



Australian Government  
Department of the Environment and Heritage

F A C T S H E E T

# Frogs of Australia

Australia has many different frog species, with over 200 described and probably more to be discovered. However, Australia's frog populations are declining, as are populations worldwide, for reasons that are as yet unknown. This is a disturbing trend, because the presence of frogs is a good indication of a healthy environment.



Giant barred frog  
*Mixophyes iteratus*  
(endangered)  
Illustration by  
Barbara Cameron-Smith

Frogs are cold-blooded animals belonging to a group known as amphibians. Usually, they start life as tadpoles in an aquatic (water) environment, and transform into frogs to become terrestrial (land-based) animals.

About 4000 frog species have been identified worldwide, with 214 known in Australia. Many of Australia's frogs are found nowhere else in the world.

Although frogs have lungs to breathe, they also breathe through their skin to regulate moisture and fluid transfer in a process called cutaneous gas exchange. Some frogs also cover their skin in a slimy substance (mucus) to protect the skin and keep it moist.

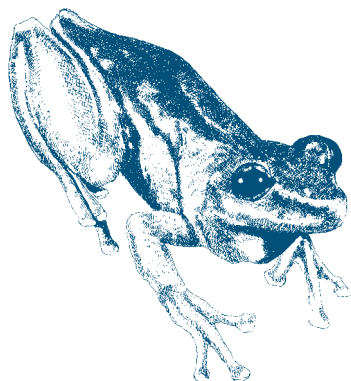
Despite their need to stay moist, frogs have adapted to an extraordinary range of environments, particularly in Australia. For example, the South Australian water holding frog *Cyclorana platycephala* spends most of its time underground. When pools dry up, it burrows into the sandy ground with a 'spade' on its foot, enclosing itself in a transparent waterproof cocoon made from layers of shed skin until the next wet period. This may not happen for years. This frog has a unique ability to retain large amounts of water by storing it in the bladder or in the pockets of the skin. Tree frogs have adhesive pads on their toes that act like small suction cups.

This allows them to climb almost any surface, and their bodies gleam with a waxy coating to prevent dehydration.

The Western Australian turtle frog *Myobatrachus gouldii*, which looks like a baby turtle without a shell, spends much of its life underground in sandy soils and feeds on termites.

Australia's frogs vary in size from the world's largest tree frog, the white-lipped tree frog *Litoria infrafrenata*, which grows up to 135 millimetres, down to the slender-bodied javelin tree frog *Litoria microbelos*, which is only 14 millimetres long. Many species are less than 30 millimetres, and are commonly called froglets or toadlets. Most froglets live close to permanent water, such as the Flinders Ranges froglet, which lives in the narrow spaces between boulders and rocks at the edge of creek beds. Toadlets generally do not need to live close to freestanding water. Many are dull brown or slate coloured.

The southern corroboree frog *Pseudophryne corroboree* is the most striking frog in Australia. It has boldly patterned stripes of glossy black and brilliant yellow, and each frog has its own pattern on the throat. The southern corroboree frog inhabits bogs and surrounding woodland in Kosciuszko National Park, and is now on the brink of extinction.



Creek frog  
*Litoria rheocola*  
**(endangered)**  
Illustration by  
Barbara Cameron-Smith

## Distribution and status

Frogs are found Australia wide, with the greatest diversity being in the east (particularly north-east Queensland) and south-west. Some species are widespread, but others are very localised. For example, the green tree frog *Litoria caerulea* is found across the entire north of the mainland, from the suburbs of Darwin to the gorges of Alice Springs, whereas the Baw Baw frog *Philoria frosti* is found only on Mount Baw Baw, Victoria.

Although a few Australian frog species, such as the green tree frog, are flourishing in human environments, many species have suffered dramatic population declines since the 1980s. Fifteen species of Australia's frogs are currently endangered, twelve are listed as vulnerable and four have become extinct. Of particular concern is the disappearance of frogs from pristine habitats.

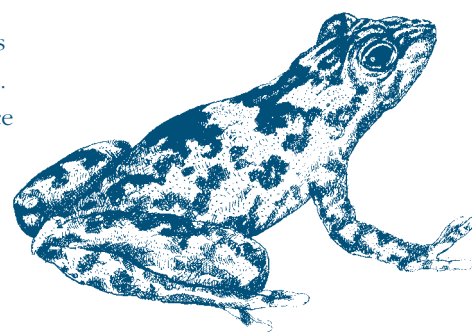
## Ecology

Frogs eat a wide range of invertebrates (creatures without backbones), including worms and insects such as backswimmers and damselfly larvae. Most tadpole species feed on small particles of organic matter, but some even eat other tadpoles.

The best known and most common method of frog reproduction is through eggs laid in jelly in water, although some frog species lay their eggs on land. Unlike most frogs, the Baw Baw frog lays its eggs in moist, dark vegetation and the tadpoles do not live in water. Instead, they develop entirely from their yolk reserves. Frog eggs of different species vary in size, colour and number; they may be laid singly, in small clumps or in huge rafts of foam; some sink, others float. Tadpoles vary in colour, size and shape and develop rapidly; they broaden in the head, grow arms and legs, and absorb the tail to develop into miniature frogs.

In most frog species the adults do not care for their young, but at least three species take elaborate care of their offspring. The male marsupial frog *Assa darlingtoni*, of the high country on the New South Wales–Queensland border, carries the developing tadpoles in special pockets. The eggs are laid in moist soil. By the eleventh day, blind white tadpoles hatch and wriggle up the male frog's sides into his hip pouches, to emerge as baby frogs 70 days later.

The gastric brooding frog *Rheobatrachus silus* and the Eungella gastric brooding frog, now presumed extinct, were even more unusual. The female swallowed her fertilised eggs and stopped feeding for six weeks.



Eungella day frog  
*Taudactylus eungellensis*  
**(endangered)**  
Illustration by  
Barbara Cameron-Smith

The eggs passed through the tadpole stage in her stomach, and emerged from her mouth as young frogs. They were protected from being digested either by the egg jelly and other chemicals, which shut down the gastric juices, or by mucus. This ability to turn off powerful digestive acids aroused interest because of its potential application to the treatment of gastric ulcers in humans. Sadly, neither species has been sighted since the first half of the 1980s.

## Threats

The first evidence that Australian frog populations were in serious decline was provided by the disappearance of two species — the southern day frog and the gastric brooding frog. However, the urgency of the situation and the global nature of frog declines were not apparent until 1989. Although the factors responsible for the sudden fall in frog numbers are not clear, a number of human activities are harmful to frogs. Some of the most important include:

- land reclamation by drainage in wetland areas, leading to loss of breeding sites
- the conversion of temporary ponds to dams for stock use, resulting in trampling by animals (such as cattle) and destruction of surrounding sheltering sites
- insecticide and herbicide use in agricultural and horticultural areas, particularly aerial spraying
- introduction of the mosquito fish, trout and other fish that prey on frog eggs and tadpoles
- increased salinity caused by land clearance (most frogs are salt intolerant)
- siltation from forestry operations.

Other factors possibly contributing to frog declines include global changes to air and water quality, and climate change.

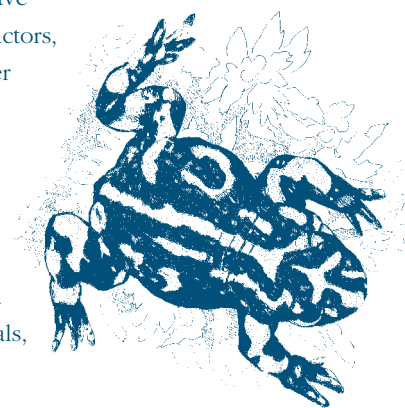
In 1998, a new threat was found to have spread through frog populations since the 1970s. Chytrid (pronounced 'ky-trid') fungus *Batrachochytrium dendrobatidis* is an infectious disease that affects amphibians worldwide. The fungus can cause anything from sporadic deaths in some amphibian populations to 100% mortality in others. Although chytrid fungus is known to have caused the death of a number of individual Australian frogs, so far there is no agreement that it is the main cause of population declines.

While the reasons for many local losses of frogs are obvious, such as drainage of wetlands, many disappearances, such as that of the Eungella gastric brooding frog, cannot be explained. This species lived in creeks that were difficult to access and that were not subjected to any apparent human pressure or to climatic extremes such as drought.

## Recovery

It is possible that frog declines have resulted from a combination of factors, which together have had a greater effect than they would have had individually. Until an explanation is found, it will be difficult to reverse the trend and prevent further loss of frog species. Scientists continue to search for a cause. In the meantime, individuals, community and conservation groups are helping conservation efforts by rehabilitating frog habitats and surveying populations, and following recovery plans that have been developed for a number of Australia's endangered frogs.

Recovery plans focus on detailed study of the frogs, their habitats, their needs and their diseases, and on long-term monitoring of frog populations. The plans include a range of conservation activities such as managing fire, controlling weeds, grazing and recreational activities and introducing frogs to new or previously occupied sites. The recovery plans put strong emphasis on community participation and on sharing the information gained as widely as possible.



Southern corroboree frog  
*Pseudophryne corroboree*  
(endangered)

Illustration by  
Barbara Cameron-Smith



**Baw Baw frog**

**Scientific name**

*Philoria frosti*

Illustration by  
Barbara Cameron-Smith

The nationally endangered Baw Baw frog is found only in an area of just 80 square kilometres on the Baw Baw plateau, Victoria. It needs a special habitat to survive. Unlike most tadpoles, Baw Baw tadpoles do not feed. Instead, they hatch with a yolk sac that sustains them until they turn into frogs. They do not swim either, but develop under vegetation and leaf litter where there is little free-flowing water. Once thought to number between 20 000 and 30 000, now fewer than 600 frogs remain. The reasons for the decline of the Baw Baw frog are unknown, but could include climate change, pollution, habitat destruction or disease.

**Definitions of conservation status terms**

The *Environment Protection and Biodiversity Conservation Act 1999* promotes the conservation of threatened species and biodiversity. Under this Act, there are six different categories of threatened species:

**Extinct** — there is no reasonable doubt that the last member of the species has died.

**Extinct in the wild** — the species is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range.

**Critically endangered** — the species is facing an extremely high risk of extinction in the wild in the immediate future.

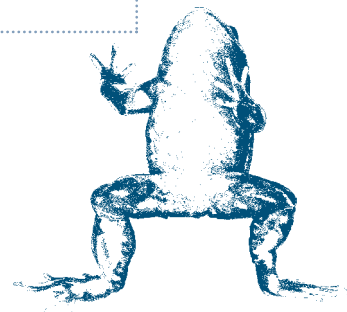
**Endangered** — the species is not critically endangered but it is facing a very high risk of extinction in the wild in the near future.

**Vulnerable** — the species is not critically endangered or endangered but it is facing a high risk of extinction in the wild in the medium-term future.

**Conservation dependent** — the species is the focus of a specific conservation program without which the species would become vulnerable, endangered or critically endangered within a period of five years.

White-bellied frog  
*Geocrinia alba*  
**(endangered)**

Illustration by  
Barbara Cameron-Smith



**Further reading**

Campbell A (1999). *Declines and Disappearances of Australian Frogs*. Environment Australia, Canberra.

Cogger HG (1994). *Reptiles and Amphibians of Australia*. Reed Books, Sydney.

Tyler MJ (1997). *Action Plan for Australian Frogs*. Environment Australia, Canberra.

**For more information, contact:**



Australian Government

Department of the Environment and Heritage

GPO Box 787, Canberra ACT 2601

Community Information Unit **1 800 803 772**

Web site [www.deh.gov.au](http://www.deh.gov.au)



**Natural Heritage Trust**

*Helping Communities Helping Australia*  
A Commonwealth Government Initiative