SMALL POND teachers notes

Frogs are creatures that have captured the imagination of naturalists, poets, writers, puppeteers and people of all ages. The Small Pond stamp issue highlights the importance of ensuring that such habitats are preserved or others created in order to make sure that these wonderful varied creatures are preserved as part of our natural wildlife.

The creatures depicted on the Small Pond stamps are four frogs, one bird and a dragonfly. Note how the names of the frogs reflect a feature special to that frog.

The Magnificent Tree Frog (*Litoria splendida*) is the largest tree frog in Australia and it is certainly magnificent in colour and size. Its head and body are a vibrant green with small sulphur-coloured patches while the backs of its thighs are yellow or orange. During the day this tree frog keeps cool in caves or in crevices under boulders.

The Javelin Frog (*Litoria microbelos*) has a long and sharply pointed snout, moves very fast and takes off just like a well-aimed javelin. It is the smallest of the Australian tree frogs, growing to just 1.4 centimetres. The Javelin Frog is usually found among long grass in marshy areas and around ponds. It has a high pitched buzzing call.

Roth's Tree Frog (*Litoria rothii*) is mainly found in the tropics. The backs of its thighs are mainly black with some small yellow or orange patches. In dry conditions this frog uses pandanus branches as a refuge. Roth's Tree Frog usually calls from branches above the water and has a loud chuckle-like call. Tree frogs have suction pads on their toes that help them hang on to tree trunks and wet leaves.

The Northern Dwarf Tree Frog (*Litoria bicolour*), as you can guess from its name, is a small frog. It is mainly green in colour, with a flash of orange in the groin and thigh. It lives in streams and marshy areas and must live near water. It has been known to climb to as high as four metres in trees. It grows to three centimetres, making it one of the smallest tree-frogs in Australia. The call is a high-pitched 'wree-e-eck pippip'.

The Sacred Kingfisher (*Todiramphus sanctus*) has beautiful vibrant blue feathers. Its diet is mainly small reptiles, crickets, and grasshoppers and when it is near water it will also eat fish and frogs. It spends much of its time perched on small low branches sitting very still, occasionally bobbing its head as it watches for prey. When it sights food it plunges into the water, grabs the prey in its bill and flies back to the perch to eat it. The Kingfisher can enter the water, catch its prey, and leave the water again in less than half a second!

Dragonflies (*Rhyothemis graphiptera*) are brightly coloured and extremely fast. Adults are often found near streams, lakes or dams where they chase and catch other insects. A Dragonfly's legs are arranged so that they can seize prey such as smaller flying insects in mid flight. Its wings are membranous and have a beautiful lacework of veins. It can twist and turn in flight and change direction very quickly. The surface of each eye may contain up to 10,000 individual lenses. Dragonfly larvae feed on tadpoles. The Australian Dragonfly is the fastest flying insect: it can fly up to 58km per hour.

Teacher note: Many of the activities in these notes will help students in all grades to develop research and discussion skills. Children will be asked to build on what they know, be encouraged to find out further information and to construct their own questions. Give them time to list ideas, construct questions, confirm and justify their findings. Make sure the children have access to a variety of sources, for example, specialist books, encyclopaedias, library reference material, atlases, CD-Roms and the Internet. There are many associations which support the preservation of frogs. Try to find someone in your area to come and talk to the children.

Same frogs - different information

Collect together a large range of books about frogs, birds, insects or other topics. Take a group of books and show them to the children using the questions below. Can children come up with other questions? This activity helps children to skim texts for information and pick out main ideas.

Children can work in groups and then report back at a class level. Ask children to investigate the texts and find out:

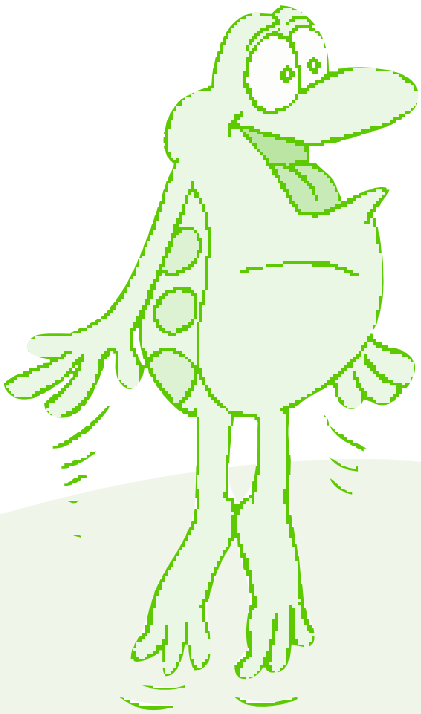
- Is all the information the same?
- Are there diagrams, cross sections or photographs?
- Is the information specific or general?
- Do all books have a glossary, an index, a contents page?
- What texts did you find were better to locate information?
- Did the photographs relate to the text so that the meaning was extended?

Ask children to report on the advantages and disadvantages of each text.

Frog habitats

There are four special frogs in the Small Pond. Ask the children to find out about other frogs that live:

- in the desert
- in the rainforest
- in the jungle.



Children can then choose a habitat and one frog which lives there. They will need to find out:

- common name
- scientific name
- where it lives
- size
- colour and other special features
- what it eats
- if endangered, reason
- any other relevant information

This work can be presented as a field guide.

Lifecycles

The process from tadpole to frog is called metamorphosis.
Ask: What does this word mean? Are there other creatures that go through this process?

The frog starts as an egg in the water and over time is transformed into a frog that lives on land and sometimes near water.

The dragonfly's life cycle is called 'incomplete metamorphosis' meaning that it has a more gradual change by splitting its skin and growing a new one several times. In its in-between stage, the dragonfly is referred to as a 'nymph'. Finally the nymph climbs up a stem into the air and splits its skin a final time and the dragonfly emerges.

Ask children to investigate both of these life cycles and draw and illustrate the process.

Writing

Teacher note: These activities can be used at the end of the topic to give children an opportunity to demonstrate what they have learned. You will be looking for children to:

- write in the style of the text type they have chosen
- use particular and technical vocabulary related to the subject

- use a logical construction
- present a sound argument

Children can choose from the following activities:

- write a newspaper article to try to save a local pond/wetlands/lake habitat from destruction
- write a report about frogs in general
- write a report about one of the frogs, the kingfisher or the dragonfly in Small Pond
- write an account of an experience with frogs
- make a brochure for your local Friends of the Frogs to promote interest in helping preserve frogs
- write a submission to your school board or council on why it would be advantageous to introduce a pond habitat in the local area or school grounds.

Oral language projects

Give children time to prepare a talk of no more than five minutes on one of the following subjects:

- how frogs can become endangered
- one of the frogs, or the kingfisher or the dragonfly
- Pretend you are a visitor from the local Council with a proposal to put a Small Pond habitat into your school.

Teacher note: Remember that oral presentations can take as much preparation as written ones. Encourage children to use notes and lists. You will be looking for children to:

- speak clearly and concisely
- use language and vocabulary appropriate to the subject
- have a logical and well-constructed talk.

Art activity

Look carefully at the detail on the mini-sheet: feathers, wings, spots, highlights on grass, leaves and water. Illustrator Kevin Stead used an airbrush to define large areas of his painting, then added details later with a fine brush. Have the children make their own Small Pond illustrations, using paint to define large areas then (when paint has dried!) go back and add details with felt pens and/or coloured pencils.

Other investigations and projects

Many areas including schools are developing parklands and wetlands to attract bird life, insect life and frogs. Local councils and other associations may support the school in such a project. Find out whether this is a possibility for your school.

Visit a parkland or a wetlands area. List the animal life you see and the conditions that make it suitable for plant life and animal life to flourish.

Join a local frog society and keep up to date with what is happening in your area.

Find out whether your local Council has laws regarding keeping waterways clean.

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Creatures of the Small Pond - What I know, what I need to find out.

Give each group of children a copy of the miniature sheet. With the children examine the sheet very closely.

Ask: What are the names of the creatures you can see in the picture? What else can you see? Where do you think this might be? Does it have a special name? What kind of plants can you see? Are all the frogs the same colour? Are they all the same shape? Are all frogs green? What other colours could they be? What else do you know about frogs? Does the picture tell you anything about what these creatures might need to survive? Look at how 'Small Pond' has been written on the sheet? Do you think this might be giving the reader a message? List the children's responses for future research and comment.

Write up the names of the creatures including the scientific names. Ask the children whether the names give them any more clues to their special features. Record their responses.

How did frogs get their names?

Read the common and scientific names of all the creatures from the list you have written up. Ask the children: Do you recognise any meanings of the words? For example, *splendida* has a similar meaning to magnificent, *micro* means small, *sanctus* means sacred. Use dictionaries or reference books to search for meanings.

Children can find the names of other frogs and investigate why they have been named in a particular way.

Classifying animals

Ask: Why do scientists classify animals? What other classifications of animals are there? List these, for example, reptiles, mammals, fish and so on.

Ask: What is the classification of a frog?

Teacher note: A frog is an amphibian - *amphi* means both, *bios* means life. Frogs are the only amphibians found naturally in Australia (toads are not native here).

What makes an amphibian?

- Most hatch from eggs laid in water
- A process called metamorphosis turns them into adults
- They are cold blooded
- They can breathe through gills and lungs or its skin

Ask the children to investigate other animal classifications, for example:
What makes a bird?
What makes a reptile?
What makes a mammal?
What makes a fish?

Children can present their information as a list accompanied by a labelled drawing of a creature from the classification they have chosen.

What causes a species to become endangered?

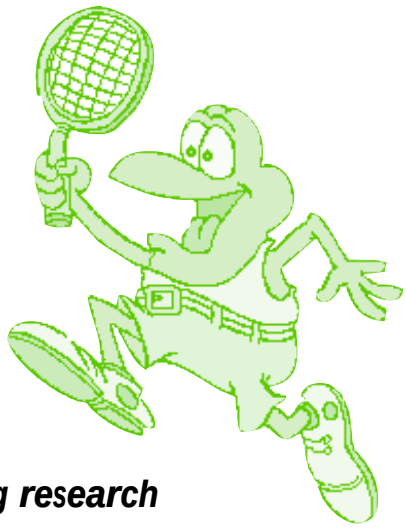
Ask: What factors can endanger the life of frogs and in turn the other creatures that share the same habitat? List the children's responses, for example: pollution, insecticide, imbalance of the ecosystem, habitat destruction.

Children can take the role of scientist or conservationist and in groups explore each issue.
Ask: what causes these things to happen? Who is responsible? How could we change laws to improve our habitats? For example the White Spotted Tree Frog is in danger because an introduced fish (trout) eats the tadpoles, while native fish find them poisonous. What could a solution be?

Using our eyes

Refer to the activity of the same name in the K-2 section. Extend this activity with further questions:

- What would happen if this habitat was destroyed?
- How could these creatures run out of food?
- What other animals might eat the animals shown on the mini-sheet?
- What kind of animal is a frog?



Focusing research

Teacher note
Sending children off to find out about a large topic can be a bit daunting. Here are a range of questions which children can work out either individually or in pairs. They can include their own questions as well. The information is brought together to make a class Frog Fact File.

Questions for starting a Frog Fact File

- How many species of frogs are there in the world?
- How many species of frogs are there in Australia?
- What is the only region in the world where frogs are not found? (Antarctica)
- How do tadpoles breathe? How do adult frogs breathe?
- Why is it important that we ensure the survival of frogs?
- What is an amphibian?
- What do tadpoles eat? What do adult frogs eat?
- How do frogs catch their prey?
- How do frogs move?
- What is a carnivore?
- How did spadefoot toads get their name?
- Why are some frogs able to climb trees?
- Why does a male frog have its own special call?
- What is metamorphosis? What are some of the changes involved?

Creatures of the Small Pond - What I know, what I need to find out.

Give each group of children a copy of the Small Pond mini-sheet. With the children examine the sheet very closely.

Ask: **What are the names of the creatures you can see in the picture? What else can you see? Where do you think this might be? What kind of plants can you see? Are all the frogs the same colour? Are they all the same shape? Are all frogs green? What other colours could they be? Does the picture tell you anything about what these creatures might need to survive? What else do you know about frogs?**

List the children's responses for future research and comment. Write up the names of the creatures. Ask the children whether the names give them any more clues to their habits or features. Record children's responses.

Using our eyes

Ask the children to choose one of the frogs, the dragonfly or the kingfisher from the mini-sheet and list as much information as they can. These questions will help them focus on the activity.

- How do you think the colour of the creature would help to protect it?
- Where does it need to live?
- How do you think it catches its food?
- What other animals might eat it?
- Do you think any of these creatures might be in danger of becoming extinct? Why do you think that?

This activity allows you to introduce vocabulary such as: camouflage, habitat, prey, predator, extinct, endangered, ecosystem.

Children can present their information in writing or by drawing and labelling.

Make a glossary

With the children make a glossary. Begin by using words already found. Ask children for others. Use a variety of reference materials to read different definitions. With the children compose a clear definition. Display this and add to it when children find special words throughout the topic.

What's the difference?

Frogs and toads are both amphibians but have differences:

Frogs are native to Australia.	Australia's only toad is the introduced cane toad.
Frogs generally have smooth skin.	Toads have rough skin.
Frogs have damp skin.	Toads have dry skin.
Frogs are active.	Toads are less active.
Frogs have fully webbed feet.	Toads have little or no webbing.
Most frogs live near water.	Toads prefer to live on land.

Ask children to find out the differences between:

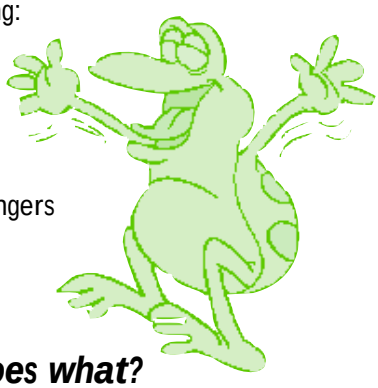
- a hare and a rabbit
- a crocodile and an alligator
- a butterfly and a moth.

Children can present their findings as a simple chart.

Are all frogs green?

Sometimes when we think 'frog', we think green...but frogs are also black, violet, yellow, red, blue and other colours. Frogs are also many different sizes and shapes. Children can use a variety of books to find their favourite or different frog. They can draw and label the frog. With the children list some features which will support them in labelling their drawing:

- webbing
- eyes
- disc
- digits, toes and fingers
- mouth
- nostril



Which beak does what?

Ask the children to look closely at the Sacred Kingfisher. What does it have between its beak? How did it get the fish?

The Kingfisher's body and feathers are especially designed to hover and dive. The beak is designed to grab fish and other prey.

Investigate the shape of other birds' beaks and what they are used for. For example:

- Spoonbill
- Pelican
- Heron
- Parrot
- Curlew

Have the children make a chart showing the shape of different birds' beaks and how the birds use them for different purposes.

The Dragonfly

The dragonfly is only one of many insects that are part of the habitat of Small Pond. With the children list other insects. What makes an insect an insect? All insects have:

- head
- thorax
- abdomen
- legs.

Children can draw and label a dragonfly, using glitter and coloured pencils or paint to make vivid wings.

Making a Small Pond - art activity

Children can do this as a large classroom mural or as a small group activity. With the children look at the mini-sheet.

Ask: What kind of materials could we use to make a Small Pond mural?

- cellophane
- feathers
- natural materials from our gardens or the playground
- paint for the background and outlines
- coloured paper
- white paper for labels.

Work out with the children a process of creating the mural and allocate tasks to each pair or group. Ask each group to report on what they did and how that aspect is important in a Small Pond.

Small Pond references

These books are excellent resource for investigating classification, specific animal features and life cycles. They could be used as models for writing books about birds and frogs.

K-2

Drew, David — *Insects InfoActive* Addison Wesley Longman 1997

Drew, David — *Caterpillar Diary Informazing* Nelson 1987

Drew, David — *How Many Eyes InfoActive* Addison Wesley Longman 1997

Drew, David — *From Egg to Butterfly InfoActive* Addison Wesley Longman 1997

Drew, David — *Reptiles InfoActive* Addison Wesley Longman 1997

Drew, David — *Tadpole Diary Informazing* Thomas Nelson 1987

Drew, David — *Animal Acrobat* Thomas Nelson 1987

Frogs Theme Pack RIC Publications

Life Cycle of a Frog chart Frank Schaffer Publications

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CD-Rom — *Explorapedia Microsoft*, 1994

Frog Symphony Industry Science Tourism

Drew, David — *Designosaurs and other animals*

Drew, David — *Realization* Rigby Heinemann, 1994

Casey, Kevin — *Attracting Frogs to your garden* Kimberly Publications 1996

Oliver, Narelle — *The Best Beak in Boonaroo Bay* Lothian

Parish, Steve — *Amazing Facts about Australian Frogs and Reptiles,* Steve Parish 1994

Parker, Steve — *Pond & River,* Collins Eye Witness Guides, Harper Collins 1991

Taylor, Barbara — *Pond Life,* Look Closer, Harper Collins 1992

Tyler, Michael J. — *An Action Plan for Australian Frogs* Wildlife Australia Endangered Species Program.

Frog groups &websites

Small Pond
www.auspost.com.au/smallpond

Brisbane Frog Society,
PO Box 7017,
East Brisbane QLD 4169
www.brisfrogs.asn.au

Frog and Tadpole Study Group of NSW,
PO Box A2405,
Sydney South NSW 2000

Frog Symphony
www.csn.act.edu.au/frogs/

Frogs in ACT
http://155.187.10.12/projects/frogs/frogs.html

Frogs of South Australia
www.epa.sa.gov.a/frogcensus/

Frogs of WA
www.upnaway.com/~rdavis/frog.htm

Gould League
www.gould.edu.au

Victorian Frog Group,
PO Box 424,
BRUNSWICK VIC 3056
www.frogs.org.au

Zoos and aquaria with frog exhibits

Adelaide Zoological Gardens, SA

Australian Reptile Park, NSW

Healesville Sanctuary, VIC

Lone Pine Koala Sanctuary, QLD

Royal Melbourne Zoological Gardens, VIC

Taronga Zoo, NSW

Small Pond teachers notes written by Margaret Clyne.

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