



Creating a...

Frog Friendly Habitat

in your backyard, school ground or rural property



a resource for communities in the ACT and region

This leaflet is an educational and training resource for the ACT and Region Community Frogwatch Program. Frogwatch is a community frog monitoring activity that aims to involve large numbers of volunteers of all ages to undertake frog monitoring and protect frog habitats.

A large amount of information about creating frog habitats currently exists. This leaflet provides information specific to the ACT and surrounding region, and is designed to be used in conjunction with existing resources. A recommended resource is: "Bonking in the Garden", produced by Alcoa Frogwatch and the Amphibian Research Centre.

A list of references and contact details can be found at the end of this document.



Why create a frog friendly habitat?

Frogs are a valuable asset to the environment. Frogs and tadpoles are an important link in the food chain of many ecosystems and do a great job helping control insect pest populations. Tadpoles also act as natural nutrient filters and can help to control levels of algae in your pond. Frogs are often sensitive to changes in their habitat and can serve as indicators of the overall health of both aquatic and terrestrial environments.

Recently, there has been an alarming decrease in frog numbers worldwide, for reasons scientists can only speculate. Pollution of waterways and loss of habitat certainly play a significant part. Other evidence suggest global warming, acid rain, widespread use of chemicals and spread of the *chytrid* fungus as likely culprits.

Whilst many species are still considered common in the ACT, local populations of these species can be threatened by the very activities we undertake in our backyards and surrounding nature reserves. Creating or maintaining a frog friendly habitat in our backyards or schoolyard is one way that we can help to protect local frog populations and maintain the health of our natural environment. Each habitat that is protected or created encourages local frog species and other native species to inhabit the area.

Before you begin

Before you begin, find out whether there are already frogs living in your backyard or school ground. Some frog habitat can be easily overlooked because we typically expect that frogs live in ponds and other bodies of open water. We should be aware that frogs can be found in a diversity of natural habitats. Inspect any logs, rocks and thick vegetation for frogs before disturbing the area. Identifying existing habitat will allow you to manage these areas so that frog populations are protected from disruptive backyard or school ground activities.

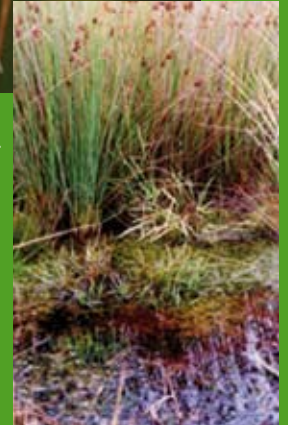
A list of frog species that occur in the ACT and region, can be obtained from the ACT Frogwatch Coordinator. This may give you further ideas about the best type of habitat to create.

Whilst it is likely that you will not be able to provide refuge for the more unusual species in suburbia, providing refuge such as logs and rocks for local frog species in our community is essential if we wish to protect local populations and maintain the health of our natural environment.

You will also need to consider that frogs can be extremely noisy during their breeding season. It is best to consult your neighbors about this issue before you begin, rather than having to fill in your pond or move it.



Two individuals
(Limnodynastes tasmaniensis) in amplexus.
Photo: L. Fucsko www.frogs.org.au



Ideal frog habitat:
Shallow water and thick
native vegetation.
Photo: Chris Cleeman,
www.frogs.org.au

Creating or maintaining a frog friendly habitat in our backyards or schoolyard is one way that we can help to protect local frog populations and maintain the health of our natural environment.



The Victoria Frog Watch Frog Friendly Garden of the Year, 2002.
Photo: Hohaus family. www.frogs.org.au

General considerations for frog habitats

Frogs need shelter, food and a place to breed. However, it is not necessary to provide all of these requirements in one habitat.

Most frogs require a source of moisture to breed such as permanent water bodies, temporary water bodies or streams and rivers. Thus, creating a pond or frog bog may assist the survival of frogs in suburban areas by providing stable breeding sites.

You can also provide valuable frog habitat without building a pond. Frogs need protection from predators and from the extremes of summer and winter, and may move away from their breeding environment in order to find suitable environments. Such places act as important stepping-stones to allow frog movement through your local area. These refuges may take the form of damp areas with loose friable or sandy soil, and may be distinguished by other habitat features including large logs and rocks under which frogs can take refuge, or patches of unmown native grass.

Either type of habitat can help to maintain frog populations in urban areas, and both types designed well, will provide the necessary food requirements. Brick walls, paling and birdwire fences will prevent most frogs from getting into your backyard. A gap of about 3 cm here and there will ensure that all ACT frog species will be able to get through.

Regulations

Ponds may require building or development approval if the depth of the water is greater than 30 cm or the height (above ground level) is greater than 1.2 m.

For specific details, refer to the ACT Planning and Land Authority website. Go to the Table of Exempt Works, section 9: an outdoor ornamental pond. www.actpla.gov.au/bepcon/build/exemptwork.pdf



Rocks, logs and vegetation provide important hiding places for frogs.
Photo: Josh Hilton. www.frogs.org.au

Considerations for suburban ponds

Placement

- A pond should be positioned so that roughly two thirds of the surface is in shade. Some sunshine is desirable to promote algal growth (which is ideal tadpole food), but too much may result in excessive algal growth which is detrimental to water quality. Alternately, new ponds may be placed in the sunniest part of the garden and plants added nearby to create the desired level of shade.
- Look for a low point in the landscape where water naturally collects. Even if these areas do not stay wet all year round, they may retain some moisture, particularly under rocks and large logs.
- Frogs can be very noisy. Locate the habitat away from windows, your neighbours house and not directly under trees.
- Always check for underground pipes before digging.
- Be mindful that if there are deciduous trees growing close to your pond they will fill your pond with leaves every Autumn. This can result in excessive nutrient build up in the pond and result in a decrease in oxygen levels in the water as the leaves break down. Low oxygen levels in the water will not encourage frogs and can make the pond rather smelly.

Structural features of pond habitats

- Ponds can be built from a variety of materials. Plastic pond liners create a relatively cheap pond that is quicker and easier to construct than a cement lined pond. However, make sure you use strong plastic that won't be punctured by kids with toys or dogs' claws. It is also important to remember that shallow ponds lined with plastic may get very hot and so plenty of shade will be required. Temporary ponds may not require any liner at all, particularly if they occur in areas that are naturally wet and boggy. They may just need materials added to stop water from draining away, for example clay.
- Create shallow edges to allow frogs to enter and exit. At least one edge of the pond should have a surface no steeper than 45 degrees. If steep edges are a feature of an existing pond, submerged logs provide good access ramps for frogs.
- Make a flat base with a maximum depth of least 50 cm in one spot. A deep patch of water helps to maintain the water level in dry periods and provides a cooler patch of water during hot periods.
- Cover the base with washed sand or gravel. A loose substrate on the base of the pond can provide habitat for aquatic invertebrates, some of which make great food for frogs.

- Place rocks, submerged logs and potted aquatic plants in the water to create flat shelves for frogs to sit on and places to hide from predators. Some species like to sit in shallow water and call amongst vegetation, so be creative with your placement of potted plants, logs and rocks.
- Include a boggy area or wet zone adjacent to the pond to prevent frogs from dehydrating. This is a section of ground kept wetter than the surrounding landscape, containing marshy grasses, moss or other plants that like moist areas. It is best situated in an area where water naturally pools during rain events.



These logs provide a good access ramp for frogs. Photo: J McCarthy.

Providing shelter around ponds

- It is important to provide shelter for frogs in the area around a pond. Place rocks and logs in the vicinity, with some extending into the water if possible.
- These items provide damp places where frogs can shelter from predators and extreme conditions. The larger the rocks or logs, the better.

Chemical and toxin free

- Locate the area away from sprinkler systems. Tap water contains chlorine and is harmful to tadpoles and frogs. As an alternative, locate the habitat where it will receive rainwater runoff such as a downpipe from your roof. If the pond needs to be refilled, tap water can be put in an open vessel for 24 hours, before adding it to the pond, to dissipate the chlorine.
- Keep away from areas where pesticides or fertilisers may be used. Do not allow water from contaminated areas to run into the habitat.
- Keep the frog area well away from trees or shrubs that shed poisonous leaves such as oleanders or pines.



- Do not handle frogs, as their skin absorbs moisture and chemicals from their immediate environment. Small traces of chemicals from soaps, detergents, or other chemicals you may have handled can be harmful to frogs, even if they are safe to humans.

Safety

- If you have small children, or small children visit the site, a safety mesh (very sturdy wire mesh) can be installed over the top of the pond, or just below the surface to prevent children entering the pond.
- Educate young children about the frog habitat and the importance of not entering the water for the protection of both children and frogs alike.

Fish or no fish?

- As far as frogs and tadpoles are concerned, it is best to not have fish in your pond at all. Many fish species will prey on tadpoles, and tadpoles in this region are generally very susceptible to predation by fish.
- If you must have fish, the most suitable species for small frog ponds are the two small native species Western Carp Gudgeon (*Hypseleotris klunzingeri*) and Mountain Galaxias (*Galaxias olidus*). Whilst there are many other small Australian species, none are native to the Canberra region and so are not suitable for release in urban ponds.
- It is not permitted (or desirable) to move fish from one water body to another under the ACT Fisheries Act 2000 unless you have a licence. To legally obtain the fish suggested above, you need to source them from an aquarium shop or fish breeder. There are a number of aquarium shops in Canberra that deal in native fish.
- You should not use alien species such as Eastern *Gambusia* (formerly known as Mosquito fish) as this species is known to harass and prey on tadpoles, and is listed as a threatening process for frogs in NSW. To avoid this risk, under no circumstances should you transfer fish from ponds or other water bodies. Mosquito fish are often mistaken for native fish as they are unfortunately very common in many lakes and streams. Some frog fact sheets also list the White Cloud Mountain Minnow (an alien fish) as a suitable mosquito control agent for frog ponds, however this species has recently established feral populations in northern NSW and Qld, and so is not a suitable species for introduction into urban ponds or other water bodies.

If you don't have a pond, you can still provide shelter for local frog species.

Considerations for non-pond frog habitats

Whilst frogs typically seek open water bodies for breeding, throughout the year they may use a diversity of habitats to seek refuge from predators and harsh environmental conditions. So, even if you don't have a pond, you can still provide shelter for local frog species.

Placement

- Find a spot in your yard that stays quite damp throughout the year, for example where water naturally pools during periods of high rainfall.
- Locate the habitat away from heavily lit areas and areas that people might walk through. Off to the side of a path is fine.

Structural features of non-pond habitats

- Refuge can be provided in the form of a patch of some of the smaller plant species mentioned below. Choose plants from the ephemeral list.
- Scatter rocks and logs amongst these plants.

Frog refuge in drier areas

- If you don't have a wet patch in your backyard you can still provide a frog refuge area. Plant a patch (2 to 3m²) of tussock forming grasses and native ground covers (see dryland plant list below) with plenty of rocks and logs amongst them.
- The rocks and logs are very important in these drier frog habitats. The larger they are, the more likely it is that the soil underneath them will remain moist throughout extended dry periods. This provides important protection for frog skin that must remain moist for them to survive.



Frogs will bury down under and between rocks and logs to find damp cool places. Photo: Beth Mitchell

Safety

- If you have a cat try not to let it outside at night, particularly in Spring and Summer. Many cats love to play with frogs which, unfortunately, tends to end in the demise of the frog.
- Educate children about the habitat and the importance of not disturbing the site too often. When looking for frogs in the habitat always wear sturdy gloves. While big rocks and logs provide habitat for frogs, they may also provide habitat for other creepy crawlies that bite.

Local plant species suitable for frog habitats

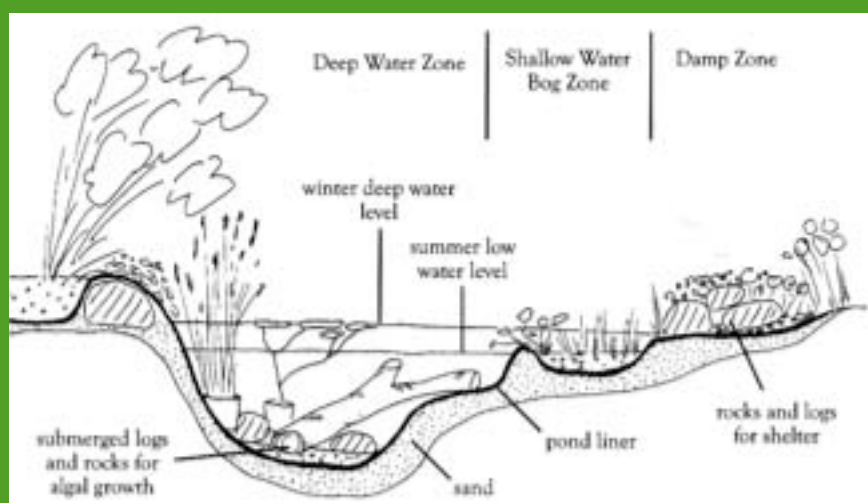
Use local plants to help conserve local gene pools, create the natural habitat of local frogs and the insects they feed on. A wide variety of native plants such as trees, shrubs and grasses will create a balanced plant environment and be less likely to create weed problems. Deciduous species will drop their leaves every autumn and so it is best to avoid planting such species too close to ponds. Aquatic plants can be placed in ponds still in their pots.

The diagram below illustrates the main zones in which to locate the aquatic plants. The following section details plant species that are local to the Canberra region, for each of the zones of a frog friendly habitat.



Above: This swale at the ANU provides an important dryland refuge, it has damp ground underneath rocks, logs and vegetation for most of the year, and provides temporary breeding habitat after rain. Photo: Lynn Churchill

Cross section of an ideal frog pond showing different plant species. Diagram: www.frogs.org.au



Wet Species

Deep water zone and shallow water zone - always wet

- ***Eleocharis acuta*** - Common spike rush or hair grass. Evergreen perennial to 2 m high x 50 cm wide. Good habitat plant. Plant in open sunny positions in wet soil or shallow water to 20 cm deep.
- ***Baumea articulata*** - Jointed twigrush. Grows in clumps up to 2.5 m tall. Grows in water less than 1 m deep.
- ***Schoenoplectus validus*** - River clubrush or Great bulrush. Will grow up to 3 m tall. Grows in water up to 80 cm deep. Good habitat plant.
- ***Alisma plantago*** - Water plantain. Large broad-leaf perennial. Grows well in shallow marshy areas or drying mud.
- ***Myriophyllum species*** (*M. variifolium*, *M. crispatum*) - Watermilfoil. A feathery aquatic plant often found in farm dams with long trailing stems that provide good shelter for tadpoles. AVOID *M. aquaticum*, as it has potential to become a major weed.
- ***Potamogeton ochreatus*** - Blunt pondweed. A submerged annual or perennial that grows in water up to 5 m deep. Provides good underwater shelter for tadpoles.

Myriophyllum crispatum

Photo: www.walliscreekwatergarden.com.au



Baumea articulata
Photo: Sainty

Ephemeral or Bog Species

Damp Zone and Bog Zone - retains water after rain and can transform to a bog for extended periods. Typically dry during periods of no rainfall.

- ***Juncus subsecundus*** - Finger rush. Perennial rush that will grow to 90 cm high.
- ***Juncus usitatus*** - Common rush. Grows in damp soils and shallow water to 30 cm deep. Will grow 1 m high x 2 m wide. Good for filtering nutrients and providing habitat.
- ***Carex appressa*** - Tussock sedge, tall sedge, cutting grass, or sword sedge. Common in open sunny positions along margins of rivers, creeks and swampy areas. Grows up to 1.5m high. This species must be handled with care as it's leaves are sharp and will cut fingers.
- ***Phragmites australis*** - Common reed. Will grow along banks, rivers and creeks and in swamps to 1.2m deep. Shade tolerant.

Upper Bank Species

Bank and surrounds - occasionally wet, normally dry or damp

- ***Poa labillardierei*** - River tussock. Coarse, dense perennial to 1.2 m high.
- ***Lomandra longifolia*** - Spiny-headed mat-rush, Honey reed. Flat tufted perennial herb. Usually grows 50 to 100cm high.
- ***Carex appressa*** - Tall sedge. Densely tufted, tussocks growing 40 - 100 cm high.
- ***Phragmites australis*** - Common reed. A native robust perennial, growing to 4 m high with an extensive rhizome system.



Carex appressa
Photo: www.abulk.com.au

Juncus usitatus
Photo: Lynn Churchill



Phragmites australis
Photo: www.ambiente.venezia.it

Dryland Species

Surrounds - always dry

- ***Poa labillardierei*** - River tussock
Coarse, dense perennial to 1.2 m high.
- ***Themeda triandra*** - Kangaroo grass
A tufted perennial grass that can grow to 1.5 m tall.
Has attractive red-brown seed heads in summer.
- ***Wahlenbergia communis*** - Common bluebell
Perennial tufted herb, growing 5 to 75 cm high.
Produces attractive blue flowers year round.
- ***Lomandra longifolia*** - Spiny-headed mat-rush,
Honey reed
Flat tufted perennial herb. Usually grows 50 to 100 cm high.
- ***Dianella revoluta*** - Spreading flax lily, Blueberry lily
Perennial herb growing to 1 m high.
- ***Chrysocephalum apiculatum*** - Yellow buttons, Common everlasting
Variable sometimes bushy perennial herb, growing 7 to 60 cm tall. Gold-yellow flowers in late spring to early summer.
- ***Myoporum parvifolium*** - Creeping myoporum, or Creeping boobialla
An attractive shrub forming mats to over 3 m diameter.
- ***Grevillea lanigera*** - Woolly grevillea
Spreading shrub, mostly 0.2-1.5 m high.
- ***Calytrix tetragona*** - Common Fringe Myrtle
Hardy shrub to 0.5 - 2 m high, with clustered white or pink flowers.
- ***Hardenbergia violacacea*** - Purple coral pea, False Sarsparilla, or Waraburra (Cadigal)
Evergreen shrubby vine up to 2 m long, with attractive purple flowers.



Themeda triandra
Photo: Lynn Churchill



Grevillea lanigera
Photo: N. Marriott, www.anbg.gov.au

Some plants to avoid

Avoid using floating plants like duckweed (*Lemna*) and water fern (*Azolla*). These will quickly cover the water surface and deprive tadpoles of oxygen. They will also block out the light, which is needed to allow algal growth.

As with all garden plantings, make sure none of the species you are planting are registered weeds. A chart of local weed species, "Garden Plants Going Bush and Becoming Environmental Weeds in the ACT Region" is available from Environment ACT to help you identify registered weed species.



Myoporum parvifolium
Photo: A. McWhirter, www.anbg.gov.au

So Where are the Frogs?

Basically, if you build it, they will come!

In the ACT, and NSW, it is illegal to take frogs or tadpoles from the wild or to move them from one water body to another. Moving frogs or tadpoles can disrupt natural populations and spread disease.

Frogs move around most parts of the ACT during rainy weather and at night. You may need to be patient, but if your frog habitat is well designed, and provides appropriate shelter, food and protection, frogs will find their way there. And even if the frogs don't come straight away, you will still have an excellent mini ecosystem for other creatures to enjoy!

Schools and other institutions can obtain a permit to take tadpoles from the wild for study purposes but they must be returned to the exact spot they were taken from as soon as their legs have formed. Teachers should be aware that froglets will starve very quickly, within a day or two, once they have grown legs and emerged from the water. It is best to return them before their tails are reabsorbed.

Permits are available from the Environment ACT website:

[www.environment.act.gov.au/
nativeplantsandanimals/
scienlicaps](http://www.environment.act.gov.au/nativeplantsandanimals/scienlicaps) .

Photo: S. Eipper
www.frogs.org.au



Useful contacts

ACT and Region Community Frogwatch Program

ACT Frogwatch Coordinator
Ginninderra Catchment Group
Ph 6278 3309
Email waterwatch@
ginninderralandcare.org.au

Seed and plant supplies

Provincial Native Plants

Ph 6262 6456
www.provincialnativeplants.com

Warren Saunders Horticultural Services

Ph 0418641306
email warrenclara@netspeed.com.au

Greening Australia - ACT & SE NSW

Ph 6253 3035
Fax 6253 3145
www.greeningaustralia.org.au/GA/ACT/

Australian Native Plant Society

Ph (02) 62511501
Native landscaping

Native Nooks. Contact Leon Horsnall

Ph 62316738 or 0418627196
email leonh@pcug.org.au or www.
pcug.org.au/~natnooks

Educational resources

Centre for Environmental Education Australia

They have an excellent frogzone education kit that can be purchased.
www.ceeaustralia.org.

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Helpful websites

The Amphibian Research Centre and Victorian Frog Group.

www.frogs.org.au

"Bonking in the Garden" can be downloaded from here. You can also join the community discussion group to have your questions answered about all frog-related matters, including frog habitat issues.

Frogs Australia Network

www.frogsaustralia.net.au

The Frogs Australia Network aims to establish itself over the coming years, providing a comprehensive 'portal' that showcases the efforts of frog conservation across Australia and directs you to the right source of information and people. The website includes the Australian Frog Database, Conservation, Resources, Community, Members, and News.

Environment ACT

www.environment.act.gov.au/
petsandlocalwildlife/localwildlife/
frogpondsinbackyards

Frog and Tadpole Study Group (FATS)

www.fats.org.au

Department of Environment and Heritage

www.deh.gov.au/education/
publications/frogpond.html

Landlearn

landlearn.netc.net.au/newsletter/
2004term1/page1.htm
An great example of a school frog pond project from Victoria.

Books

Wet & Wild: A Field Guide to the Freshwater Animals of the Southern Tablelands and High Country of the ACT and NSW. Lintermans, M and Osborne, W. S. 2002. Environment ACT, Canberra.

A great field guide for the Canberra region. Available from the Australian National Botanic Gardens Bookshop and other good book stores.

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Robin Villers-Brown, Autochthonous Gardening and Landscaping Group.

Rosemary Blemmings, Australian Native Plant Society.

Leon Horsnell, Native Nooks.

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