Frogs of south-west NSW
A glovebox guide to their identification, ecology and conservation
Second Edition
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Published by:

Office of Environment and Heritage
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: +61 2 9995 5000 (switchboard)
Phone: 131 555 (environment information and publications requests)
Phone: 1300 361 967 (national parks, general environmental enquiries, and publications requests)
Fax: +61 2 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

Report pollution and environmental incidents

Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au
See also www.environment.nsw.gov.au

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Purpose of this guide

Frogs are found in wetland ecosystems through most of Australia. Their presence is critical to maintaining healthy environments. Their dual life cycle, which includes an aquatic tadpole stage and a terrestrial frog stage, and the fact they often occur in large numbers, means they filter and cycle large quantities of nutrients. This service directly benefits the environment, including water quality. Frogs also consume invertebrates, many of which are pests to humans. Frogs are food for other animals, including fish, reptiles and birds, and are an important part of Australia’s biodiversity.

This guide aims to assist in the identification of frog species that are commonly found on the highlands, tablelands, slopes, and plains of south-west New South Wales, contributing to a broader appreciation and knowledge of these interesting and important animals. This guide is a starting point to understanding local frog fauna, and its ecology and conservation needs. Other sources are available that provide additional details (refer to the Bibliography for some examples).

Frog calls

Frogs are often heard, but not seen. Listening to frog calls is a common method of identifying them. This guide includes a companion CD containing recordings of frog calls, to help you identify frog species.
Water for frogs

Water for rivers and wetlands plays an important role in restoring and maintaining healthy habitat for frogs and other native wildlife across the State.

OEH has been delivering water to wetlands on public and private land across the region for more than 15 years.

In a landscape significantly altered by river regulation, these managed flows are helping to restore and maintain critical frog habitat for a variety of species including the endangered southern bell frog.

Water for the environment supports healthy habitat, creates connectivity across the landscape and helps to maintain viable frog populations in the event of drought or other threats.

While some of the more common frog species respond readily to the arrival of water, other species, like the southern bell frog, appear to be more selective.

Restoring suitable feeding and breeding habitat may take several years and repeated applications of environmental water. Only then are we likely to establish diverse and abundant frog communities at our wetlands.

OEH uses the best available science, management and local expertise to determine priority sites for watering in order to achieve the best possible outcomes.
Frog conservation in the NSW Murray and Murrumbidgee catchments

Over the past 50 years the number of globally declining and extinct frog species has increased dramatically. In the region covered by this booklet, eight frogs are listed as threatened in New South Wales or nationally. These species have undergone extensive and ongoing declines across their range, raising concerns for their long-term survival. These declines can be attributed to a range of factors, but particularly to infection by the recently introduced amphibian chytrid fungus, which causes a lethal disease called ‘chytridiomycosis’. Habitat modification is an ongoing threat for most species. The NSW Office of Environment and Heritage (OEH) has implemented conservation programs for most of these threatened frog species over the past two decades. Two species (southern corroboree frog and spotted tree frog) would already be extinct if not for these efforts. Frog conservation work continues, primarily via two OEH programs: Saving our Species and Water for the Environment. The work done for these species has only been possible with the support of partner organisations, including Murray, Riverina, and Central Tablelands Local Land Services, and major zoological institutions such as Taronga Zoo, Melbourne Zoo, Healesville Sanctuary and the Amphibian Research Centre.
Southern corroboree frog (Pseudophryne corroboree), critically endangered

The southern corroboree frog is perhaps Australia’s most iconic and threatened frog species. It has been in a rapid and ongoing state of decline since the introduction of chytrid fungus to its high country habitat in the early 1980s. Fortunately, recovery efforts for the southern corroboree frog have prevented its extinction, including the establishment of a large-scale captive breeding program at Taronga Zoo, Melbourne Zoo and Healesville Sanctuary. A Saving our Species conservation project, involving collaboration with many partners (zoological institutions, government agencies and universities) is supporting the development of reintroduction techniques to maintain the species in the wild. Research is continuing into options for mitigating the impacts of chytrid fungus. Live southern corroboree frogs can be viewed at Wirraminna Environmental Education Centre at Burrumbuttock, and at the National Parks and Wildlife Service (NPWS) Tumut Visitor Centre (both in New South Wales). The corroboree frog website (www.corroboreefrog.org.au) provides more information about the conservation and biology of this remarkable little frog.
Northern corroboree frog (*Pseudophryne pengilleyi*), critically endangered

Like its southern relative, the northern corroboree frog has undergone a rapid and extensive decline across its range following the introduction of chytrid fungus. Two important populations of this species in the Brindabella Range are close to extinction and have been secured in captivity at Tidbinbilla Nature Reserve, Taronga Zoo and Healesville Sanctuary.

Fortunately, populations of the northern corroboree frog in Kosciuszko National Park, and some state forests, appear to be doing better. This improvement is likely related to a range of environmental factors that have reduced the impact of chytrid fungus, including fewer common eastern froglets (which carry and spread the fungus without being affected by it). A *Saving our Species* conservation project is determining how to ensure these populations remain viable, which includes managing impacts from other threats such as feral animals and weeds. The corroboree frog website provides more information about the conservation and biology of corroboree frogs.
Spotted tree frog (*Litoria spenceri*), critically endangered

The spotted tree frog occurs along rocky streams in the central highlands of Victoria, and a small area of Kosciuszko National Park in NSW. This species is declining across its range as a result of disease caused by the chytrid fungus. The spotted tree frog would already be extinct in NSW if not for the initiation of a captive breeding and reintroduction program by NSW OEH and the Amphibian Research Centre. Initial attempts at securing this species where it historically occurred failed because of repeated outbreaks of chytrid fungus. This species has been translocated to a new stream that may prove to be a refuge from the disease. The warmer temperatures of this new site are predicted to be less favourable to the fungus, which will hopefully allow the persistence of the spotted tree frog in the wild. A NSW Environmental Trust *Saving our Species* Partnership Grant is funding the ongoing monitoring and assessment of this species.
Booroolong frog (*Litoria booroolongensis*), endangered

The Booroolong frog has declined from much of its former known distribution as a result of habitat degradation and chytrid fungus. Ensuring the persistence of the Booroolong frog where it now occurs requires maintaining certain features of the river environment – especially rocky crevices in shallow water where this species likes to lay its eggs (see above photo). Key threats to these critical rocky habitats are weeds, particularly willows, and sedimentation caused by erosion. Several Local Land Services (Murray, Riverina and Central Tablelands) are undertaking weed control and riverbank protection where the Booroolong frog occurs. Much of this work is being funded by a NSW Environmental Trust *Saving our Species* Partnership Grant.

Alpine tree frog (*Litoria verreauxii alpina*), endangered

The alpine tree frog is a high-altitude subspecies of Verreaux’s tree frog, which historically occurred across the entire high country region of south-eastern mainland Australia. The introduction of chytrid fungus has caused the alpine tree frog to disappear from more than 90% of its former range.
Over the past two decades OEH has undertaken a monitoring program for the alpine tree frog. Fortunately, the results suggest that most remaining populations are robust and stable. Research has shown this species is able to persist at some sites, despite much of the population being infected with chytrid.

New South Wales are threatened by ongoing habitat fragmentation from urban development and other land management practices, such as intensive livestock grazing around wetlands. Maintaining a network of large and connected wetlands is critical to ensure that remaining Sloane’s froglet populations are viable in the long term. A Saving our Species conservation project is developing a strategy to ensure these populations remain viable, which includes incorporating suitable wetland breeding habitat into the urban and industrial stormwater system. Many partner organisations are involved in this project, including local councils, government agencies, universities, conservation groups and landholders. These partners are working together to ensure that urban development and land management is sensitive to the species’ needs.

**Sloane’s froglet (Crinia sloanei), vulnerable**

Sloane’s froglet is estimated to have declined from more than 90% of its former NSW range as a result of habitat degradation and fragmentation. Important populations on the outskirts of Albury and Corowa in southern
Southern bell frog (*Litoria raniformis*), endangered

Historically, and until relatively recently (around the 1980s), the southern bell frog occurred through much of south-eastern Australia, and was relatively widespread in New South Wales. The species’ dramatic decline is likely related to disease caused by the chytrid fungus, regulation of flooding and river systems, over-grazing around wetlands, and exotic fish, such as carp.

Monitoring by OEH and partner organisations has shown that southern bell frogs respond well following large flood events in wet years, but contract back to refuge areas with more reliable water during dry times. A *Saving our Species* conservation project is focused on ensuring that priority southern bell frog wetlands receive appropriate environmental water so they can support breeding populations of this species. This project is supported by numerous partners, including environmental water managers, industry, research institutions and private landholders.
Threatened frog species included in this guide

Painted burrowing frog (*Neobatrachus pictus*), endangered

The painted burrowing frog is widespread in south-eastern South Australia and western Victoria, but has been found at only a few locations in New South Wales. The species appears to have a very limited distribution in New South Wales and fewer than 30 individuals have been recorded in the State. However, it can be difficult to identify a painted burrowing frog from a common spadefoot frog (which is very similar in appearance), and both are active only after good rainfall, meaning they cannot be monitored or surveyed regularly. The painted burrowing frog is a ‘partnership species’ under the *Saving our Species* program. Partnership species are threatened species found mainly in other states and territories – these species have less than 10% of their population in New South Wales. The NSW Government partners with others to protect them. OEH is developing a targeted approach for managing frogs and other threatened species in this category. Key threats to painted burrowing frogs are likely to include fragmentation or loss of habitat through over-grazing and loss of suitable wetland habitats.
Information in this guide

The species described in this guide are separated into two types of frogs, which represent the major groups found in Australia: tree frogs and southern frogs. These groups are largely based on differences in the frogs’ internal anatomy (or structure).

Description
This guide describes the physical appearance of each species, including its size, colour, pattern, form and skin texture. Unlike many other animals (e.g., birds), frogs are often highly variable in colour and pattern. Many species can look very different from the pictures provided in this guide. Hence, it is necessary to use a range of features when identifying frog species (e.g., size, call, colour, pattern and habitat). In addition to a description of the frog species’ size, the stylised frog next to the ruler provides an indication of the actual size of an adult male for that species. Females are often larger than males.

Call description
The call description should be used in conjunction with the recording on the CD to identify species based on their male advertisement call. Male frogs often have other calls, including a threat call to other males, which is different from the advertisement call and can confuse the listener. These calls are typically less frequent, and often interspersed with the advertisement call.

Breeding season
This section provides details on when male calling activity is most likely. Depending on seasonal conditions, particularly temperature and rainfall patterns, males may also call outside this period.
Breeding habitat and behaviour
Where a frog is found (its habitat) may provide clues to its identification. Habitat includes both the micro-habitat, such as the location where a male calls from, and also the broader habitat or water body type occupied by the species. In addition to providing a description of the types of breeding habitats normally occupied, each species has been assigned to broad wetland types as a quick reference for where it is likely to be found in the landscape.

Conservation status
Several frog species in the south-west region have disappeared from much of their former known range, primarily because of chytrid fungus and loss of habitat. Consequently, these species are listed as threatened at a state or national level, or both. Many of the threatened species in this guide persist in agricultural landscapes, which provides an opportunity to integrate farming practices with biodiversity conservation.

Geographic coverage and species distributions
This guide covers the highlands, tablelands, slopes, and plains of south-west New South Wales (see below map). While this guide covers most species found in this region, it is not exhaustive, and some species may not be represented here. Each species’ entry includes a distribution map that broadly outlines where it might be found. This guide does not include the possible distribution of the species in adjacent states.
Broad wetland types

Dams and large ponds
These wetlands are large bodies of still water that may be permanent or dry during drought. This wetland type includes both natural ponds such as billabongs, and also artificial wetlands like dams and lakes. Dams and large ponds can support many different frog species breeding in proximity to each other depending on vegetation and structural complexity.

Permanent rivers
These wetlands maintain surface-flowing water along a drainage line all year except sometimes during periods of severe drought when surface water may be reduced to intermittent pools. They are structurally diverse, with varying depths, water flow rates, substrates and vegetation. Several frog species are restricted to this wetland type.

Ephemeral claypans, swamps and floodplains
These wetlands are small to large waterbodies that may be isolated from larger systems (like claypans) and only fill
after rain, or swamps and floodplain wetlands that fill as larger river or creek systems flood. All provide ephemeral (temporary) habitat that will recede at different rates depending on rainfall and temperature.

**Seasonal rivers**
These wetlands include rivers where the duration of surface-flowing water varies depending on the season. Most frogs occupying this wetland type will also use ponds and dams.

**Small ponds and puddles**
This wetland type ranges from alpine sphagnum pools to roadside puddles that dry seasonally and includes ephemeral depressions (like gilgais) that only fill after rain. Many frog species have the capacity to breed in relatively small water bodies. Many frogs that breed in small ponds also breed in soaks and seepages.

**Soaks and seepage lines**
This wetland type occurs at all altitudes, and results when flowing groundwater is pushed to the surface resulting in slow-moving, shallow surface water.
Water holding frog

*Cyclorana platycephala*

**Description**
A distinctive medium- to large-sized frog (65–110 mm) with eyes that sit very high on top of the head. The dorsal (the upper side or back of a frog) surface colour is either a warm brown, yellow-brown, or a yellow-ochre. The dorsal skin can be smooth or have tubercules and skin folds. When looked down on from above, the nose is distinctly rounded. The belly is smooth and white. The toes are completely webbed.

**Call description**
A soft, low-pitched moan with an inflection at the end: ‘wa-a-a-a-r’ (track 1).

**Breeding season**

After heavy rain in summer
**Breeding habitat and behaviour**

Water holding frogs can spend many years underground in a membranous cocoon, waiting for good rain. Adults breed opportunistically, emerging from underground after heavy rainfall. In the region covered by this guide, the species is primarily found in mallee woodlands. Breeding occurs in floodplains and large clay pans. Males call usually as they float on the water’s surface or sometimes from within aquatic vegetation. Eggs are deposited in large clumps that may sink if disturbed.

**Water body type**

Ephemeral claypans, swamps and floodplains

**Conservation status**

Not listed
Booroolong frog
*Litoria booroolongensis*

**Description**
A medium-sized frog (35–55 mm). The dorsal colour varies from light grey to brown with light and dark mottling, and raised flecks. The thighs are typically a darker brown with lighter coloured spots. The belly is white and smooth. The toes are fully webbed except for the longest toe. The toe-pads are well-developed and noticeable.

**Call description**
The call is relatively soft because this species lacks a distinct vocal sac. The call is a series of repeated ‘crawwww, crawwww, crawwww’ (track 2).

**Breeding season**
Mid spring to summer
Breeding habitat and behaviour
Booroolong frogs breed in permanent rivers, particularly those with ample rocky habitat. The species can occupy streams flowing through cleared pastures, grasslands, woodlands and forest. The males call from exposed rocky banks. The females deposit their eggs in submerged rock crevices.

Water body type
Permanent rivers

Conservation status
NSW and national status: endangered. The species has declined from much of its former range, but persists along many streams, including those flowing through the agricultural landscape.
Green tree frog
*Litoria caerulea*

**Description**
One of Australia’s largest frogs (90–130 mm). The dorsal colour is a uniform bright green. White spots may be present on its sides and sometimes on the back. The back is typically smooth. The belly is white and grainy in texture. The groin is white and back of the thighs bright green. The eardrums are large and noticeable. The toes are about three-quarters webbed and the toe-pads are large. They shelter in hollow tree limbs, houses, toilets, water tanks and other artificial water sources during dry periods.

**Call description**
A deep: ‘wark-wark-wark’ (track 3).

**Breeding season**

Late summer to early autumn, following heavy rain.
Breeding habitat and behaviour

Green tree frogs are typically associated with permanent water systems (e.g. rivers and creeks) and grassy ephemeral wetlands that form after good rain. The species occurs in a range of habitats Australia-wide, including woodlands, forests and grasslands. They are often heard calling from hiding spots during dry periods. Males call from near large ponds following heavy rain. Eggs are deposited in large floating clumps on the surface of the water.

Water body type

Dams and large ponds
Ephemeral claypans, swamps and floodplains
Permanent rivers

Conservation status

Not listed
Brown tree frog
*Litoria ewingii*

**Description**
A medium-sized tree frog (30–45 mm) that occurs along the eastern edge of the NSW southern tablelands, and southern edge of the NSW western slopes. The dorsal colour is typically a light cream, grey, or brown colour with a broad darker brown band running down the back. The belly is white or cream. A black stripe runs along the side of the head from the snout, through the eye, to over the shoulder. The back of the thighs and groin are a bright yellow to orangish-red colour without darker spots. The toes are half-webbed. The toe-pads are slightly wider than the toes.

**Breeding season**
Any time of the year, but peaks in winter and early spring
Call description
A series of whirring pulses (5–10 times): ‘creee-creee-creee-creee ... ’ (track 4).

Breeding habitat and behaviour
Brown tree frogs occur in forests, heathlands, grasslands and cleared pastures. They breed in farm dams, natural wetlands, stream-side pools and roadside ditches. Males call from vegetation overhanging the water, from the bank, or from among floating vegetation in the water. Eggs are attached in clusters to submerged sticks and vegetation in still water.

Water body type
Dams and large ponds
Seasonal rivers
Small ponds and puddles

Conservation status
Not listed
Broad-palmed frog  
*Litoria latopalmata*

**Description**
A medium-sized tree frog (30–45 mm). The dorsal colour is typically a light grey or brown, often with darker blotches and slightly raised warts. A broad stripe runs along the side of the head from the snout to above the shoulder. The stripe is broken by a white bar in front of the eye. The backs of its thighs are a dark brown colour with yellow blotches. The toe-pads are not much wider than the toes.

**Call description**
A series of rapid ‘yap, yap, yap, yap, yap’ (track 5).

**Breeding season**
Late spring through to summer
**Breeding habitat and behaviour**

Broad-palmed frogs are found in forests, heathlands, grasslands and cleared pastures. They breed in farm dams, natural wetlands and stream-side pools. Males call from the edge of the water in vegetation or on rocks. Eggs are laid in clusters near the surface of the water.

**Water body type**

Dams and large ponds
Ephemeral claypans, swamps and floodplains
Seasonal rivers
Small ponds and puddles

**Conservation status**

Not listed
Lesueur’s river frog
*Litoria lesueuri*

**Description**
A medium-sized tree frog (35–65 mm). The dorsal colour is typically a light grey or brown, sometimes with darker blotches. Males turn a yellow colour during the breeding season. A dark stripe runs along the side of the head from the snout to above the shoulder. The backs of its thighs are a dark brown colour with yellow or blue blotches. The toe-pads are slightly wider than the toes.

**Call description**
The call is relatively soft because this species lacks a distinct vocal sac. The call is a repeated ‘craww, craww, craww’ (track 6).
Breeding habitat and behaviour
Lesueur’s river frog breeds in permanent rivers, particularly where ample rocky habitat is available. It can occupy streams flowing through cleared pastures, grasslands, woodlands and forest. The males call from exposed rocky banks. The females deposit eggs in submerged rock crevices.

Water body type
Permanent rivers

Conservation status
Not listed
Southern leaf-green river frog  
*Litoria nudidigita*

**Description**
A small- to medium-sized tree frog (30–45 mm) that is very similar to the northern green leaf river frog. The dorsal colour is a light green to dark olive. Some populations have individuals with brown flecks and small raised warts. A light silver- to gold-coloured stripe runs from the snout, across the top of the eye, and down the side of the body. The armpits, groin and backs of thighs are a dark red or purple colour. The toes are partially webbed. The toe-pads are broader than the toe.

**Call description**
The call has two parts: ‘eeerrrrr – cuk, cuk’ (track 7).

**Breeding season**
Mid spring to mid summer
Breeding habitat and behaviour
This species breeds in pools and slow-flowing sections of permanent rivers, typically in wet and dry forests. Males call from vegetation along the bank. Females deposit eggs in clusters that are attached to submerged sticks and other vegetation.

Water body type
Permanent rivers

Conservation status
Not listed
Plains tree frog  
*Litoria paraewingi*

**Description**
A medium-sized tree frog (35–45 mm). The dorsal colour is typically a light cream or brown, with a broad darker brown band that runs down the back and is divided by a paler stripe running directly down the backbone. The belly is white or cream. A broad dark stripe runs along the side of the head from the snout, through the eye, to over the shoulder. The back of the thighs and groin are a bright yellow to orange-red colour. The toes are half-webbed. The toe-pads are wider than the toes.

**Call description**
A series of whistling pulses (5–10 times): ‘creeeeee-creeeeee-creeeeee-creeeee …’ (track 8).

**Breeding season**
Primarily in winter and early spring.
Breeding habitat and behaviour

Plains tree frogs occur in forests, heathlands, grasslands and cleared pastures. They breed in farm dams, natural wetlands, streams and roadside ditches. Males call from vegetation overhanging the water, from the bank, or from floating vegetation. Eggs are attached in clusters to submerged sticks and vegetation in still water.

Water body type

Dams and large ponds
Permanent rivers
Seasonal rivers
Small ponds and puddles

Conservation status

Not listed
Peron’s tree frog
*Litoria peronii*

**Description**
Sometimes also known as the maniacal cackle frog because of its distinctive call. A medium- to large-sized tree frog (45–65 mm). The dorsal colour is variable, ranging from light grey to dark brown, often with darker blotches. The back is covered in fine emerald green flecks. The eye has a vertical stripe that, in combination with the horizontal pupil, gives the appearance of a cross-shaped pupil. The armpits, groin, and backs of thighs have bold yellow and black marbling. The toes are half webbed and toe-pads are large.

**Breeding season**
Mid spring to mid summer
Call description
A rapid cackle with a downward inflection: ‘eeehh, ehh, ehh, ehh, ehh, ehh’ (track 9).

Breeding habitat and behaviour
Peron’s tree frogs occur in forests, heathlands, grasslands and cleared pastures. They breed in farm dams, natural wetlands, and slow sections of streams. Males typically call from vegetation or logs either within or overhanging the water. Eggs are laid singularly or in small groups among leaf litter and vegetation.

Water body type
Dams and large ponds
Ephemeral claypans, swamps and floodplains
Permanent rivers
Seasonal rivers

Conservation status
Not listed
Southern bell frog
*Litoria raniformis*

**Description**
Sometimes also known as the growling grass frog. A large frog (55–110mm) that historically occurred throughout the southern tablelands and south-west slopes region. The dorsal colour and pattern can be highly variable, but typically consist of a background of olive to emerald green with irregular dark brown to gold markings. The back is warty, with a pale green stripe down the middle. The groin and back of thighs are bright blue and the belly is white. The toes are webbed and toe-pads are small.

**Call description**
There are often two parts to the call: a drawn-out ‘waaaaaah, waaaaaaah’ followed by a rapid series of pulses ‘rah-rah-rah-rah-rah’ (track 10).
Breeding habitat and behaviour
Southern bell frogs are typically associated with both ephemeral and permanent water bodies, including streams with chains of ponds, and adjacent billabongs or ox-bow lakes. They occur in woodlands, heathlands, grasslands and cleared pastures. They often bask in direct sunlight adjacent to water, and will jump into the water when disturbed. Males usually call from within the water among emergent vegetation or other debris from mid spring through summer.

Water body type
Dams and large ponds
Ephemeral claypans, swamps and floodplains
Permanent rivers
Seasonal rivers

Conservation status
NSW status: endangered; national status: vulnerable. Historically, the species occurred across much of the NSW southern tablelands and NSW slopes, but no persistent populations are currently known in this region. In NSW, the species is now only known from the south-west.
Desert tree frog
_Litoria rubella_

**Description**

A small- to medium-sized frog (30–40 mm) with relatively short legs. The dorsal colour varies from grey to red-brown, with some individuals having darker flecks. A dark band runs from the nostril, over the shoulder, and down the side of the body. The groin is typically a yellow colour, while the hind edges of the thighs are brown with white flecks. The toes are two thirds webbed. The toe discs are wider than the toes.

**Call description**

The call is a harsh buzz: ‘eeerrrrrrrrrrrrr’ (track 11).

**Breeding season**

Mid spring to summer
**Breeding habitat and behaviour**

A highly adaptable frog that is often associated with human dwellings. Breeding typically occurs in water bodies that become inundated after heavy summer rain.

**Water body type**

- Dams and large ponds
- Ephemeral claypans, swamps and floodplains
- Seasonal rivers
- Small ponds and puddles

**Conservation status**

Not listed
**Spotted tree frog**
*Litoria spenceri*

**Description**
A medium-sized frog (40–55 mm). The dorsal colour typically consists of a pale grey or brown, often with darker brown or olive spots. The back has a warty texture. The pupil is horizontal, and a patch of green is often present under the eye. The toes are fully webbed. The toe-pads are wider than the toes.

**Call description**
There are two parts to the call: ‘eeerrrrrrrr – crer, crer, crer, crer’ (track 12).
Distribution area

Breeding habitat and behaviour
Spotted tree frogs breed along rocky permanent rivers in dry and wet forest. Males typically call from rocks within or along the edge of the stream. Eggs are laid in rock crevices. These frogs often bask in direct sunlight adjacent to moving water, and will jump into the water when disturbed.

Water body type
Permanent rivers

Conservation status
NSW status: critically endangered; national status: endangered. The only known population in New South Wales occurs in Kosciuszko National Park in the upper Murray catchment.
Whistling tree frog & alpine tree frog
*Litoria verreauxii & Litoria verreauxii alpina*

**Description**

A medium-sized tree frog (30–45 mm). The dorsal colour is typically a light cream or brown, often green at higher altitudes, and often with a broad darker brown band which runs down the back and which is divided by a paler stripe running down the backbone. Lower altitude populations have a smooth back, while higher altitude populations have a rough, warty back. The belly is white or cream. A broad dark stripe runs along the side of the head from the snout, through the eye, to over the shoulder. The back of the thighs and groin are a bright yellow to orange-red colour with darker spots. The toes are half-webbed. The toe-pads are the same width as the toes.

**Breeding season**

Any time of the year, but peaks in winter to late spring*

* Breeding is dependent on the altitude (populations at higher altitude sites breed later).
Call description
Series of whistling pulses (5–10 times): ‘weeeeee-weeeeee-weeeeee-weeeeee ... ’ (track 13).

Breeding habitat and behaviour
The species occurs in forests, heathlands, grasslands and cleared pastures. It breeds in farm dams, natural wetlands, streams and roadside ditches. Males call from vegetation overhanging the water, from the bank, or from among floating vegetation within the water. Eggs are attached in clusters to submerged sticks and vegetation in still or slow-moving water.

Water body type
Dams and large ponds
Permanent rivers
Seasonal rivers
Small ponds and puddles

Conservation status
The alpine subspecies (alpine tree frog, *Litoria verreauxii alpina*) is listed as endangered in New South Wales, and vulnerable nationally. In New South Wales this subspecies occurs above 1200 metres in the Snowy Mountains region.
Rocky river tree frog
*Litoria wilcoxi*

**Description**
A medium-sized tree frog (35–65 mm). The dorsal colour is typically a light grey or brown, sometimes with darker blotches. Males turn a bright yellow colour when calling during the breeding season. A dark stripe runs along the side of the head from the snout to above the shoulder. The backs of the thighs are a dark brown colour with yellow blotches. The toe-pads are slightly wider than the toes.

**Call description**
The call is relatively soft because this species lacks a distinct vocal sac. The call is a series of repeated ‘crawkl, crawkl, crawkl’ (track 14).
Breeding habitat and behaviour
Rocky river tree frogs breed in permanent rivers, particularly where ample rocky habitat is available. The species can occupy streams flowing through cleared pastures, grasslands, woodlands and forest. The males call from exposed rocky banks. The females deposit eggs in submerged rock crevices.

Water body type
Permanent rivers

Conservation status
Not listed
Plains froglet
*Crinia parinsignifera*

**Description**
A small frog (20–30 mm) that is common throughout the central and southern tablelands and adjacent slopes. The dorsal skin has raised warts and ridges, which are mottled with colours ranging from light cream through to dark brown. The belly is typically grey with darker flecks. The toes lack webbing.

**Call description**
A single drawn out note: ‘eeeeeeeeeeeeeee’ (track 15).

**Breeding season**
Any time of the year, but with a peak from late winter to spring.
**Breeding habitat and behaviour**

Plains froglets occur in forests, heathlands, grasslands and cleared pastures. The species breeds in a large range of water body types, from large permanent wetlands, flowing rivers, to small puddles. Males may call from open sites, from within vegetation, or from submerged vegetation. Eggs are typically scattered singularly on the substrate, but may also be attached to submerged vegetation.

**Water body type**

- Dams and large ponds
- Ephemeral claypans, swamps and floodplains
- Permanent rivers
- Seasonal rivers
- Small ponds and puddles
- Soaks and seepage lines

**Conservation status**

Not listed
Common eastern froglet
*Crinia signifera*

**Description**
A small frog (20–25 mm) that is common throughout the region covered by this guide. The dorsal colour and texture is highly variable, ranging from smooth with a uniform colour to raised warts and ridges with contrasting stripes and mottles of light cream through to dark brown. The belly is typically granular and is mottled with white and light and dark grey. The toes lack webbing.

**Call description**
A series of rapid ratchet sounds: ‘crick, crick, crick’ (track 16).
Breeding habitat and behaviour
Common eastern froglets occur in forests, heathlands, grasslands and cleared pastures. The species breeds in a large range of water body types, from large permanent wetlands and flowing rivers, to small puddles. Males may call from open sites, from within vegetation, or from submerged vegetation. Eggs are typically scattered singularly on the substrate, but may also be attached to submerged vegetation.

Water body type
Dams and large ponds
Ephemeral claypans, swamps and floodplains
Permanent rivers
Seasonal rivers
Small ponds and puddles
Soaks and seepage lines

Conservation status
Not listed
Sloane’s froglet
Crinia sloanei

Description
A small frog (15–25 mm) that occurs on the western edge of the slopes region. The dorsal skin has raised warts and ridges, which are mottled with colours ranging from light cream through to dark brown and olive. Raised warts are often capped with orange. The belly is typically grey with darker flecks. The toes lack webbing.

Call description
A single sharp ‘eeh’, often repeated in close succession (track 17).

Breeding season

* May call any time of the year after heavy rain, but the peak calling period in southern New South Wales is winter.*
Breeding habitat and behaviour
Sloane’s froglets occur in forests, heathlands, grasslands and cleared pastures. The species breeds in a large range of water body types, from large permanent wetlands to small puddles, primarily in areas that become inundated with winter rainfall. Males typically call from submerged vegetation. Clusters of single eggs are typically attached to submerged vegetation.

Water body type
Dams and large ponds
Ephemeral claypans, swamps and floodplains
Small ponds and puddles
Soaks and seepage lines

Conservation status
NSW status: vulnerable. A poorly known species that may have contracted from much of its former range in recent years.
Eastern banjo frog
*Limnodynastes dumerilii*

**Description**
Also known as the pobblebonk frog. A large burrowing frog (55–85 mm) that occurs throughout the NSW tablelands and western slopes region. Two subspecies are recognised in the tablelands region: *L. dumerilii dumerilii*, which occurs at altitudes below 1000 metres, and *L. dumerilii fryi*, which occurs at higher altitudes in the Snowy Mountains. The dorsal colour can be variable, ranging from grey to dark brown or olive green. Most individuals have irregular dark markings on the back, and some individuals have a stripe down the middle of the back. A raised, prominent pale stripe runs from below

![Image of Eastern banjo frog](image)
the eye to above the arm. The back is moderately warty, and the belly is smooth. The toes are one-quarter webbed. A prominent raised gland is present on the lower leg.

**Call description**

A short resonating ‘bonk’. Males often synchronise their calls which produces a rapid series of ‘bonks’ (track 18).

**Breeding habitat and behaviour**

Eastern banjo frogs occur in woodlands, heathlands, grasslands and cleared pastures. The species breeds in large permanent dams and wetlands, and streams. Males usually call from the water among emergent vegetation or other debris. Eggs are laid in a large floating foamy mass.
Barking marsh frog

*Limnodynastes fletcheri*

**Description**
A medium-sized frog (40–45 mm) that occurs along the western edge of the NSW slopes region. The dorsal colour can be highly variable, with irregular dark blotches of brown or green. An irregular orange patch is usually present on the upper eyelid. The belly is white, and the skin is smooth. The toes have very little webbing.

**Call description**
Typically a single barking pulse: ‘rup’ (track 19).
**Breeding habitat and behaviour**

Barking marsh frogs occur in woodlands, heathlands, grasslands and cleared pastures. The species typically breeds in grassy areas that have been inundated at the edge of ponds, large lakes or rivers. Males usually call from the water among emergent vegetation or other debris. Eggs are laid in a large floating foamy mass.

**Water body type**

Dams and large ponds
Ephemeral claypans, swamps and floodplains
Permanent rivers
Seasonal rivers
Giant banjo frog
*Limnodynastes interioris*

**Description**
Also known as the giant pobblebonk frog. A large burrowing frog (65–90 mm) that occurs along the western edge of the NSW slopes region. The dorsal colour is typically a pale brown, yellow and orange, with a yellow belly. Most individuals have irregular dark markings on the back. A raised, prominent orange stripe runs from below the eye to above the arm. The back is moderately warty, and the belly is smooth. The toes are one-quarter webbed. A prominent raised orange gland is present on the lower leg.

**Breeding season**
Spring and early summer
Call description
A deep resonating ‘bonk’. Males often synchronise their calls, producing a rapid series of ‘bonks’ (track 20).

Breeding habitat and behaviour
Giant banjo frogs occur in woodlands, heathlands, grasslands and cleared pastures. They breed in large permanent dams and wetlands, and also streams. Males usually call from the water among emergent vegetation or other debris. Eggs are laid in a large floating foamy mass.

Water body type
Dams and large ponds
Ephemeral claypans, swamps and floodplains
Permanent rivers
Seasonal rivers

Conservation status
Not listed
Striped marsh frog
*Limnodynastes peronii*

**Description**
A medium-sized frog (40–50 mm) that has a patchy distribution throughout the NSW tablelands and western slopes region. The dorsal colour is typically a light grey-brown with darker longitudinal stripes, and sometimes a paler stripe running down the back. The belly is white and the skin is smooth. The toes have very little webbing.

**Call description**
A single loud ‘tok’ (track 21).
Breeding habitat and behaviour
Striped marsh frogs occur in woodlands, heathlands, grasslands and cleared pastures. The species breeds in large permanent dams and wetlands, and also in smaller pools that typically dry. Males usually call from the water among emergent vegetation or other debris. Eggs are laid in a large floating foamy mass.

Water body type
Dams and large ponds
Permanent rivers
Seasonal rivers
Small ponds and puddles

Conservation status
Not listed
**Salmon-striped frog**

*Limnodynastes salmini*

**Description**
A medium-sized frog (60–75 mm) with a distribution that primarily includes the northern part of the area covered by this guide. The dorsal colour is typically brown or grey-brown with darker brown spots or patches. A distinctive pink-coloured stripe is present on either side of its body and along its back. The belly is a whitish colour that may have some brown markings. The toes are only slightly webbed.

**Call description**
A loud repeated ‘wuk’ (track 22).

**Breeding season**

Mostly from spring to summer following heavy rain
**Breeding habitat and behaviour**

Salmon-striped frogs emerge from underground to breed following rainfall. The species is typically associated with dams and grassy ephemeral wetlands that form after rain. Individuals can be found sheltering under logs and bark and may also be found in artificial structures associated with human dwellings following rainfall. Males call from the water’s edge or from underneath vegetation in the water. Eggs are deposited in large foamy masses among vegetation at the edge of water bodies.

**Water body type**

- Dams and large ponds
- Ephemeral claypans, swamps and floodplains
- Small ponds and puddles

**Conservation status**

Not listed
Spotted grass frog

*Limnodynastes tasmaniensis*

**Description**

A small- to medium-sized frog (35–45 mm) that occurs throughout the NSW tablelands and western slopes region. The dorsal colour can be highly variable, with irregular spots and blotches of brown or green. Some individuals have a stripe running down the back that varies from white to red. Irregular orange to red markings may be present on other parts of the body. The belly is white and the skin is smooth. The toes have very little webbing.

**Call description**

Typically a rapid series of three pulses: ‘uk-uk-uk’ (track 23).

**Breeding season**

Throughout the year, but with a peak in winter and early spring.
Breeding habitat and behaviour
Spotted grass frogs occur in woodlands, heathlands, grasslands and cleared pastures. The species breeds in a large variety of wetlands, from large permanent dams to small roadside puddles. Males usually call from the water among emergent vegetation or other debris. Eggs are laid in a large floating foamy mass.

Water body type
Dams and large ponds
Ephemeral claypans, swamps and floodplains
Permanent rivers
Seasonal rivers
Small ponds and puddles

Conservation status
Not listed
Painted burrowing frog
*Neobatrachus pictus*

**Description**
A stout medium-sized frog (55–65 mm) with a head that is wider than it is long. The dorsal surface colour is a mix of brown, beige, yellow and/or yellowish-green with many dark brown to black patches. A cream or yellow stripe typically runs down the backbone. The belly is smooth and white. The toes are about three-quarters webbed in females and nearly completely webbed in males. Easily mistaken for the common spadefoot frog (*Neobatrachus sudelli*) with which it shares much of its range.

**Call description**
A long and low-pitched repeated trilling (track 24).

**Breeding season**
Mostly after heavy rain from late summer to early spring
**Breeding habitat and behaviour**

Painted burrowing frogs breed opportunistically in large numbers, emerging from underground after heavy rainfall. In the region covered by this guide, the species is usually found in woodlands and grasslands in shallow ephemeral pools, dams, and in the slower-flowing sections of larger creeks and river systems. Males call as they float on the water’s surface with only their head showing, or from among aquatic vegetation. Eggs are deposited in loose clumps near the water’s surface or in vegetation, or both. Eggs are often attached to one another by thin strands.

**Water body type**

Ephemeral claypans, swamps and floodplains
Permanent rivers

**Conservation status**

Endangered in New South Wales.
Common spadefoot frog

*Neobatrachus sudelli*

**Description**

Also known as Sudell’s frog. A medium-sized burrowing frog (35–50 mm) that occurs throughout the lower slopes and inland areas, extending to drier parts of the tablelands. The dorsal colour pattern consists of a fine to coarse patterning of lighter and darker yellows, browns, greys and olive greens. Its back typically has low warts, and the belly is smooth and white. The pupil is vertical, toes are webbed, and the underside of the feet have a distinctive black metatarsal tubercle (a hard skin fold under the foot).

**Breeding season**

Winter to early summer, often after heavy rains
**Call description**


**Breeding habitat and behaviour**

Common spadefoot frogs occur in woodlands, heathlands, grasslands and cleared pastures. The species breeds in large permanent dams and wetlands, and also small ephemeral ponds. Males usually call from open water. Eggs are laid in long jelly strings that initially float near the surface, or are wrapped around vegetation.

**Water body type**

- Dams and large ponds
- Ephemeral claypans, swamps and floodplains
- Small ponds and puddles

**Conservation status**

Not listed
Holy cross frog
Notaden bennetti

Description
Also known as the crucifix frog. A plump medium-sized frog (60–70 mm) primarily found in inland arid and semi-arid areas. The dorsal surface is covered by series of black, raised warts and smaller red dots that form the distinctive cross-like pattern. The background dorsal colour is yellow or yellowish-green. The sides of the body have white-tipped tubercules and red-orange dots. The eyes are large and sit close to the nose. The belly is white. The toes are around one-quarter webbed.

Call description
A high-pitched ‘whoop, whoop’ (track 26).

Breeding season
Mostly after heavy rain from late winter to early autumn.
Breeding habitat and behaviour
Holy cross frogs breed opportunistically, emerging from underground following heavy rainfall. Usually found in woodlands and grasslands with clay soils or in red sandy soils with a clay base. Breeding occurs in shallow ephemeral wetlands or flooded areas, and possibly the fringes of large swamps. Eggs are deposited in clumps that float on the surface of the water (sometimes attached to vegetation underneath).

Water body type
Ephemeral claypans, swamps and floodplains
Bibron’s toadlet
*Pseudophryne bibronii*

**Description**
A small terrestrial frog (25–35 mm) that occurs across much of south-eastern Australia. The dorsal colour varies from brown to light or dark grey, typically with darker flecks and sometimes orange capped warts. The back is typically covered in low warts. A bright yellow or orange patch is often present on the vent and base of the arms. The belly is smooth or slightly granular, and is marked with bold black and white mottling. The toes lack webbing. The species typically crawls rather than hops.

**Call description**
A short, rapid, grating sound: ‘cre-ek’ (track 27).
Breeding habitat and behaviour

Bibron’s toadlet occurs in forests, heathlands and grasslands, and often in areas that have been highly modified. Breeding habitat includes ephemeral pools and seepage lines that are typically dry during the breeding season. Males call from terrestrial nests in vegetation and soil in areas that will flood following major rain events. The eggs are deposited in these terrestrial nests where they develop through to hatching stage. When their nests flood the eggs are stimulated to hatch and the tadpoles can move into the main pool.

Water body type

- Dams and large ponds
- Small ponds and puddles
- Soaks and seepage lines

Conservation status

Not listed
Southern corroboree frog
*Pseudophryne corroboree*

**Description**
A small terrestrial frog (25–35 mm). The dorsal colour consists of bold yellow and black stripes. The belly is smooth with yellow, black and white mottling. The toes lack webbing. The species typically crawls rather than hops.

**Call description**
A short, grating sound: ‘creeeee-ek’ (track 28).

**Breeding season**
- JAN
- FEB

Mid summer
Breeding habitat and behaviour
Southern corroboree frogs occur in montane and sub-alpine woodlands, heathlands, sphagnum bogs and grasslands. Breeding habitat includes ephemeral pools and seepage lines that are typically dry during the breeding season. Males call from terrestrial nests in vegetation and soil in areas that will flood following significant rain events. The eggs are deposited in these terrestrial nests where they develop through to hatching stage. When their nests flood the eggs are stimulated to hatch and the tadpoles can move into the main pool.

Water body type
Small ponds and puddles
Soaks and seepage lines

Conservation status
NSW and national status: critically endangered. This species is on the verge of extinction in the wild because of chytrid fungus, and is only known to occur in Kosciuszko National Park.
Dendy’s toadlet
*Pseudophryne dendyi*

**Description**
A small terrestrial frog (25–35 mm) with a limited distribution in the tablelands region. The dorsal colour is typically dark brown or black with yellow patches on the upper arm, vent, thighs, and sometimes between the eyes. The belly is smooth with bold black and white marbling. The toes lack webbing. The species typically crawls rather than hops.

**Call description**
A short, grating sound: ‘cre-ek’ (track 29).
**Breeding habitat and behaviour**

Dendy’s toadlet occurs in forests, heathlands and grasslands, often in areas that have been highly modified. Breeding habitat includes ephemeral pools and seepage lines that are typically dry during the breeding season. Males call from terrestrial nests in vegetation and soil in areas that will flood following significant rain events. The eggs are deposited in these terrestrial nests where they develop through to hatching stage. When their nests flood the eggs are stimulated to hatch and the tadpoles can move into the main pool.

**Water body type**

Dams and large ponds
Small ponds and puddles
Soaks and seepage lines

**Conservation status**

Not listed
Northern corroboree frog

*Pseudophryne pengilleyi*

**Description**
A small terrestrial frog (25–35 mm). The dorsal colour consists of bold yellow or lime green and black stripes. The belly is smooth with yellow or lime green, and black and white mottling. The toes lack webbing. The species typically crawls rather than hops.

**Call description**
A short, grating sound: ‘creeeee-ek’, similar to the call of the southern corroboree frog (track 30).
**Breeding habitat and behaviour**

Northern corroboree frogs occur in montane and sub-alpine woodlands, heathlands, sphagnum bogs and grasslands. Breeding habitat includes ephemeral pools and seepage lines that are typically dry during the breeding season. Males call from terrestrial nests in vegetation and soil in areas that will flood following major rain events. The eggs are deposited in these terrestrial nests where they develop through to hatching stage. When their nests flood the eggs are stimulated to hatch and the tadpoles can move into the main pool.

**Water body type**

Small ponds and puddles
Soaks and seepage lines

**Conservation status**

NSW and national status: critically endangered. This species has declined from much of its former distribution in the wild because of chytrid fungus.
Smooth toadlet

*Uperoleia laevigata*

**Description**
A small terrestrial frog (25–35 mm). The dorsal colour is typically a light brown or grey colour with darker blotches and patterns. A prominent pale triangular patch is usually present on top of the head. The groin and back of the thighs are a bright orange or red colour. The skin on the back is granular, and the belly is smooth with a light background and darker flecks and patterns. The toes lack webbing.

**Call description**
A short, squelching sound: ‘aannnnk’ (track 31).
**Breeding habitat and behaviour**
Smooth toadlets occur in forests, woodlands, heathlands, grasslands and cleared pasture areas. Breeding habitat typically includes large dams with grassy areas that become inundated after heavy rain. Males call from the land or in the water. Clusters of single eggs are deposited on submerged vegetation or other debris.

**Water body type**
Dams and large ponds

**Conservation status**
Not listed
Wrinkled toadlet
*Uperoleia rugosa*

**Description**
A small terrestrial frog (25–35 mm) that occurs along the western edge of the slopes region. The dorsal colour is typically a light brown or grey with darker blotches and patterns. A prominent pale triangular patch is usually present on top of the head. The groin and back of the thighs have an orange patch. The skin on the back is granular, and the belly is smooth and grey in colour. The toes have only a small amount of webbing.

**Call description**
A short, sharp ‘click’ (track 32).
Breeding habitat and behaviour
Wrinkled toadlets occur in dry woodlands and grasslands where they breed along the margins of wetlands and areas that become inundated after heavy rain. Males call from the land or in the water. Clusters of single eggs are deposited on submerged vegetation or other debris.

Water body type
Dams and large ponds
Ephemeral claypans, swamps and floodplains
Small ponds and puddles

Conservation status
Not listed
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