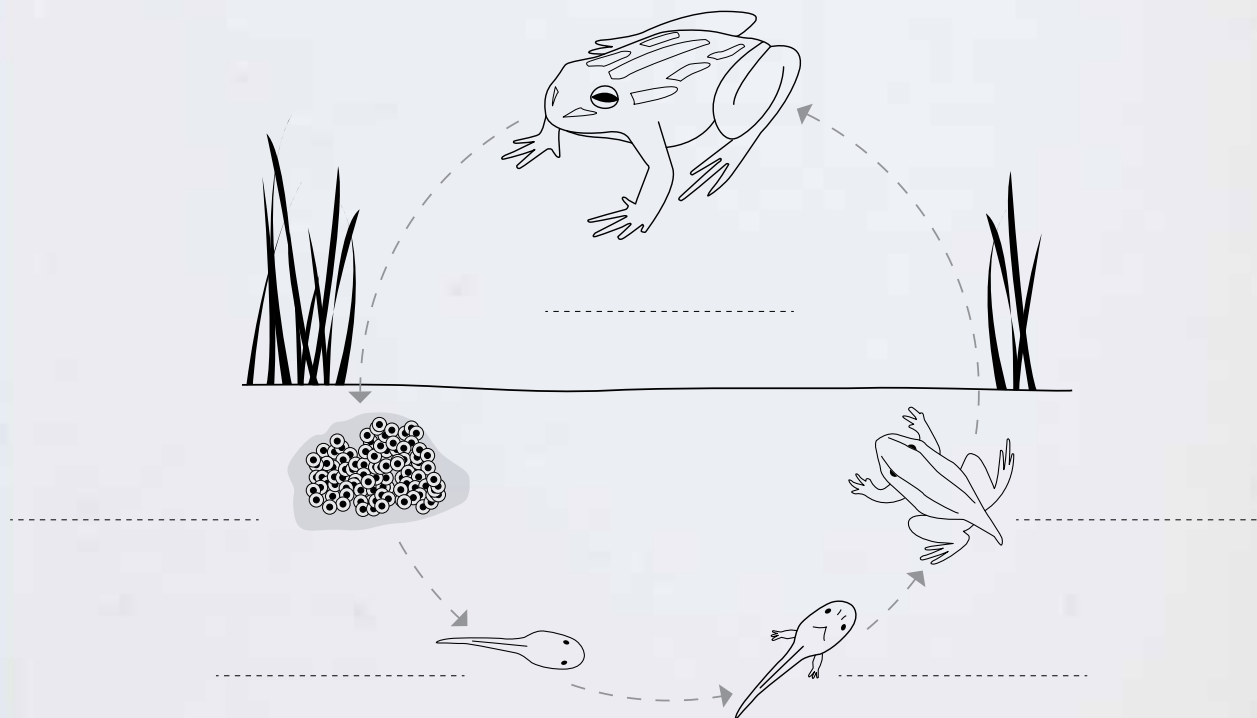
Most frogs need water to lay their eggs (spawn) and complete their life cycle. Typically, their babies (tadpoles) need to live in water because they breathe using gills.

They gradually grow legs (two, then four) and start to lose their tails (metamorphose), until they can hop or walk about like adults.

**Take a look at the diagram of a life cycle and write in the different life stages in the space provided. Colour in the pictures.**



## TYPICAL FROG LIFE CYCLE



**FAST FACT** 'Amphibian' means 'two lives' – one in water and one on land.

**On the cover** White-eyed frog, *Leptobrachium leucops*. This species has just been discovered living in the mountain forests of Vietnam. Scientists use eye colour and shape to help distinguish closely related species – the white-eyed frog's cousins have upper eyes in bright red, pale blue, green and black. Photo Jodi Rowley.



# FIND THE TOAD



There are more than 6000 species of frog in the world.

To know which is which, scientists publish descriptions and give each a scientific name which can then be used by everyone.

In describing frogs, scientists use different characters, such as body measurements, the shape of the hands and feet, and the colour and shape of the eyes, to help group all of this diversity into almost 40 families.

Now it's your turn!

**Step 1** Look at the frog eyes (below) and notice that the pupils can be grouped by shape (round, square, vertical, horizontal etc.).

**Step 2** Match the photos of these frogs found in New South Wales to the eyes.



Green Tree Frog  
*Litoria caerulea*

Eye number .....



Red-crowned Toadlet  
*Pseudophryne australis*

Eye number .....



Cane Toad (introduced)  
*Rhinella marina*

Eye number .....



Peron's Tree Frog  
*Litoria peronii*

Eye number .....



All frog photos courtesy Jodi Rowley.

# FROG & TOAD



When is a frog a toad?

When we say 'toads', we are generally talking about one group of frogs that are placed in the family Bufonidae. Generally, toads have dryish, bumpy skin; large bumps behind their eyes (paratoid glands); and they tend to walk more often than leap. They also lay their eggs (spawn) in long chains rather than in clumps.

Next time you're in the Museum, see the live Crucifix Frogs, *Notaden bennetti*, in *Search & Discover* and Green Tree Frogs, *Litoria caerulea*, in *Surviving Australia* (both on Level 2).

Trivia

'Frog and toad' is Cockney rhyming slang for what?

FAST FACT

The scientific name of the Cane Toad has changed. It used to be *Bufo marinus*, but scientists decided that the genus *Bufo* had too many species, many of which were very different from each other, so they split them up. The Cane Toad is now called *Rhinella marina*.



Each issue of Xplorer includes a collector's card for you to cut out and keep!



All the answers are on the next page.



## DOING SCIENCE

**With *Science in the City* on the radar, SCEGGS students Isobel Golovin and Helen Epstein quizzed frog biologist Dr Jodi Rowley about her career.**

**ISOBEL: What inspired you to go into science?**

JODI: In Year 12, I wasn't entirely sure what I wanted to do. I loved biology, but also art, so it was a toss-up between the two. When I got a pretty good mark for biology I decided to go on with it, so I applied for environmental science at UNSW. When I went on field trips and saw frogs, I couldn't believe they were real! Those eyes and feet! And it went on from there.

**HELEN: What was your first job in science?**

JODI: I did a lot of volunteer work initially and that's probably the best way to get experience. You can learn only so much at university. But through volunteering, you can quickly see what you're interested in – or not! There's a few things I went on and thought, 'Oh my god, run, I hate this very much ...'

**ISOBEL: What is a typical day like for you here?**

JODI: There's really no such thing as an average day at the Museum for me, which is kind of cool! I spend time staring at my computer, sitting on my chair, like in

a lot of jobs. If I'm describing new species, that can be interesting, but I also spend about two months of the year in Vietnam, climbing up mountains into the forest to look for frogs with groups of Vietnamese students.

**HELEN: Is there a problem with endangered frogs in Australia?**

JODI: Yes, frogs are in trouble around the world. There are quite a lot of people working on frogs here, but in South-East Asia we don't even know how many species there are or how they're doing.

**ISOBEL: Do you have any advice for people our age who might be considering going into science?**

JODI: The biggest thing is to volunteer or go and see what people are doing. Get out there! There's things like Streamwatch ... try things out, go to some talks. That is one of the most important things, because it's often who you know, as well as what you know, that makes a difference.

### WEBLINK >

For a longer version of this interview, go to [www.australianmuseum.net.au/doing-science](http://www.australianmuseum.net.au/doing-science).

left to right: Isobel, Helen and Jodi.



### AXOLOTL

The Axolotl, *Ambystoma mexicanum*, is a type of salamander found in just two lakes near bustling Mexico City.

Young Axolotls feed on algae but eat aquatic insects as they grow older. The adults can live under water, breathing through their external gills. But if their habitat dries up, they lose their gills and become air-breathing salamanders.

Both young and adult Axolotls are eaten by predatory waterbirds, such as herons, and are sold as food and pets in markets, but they can live for 10 years or more.

Water pollution, habitat loss and human trade are endangering the Axolotl in the wild.

Photo © Steve Wilson



### Answers from previous page

Green Tree Frog 8 Cane Toad 13

Red-crowned Toadlet 17 Peron's Tree Frog 20

Trivia Frog and toad = road, as in: 'It's over the frog and toad' ('It's over the road').