

2.0 Frogs and the Environment

This section explores the habitat requirements of frogs, the concept of frogs as bio-indicators, reasons for world-wide decline in frog populations and suggests practical ways to create a suitable habitat for frogs in a school or home environment.

Outcomes

- Understand the habitat requirements of frogs
- understand that frogs are important indicators of environmental health
- be able to identify threats to frogs
- use information to create/encourage frogs into gardens at home or school
- use information to create a frog pond or terrarium

Classroom activities

2.1 Home Sweet Home

The aim of this activity is to introduce the concept of a habitat (where an animal lives, feeds and breeds). Discuss the basic requirements for animals to survive (eg. shelter from predators/ extremes of temperature, access to food and water etc).

The 'Home Sweet Home' handout provides some basic facts about frog habitats. After reading the information, students draw and label the ideal habitat for ground dwelling frogs and tree frogs. Discuss with students what habitat characteristics they have drawn and why.

2.2 Healthy and Unhealthy Habitat

This activity is designed to cater for both lower and upper primary students. Before starting the activity with lower primary students it would be beneficial to read a series of children's story books by James Reece, 'Lester and Clyde'.

Instruct students that they will be creating a polluted habitat and a healthy habitat by pasting pictures on habitat posters.

Provide each student (or group of students) with 1 healthy habitat and 1 polluted habitat poster (enlarged onto A3 paper) and a set of habitat characteristics.

Instruct students to cut out pictures and paste them on the habitat posters.

When completed, ask students to explain why they put certain pictures on each habitat. Habitat posters can then be placed on wall in classroom.

NB: Scissors and glue are required for this activity.

2.3 Environmental Health Fact Sheet

This fact sheet outlines the concept of frogs as bio-indicators and provides useful background information for teachers. It is designed to be used with the 'Environmental Health Crossword' and is suitable as a handout for middle to upper primary students.

2.4 Environmental Health Crossword

The crossword is a comprehension activity to be used after students have read the 'Environmental Health Check Fact Sheet'. Please refer to Figure 1 for solution to crossword.

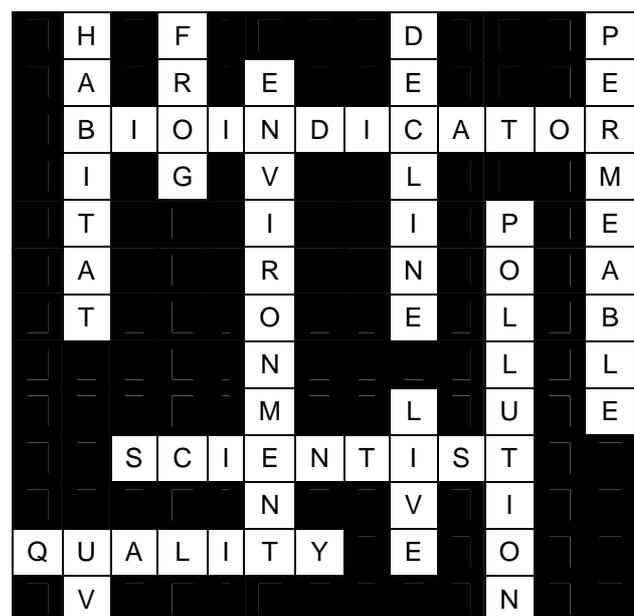


Figure 1: Solution to Environmental Health Check Crossword

2.0 Frogs and the Environment

2.5 Threats To Frogs

This activity introduces students to pollution, one of the major threats to frog populations worldwide.

Students are given the opportunity to state some of the pollution (rubbish in waterways, farm chemicals or pesticides, household chemicals such as soaps and detergents, oil spills, industrial waste etc) or other threats to frogs.

2.6 Threats To Frogs Fact Sheet

This fact sheet outlines the five major threats to frogs and provides useful background information for teachers. It is suitable as a handout for middle to upper primary students.

After reading the fact sheet, students could develop a poster of ways to reduce threats to frogs (as suggested on the fact sheet).

Creating frog friendly environment

The final activity in this section is to equip students to be able to create a frog friendly habitat in their own backyard in response to interest aroused about frogs and threats to their natural habitat. The question and answer sheet is designed to be completed in class and can then be taken home as an information guide.

2.1 Home Sweet Home

Read the information below and draw the perfect home for the two frogs in the frame.

- ✿ Frogs can live almost anywhere and are found in most areas of Australia, even in arid and alpine areas.
- ✿ Frogs are most common in warm, moist tropics where there is plenty of fresh water.
- ✿ Streams, ponds, dams, swampy areas, creeks and flooded depressions all provide good habitat for frogs.
- ✿ Frogs are most active at night. During the day frogs rest under rocks and logs, in hollow trees, reeds, small shrubs or other debris, or climb trees or burrow themselves underground.



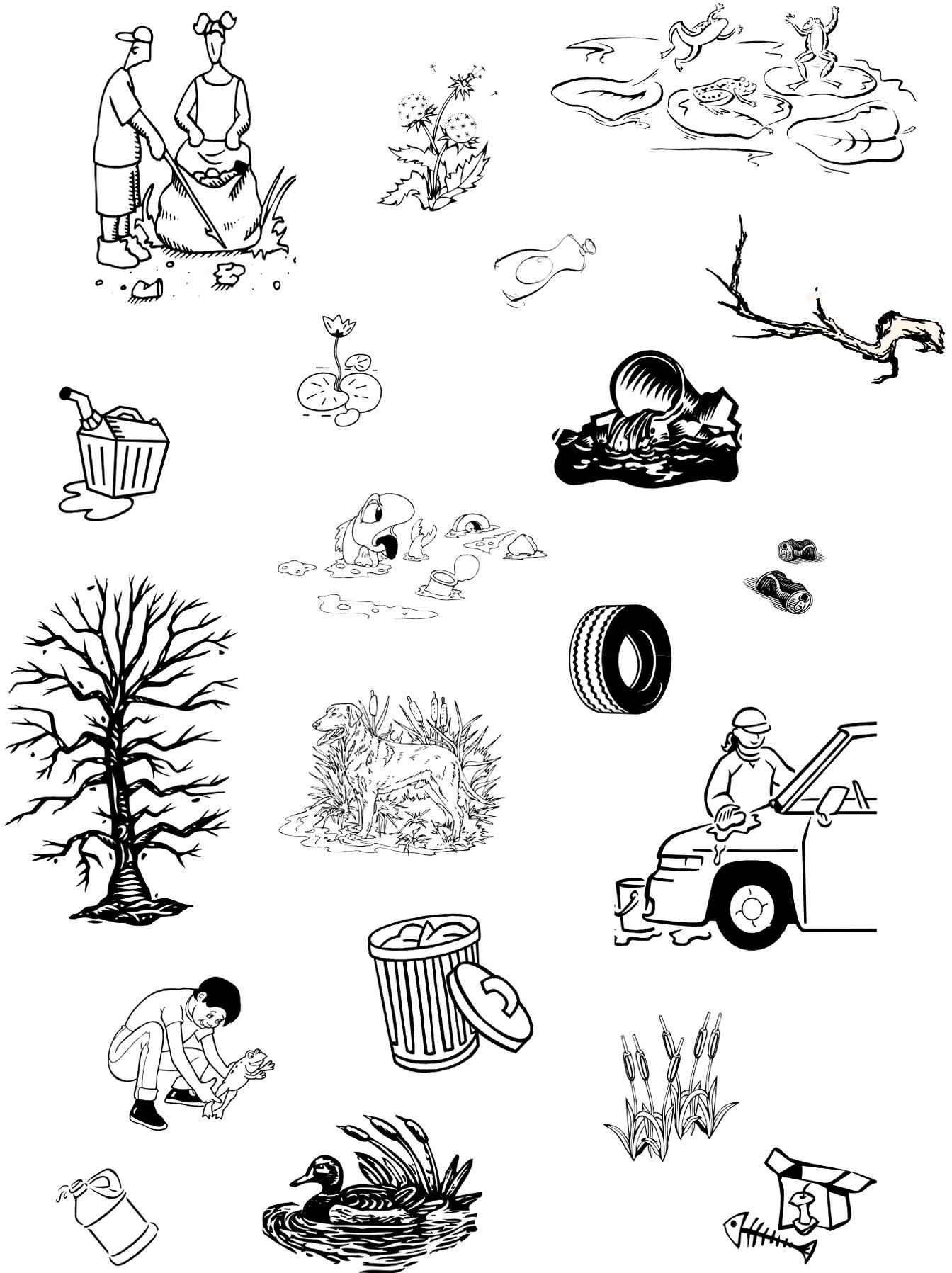
2.2 Polluted Habitat



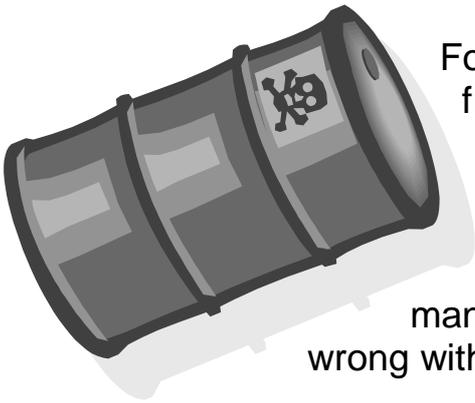
2.2 Healthy Habitat



2.2 Habitat Characteristics



2.3 Environmental Health Fact Sheet



For some years now, it has been noted that worldwide frog populations have been in the decline.

Frogs are a very good symbol of the health of our environment because they are so sensitive to environmental changes. The disappearance of many species of frogs is a sign that something is going wrong with the environment.

A bio-indicator is a living (*bio means life*) creature that is indicating or telling you something about the area that it lives in. It can be something positive (good) or negative (bad). For example, having lots of frogs in an area tells you and scientists that the environment is healthy and complete for the frogs. If for some reason frogs are suddenly missing from an area or their population is declining (shrinking), then this is telling you that their environment is changing. Sometimes bio-indicators can be used to show us that the quality of the air we breathe or water we drink may not be of a high quality.

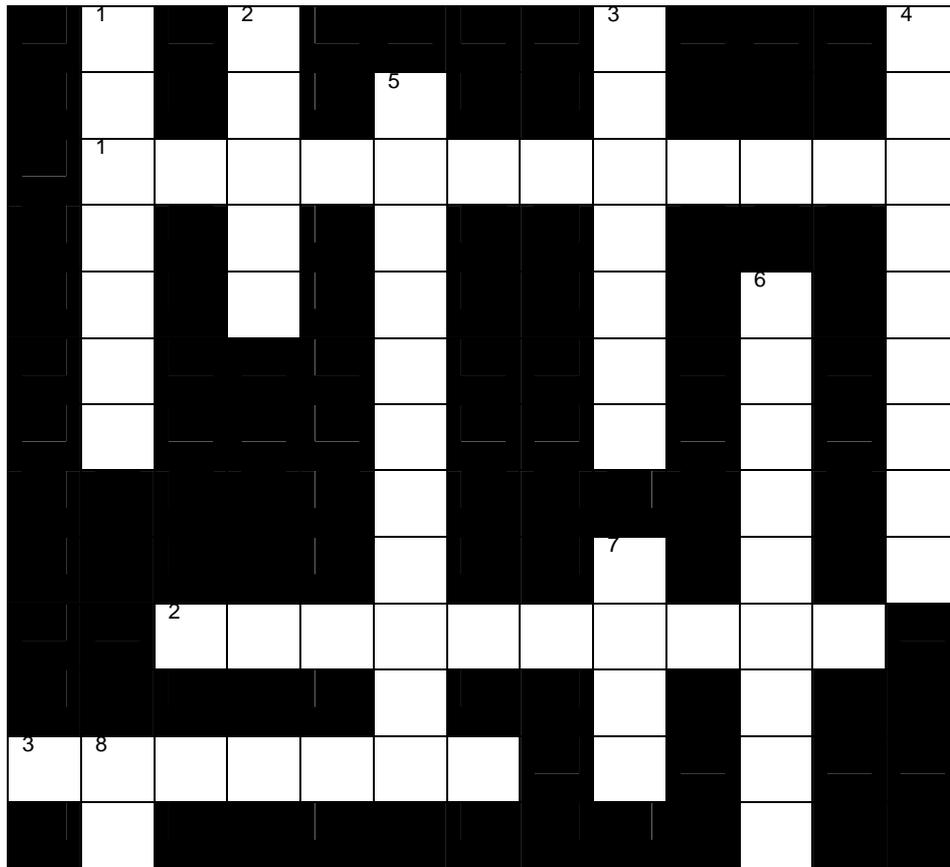
Frogs are good bio-indicators because they:

- spend part of their life cycle on land and some in water.
- have a permeable skin (which allows substances to move relatively freely into its body).
- absorb and concentrate (make stronger) toxins in their fatty tissue.

'Frogs are a symbol of the health of our environment'

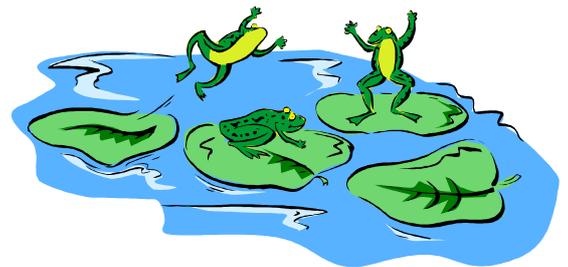
In your own words explain what this means.

2.4 Environmental Health Crossword



Across

1. A _____ is a living creature that can tell us about the health of the environment.
2. Frogs help _____ monitor the environment.
3. Frogs are an indicator of air and water _____.



Down

1. Wetlands, lakes and swamps make an ideal _____ for frogs.
2. _____ are an example of an animal that acts as a bio-indicator.
3. Worldwide, populations of frogs are in _____.
4. The skin of frogs is _____.
5. Frogs are a good indicator of the health of the _____.
6. One of the major threats to frogs is _____.
7. Bio means _____.
8. Frogs indicate of the amount of __ light entering the atmosphere.

Frogs in the environment are a true sign of a well balanced ecosystem!

2.5 Threats to Frogs

Like all living creature, frogs have natural predators – or enemies in the wild. There are lots of different predators that will eat frogs, such as snakes, lizards, birds, and other small mammals. Even in water; frogs, eggs and tadpoles might be eaten by fish or other frogs!

But the largest enemy that frogs have isn't a predator, it is something humans have created. Can you guess what it is? If you need a hint, unscramble the letters below!

L U O W L P N I O

— — — — — — — —

Use the oil drums to draw or write some of the types of pollution or other threats to frogs.



2.6 Threats to Frogs Fact Sheet

In recent years, scientists have become increasingly aware of a worldwide decline in the numbers of frogs. Frogs are certainly disappearing in Australia. Eight frog species have become extinct in the last 25 years, and several more are likely to become extinct in the near future. A range of factors are responsible for the decline in frog populations and include:

- ✎ destruction of natural habitat;
- ✎ increases in ultra-violet radiation (and the decrease of the Ozone layer);
- ✎ pollution;
- ✎ introduction of new predators or competitors into breeding areas; and
- ✎ diseases.

Habitat destruction: Clearing large areas of native vegetation (for housing and agriculture), logging of forests, drainage of wetlands or allowing cattle to graze in them and other disturbances such as fire which reduces the amount of bush for frogs to shelter in, have left frogs with fewer areas to live and breed in. A frog's habitat is the environment in which it feeds, shelters and breeds and if it cannot find suitable habitat, it will die. So it's hardly surprising that habitat loss is one of the greatest threats to frogs.

Depletion of our Ozone Layer: Increases in ultra-violet (UV) radiation as a result of the earth's thinning ozone layer may also have lethal effects on amphibians. Experiments in the laboratory and in the field have shown that UV radiation interferes with the development of eggs in some species. Increased UV levels may have even worse effects in higher elevations, where levels are already high.

Pollution: Frogs are very vulnerable to chemicals and other contaminants in our waterways. Frogs generally spend part of their life-cycle in water, and their moist skins are especially sensitive to pollution. Frogs breathe and drink *through* their skin, so pollution has a really devastating effect on them. This is particularly true in their developmental stages. In addition, chemicals can interfere with a frog's natural ability to fight off diseases and infection.

Competition and Predators: Sometimes creatures that aren't normally found in an area are introduced to that area. This can spell big trouble for local frogs. For example, Cane Toads were introduced to Queensland in 1935 and have spread through Queensland and into New South Wales and the Northern Territory. They have no natural predators here in Australia and in some areas have reached plague proportions. They prey on other frogs and compete with native frogs for food and habitat.

Diseases: Scientists think the decline and disappearance of some frog species in Australia and overseas may be partly due to a disease caused by a fungus which attacks a frog's skin. Since frogs use their skin in respiration, this makes it difficult for the frog to breathe. The fungus also damages the nervous system, affecting the frog's behaviour and eventually killing them.



Help! We need to stop frogs disappearing.
Choose one of the threats to frogs and create a poster with tips about what people can do to reduce the threat!