



Peron's tree frog

Frogs and Wetlands of the Mitta Valley

April 2023

Dr Anna Turner
Charles Sturt University
aturner@csu.edu.au
0499266290



I begin today by acknowledging the Traditional Custodians of the land on which we gather today, and pay my respects to their Elders past, present and emerging. I extend that respect to Aboriginal and Torres Strait Islander peoples here today.

Green tree frog by Melanie Hava

Outline

1) Frogs

- Background/ history
- Role of frogs in the environment
- Threats to frogs

2) Identifying frogs

3) Frog ID App

4) Frog surveys in the Mitta Valley

- Surveys before 2019
- Charles Sturt University frog surveys (2019-20, 2020-21 and 2022-23)

5) Value of wetland habitat

6) Improving wetland habitat for biodiversity

Note: All un-credited photos taken by Anna Turner



Stony Creek frog (*Litoria lesueuri*) female



Stony Creek frog (*Litoria lesueuri*), male. Credit: Australia Museum Frog ID

A bit about frogs!



Stony Creek frog (*Litoria lesueuri*)



Spotted marsh frog (*Limnodynastes tasmaniensis*)



Giant banjo frog (*Limnodynastes interioris*)



Southern bell frog (*Litoria raniformis*)

Amphibians

- a cold-blooded vertebrate animal of a class that comprises the **frogs**, toads, newts, salamanders, and caecilians.
- Two life stages-
 - 1) aquatic gill-breathing larval stage
 - 2) terrestrial lung-breathing adult stage



Southern bell frog, tadpole



Green and Golden bell frog, metamorph



Southern bell frog, adult

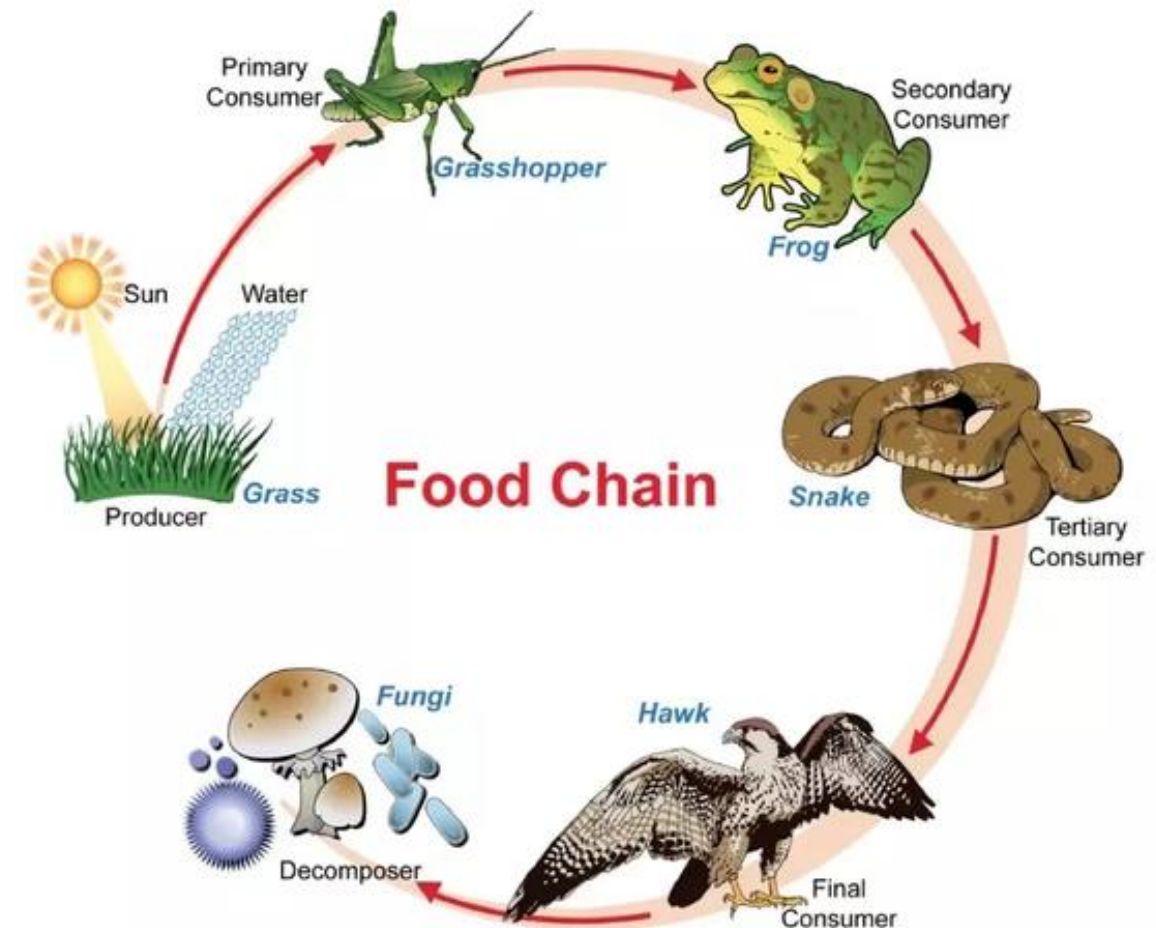
Amphibian history

- Evolved over 370 million years
- Around before dinosaurs
- Decreased in size and diversity over the years



Role of Frogs in the environment

- Feed on insects and flies and their aquatic larvae.
- Help control spread of mosquito borne diseases (malaria, dengue, Ross River virus, Japanese encephalitis)
- Wasps and spiders eat frog eggs.
- Shrimp, fish and dragonfly nymphs eat tadpoles.
- Birds, snakes and lizards eat frogs.
- Frogs eat a wide variety of worms and insects.
- Tadpoles eat algae and can reduce algal blooms.



Frogs in Medicine/ Research



Fire bellied toad
Bradykinin – reduces
high blood pressure



EXTINCT

Gastric brooding frog
Prostaglandin – possible
peptic ulcer cure



Whites tree frog
Caerin - blocks HIV
transmission



African clawed frog
Magainin – diabetic
foot ulcer cure



Waxy monkey frog
Dermaseptin – treats anti-biotic
resistant *Staphylococcus*



Phantasmal poison frog
Epibatidine - painkiller 200x
more powerful than morphine

**IF FROGS
GO EXTINCT,
YOU'LL NOTICE.**



VISIT THE
'FROGS FOREVER?'
EXHIBIT.



vancouver
aquarium
VANAGU.ORG



Threats to frogs

- Frogs are in decline globally
- Of 7000 amphibian species, 2300 are threatened
- Habitat loss
- Water regulation- dams, irrigation
- Changes in climate
- Predation by invasive species- carp, redfin, foxes, cats, pigs
- Disease- Amphibian Chytrid fungus

Foxes caught on camera during surveys for Rakali (native water rats). Credit: Emmalie Sanders



ENDURO SHP2 056F 13C 28/03/2022 05:12:22



ENDURO WID2 066F 18C 27/03/2022 09:50:30

Chytridiomycosis

- Most significant disease for vertebrate biodiversity
- >500 amphibian species infected globally
- ‘Key threatening process’ EPBC act
- Detected 62 out of 242 native species in Australia
- No proven methods of control in the wild



Dead frogs due to Chytrid fungus, South America



Swabbing Southern bell frogs for Chytrid fungus

How to identify frogs



Charles Sturt
University

—
Gulbali Institute

Agriculture Water Environment



Identifying frogs

1. Where was it located? On a window, in your spa, buried in the compost, on the shallow edge of a farm dam, in a water trough.
2. What size is it?
3. Was it calling or not?
4. What are the main colours, does it have spots/blotches or a stripe down its back?
5. Looking closely- What shape is its pupil? Does it have webbed toes or fingers?
6. Each frog species has a unique call. Learn to identify their calls with help of FrogID app.



Crossed pupil?



Webbed toes?



Buried in the garden?



Size?

Eastern sign-bearing froglet



Spotted Marsh Frog



Eastern Banjo Frog



Victorian Tree Frog



Frog species you might encounter in the Mitta Valley



Common Eastern Froglet



Stony Creek Frog



Peron's Tree Frog



Peron's Tree Frog

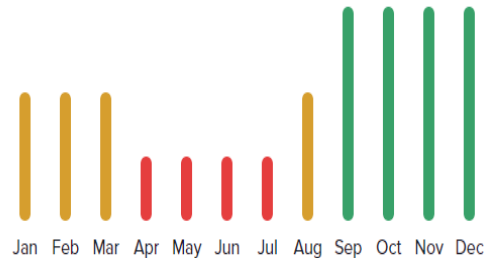
Litoria Peroni

- Size: up to 7 cm.
- Light grey or brown back, emerald-green spots.
- Pupil is crossed-shaped and the iris silver.
- Fingers are half webbed, toes full webbed with large disks. Great climbers!
- Breed during spring to summer after rain.
- Eggs laid in small groups or singly, attached to twigs or vegetation under the waters surface in dams, ponds, creek pools, swamps and even spas and swimming pools.
- Tadpoles up to 8.5 cm long. 3-4 months to develop into adult frog.
- These are commonly found on your kitchen windows, in downpipes or hollow fence posts where there is great acoustics.



Calling Period

• Possible • Yes • Peak



Eastern sign-bearing froglet *Crinia parinsignifera*



Photo credit (right):
Jodi Rowley.
Australian Museum
FrogID

- Size: Very small. Up to 2.5 cm.
- Grey, brown or sandy-gold back with darker patches or longitudinal stripes. Dark triangular patch between eyes. Cream belly.
- Pupil is horizontal, iris flecked with gold.
- Fingers and toes are unwebbed, no disks.
- Breed any time of year except middle of winter.
- Eggs laid singly in shallow muddy water in ponds and swamps, attached to grass stems or substrate.
- Tadpoles up to 3.5 cm long. 3 months to develop into adult frog.
- Looks similar to Common eastern froglet and Smooth Toadlet also found in the region, has a different call.



Calling Period

● Possible ● Yes ● Peak

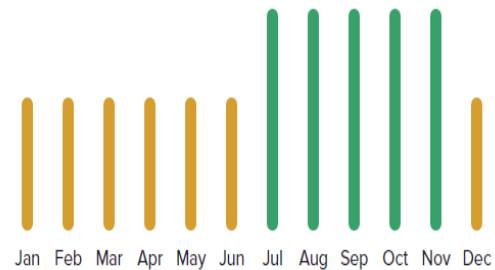




Photo credit: Stephen Mahoney.
Australian Museum FrogID

Common Eastern Froglet *Crinia signifera*

- Size: Very small. Up to 3 cm.
- Variable in appearance brown, grey, cream, beige, reddish or mustard yellow back, with or without longitudinal stripes, spots or patches.
- Pupil is nearly round and iris is gold.
- Fingers and toes are unwebbed, no disks.
- Breed any time of year.
- Eggs laid in small clusters in wide variety of water bodies including streams, flooded ditches, grassland, permanent ponds and dams.
- Tadpoles up to 3.5 cm long. 2.5-3 months to develop into adult frog.
- Often heard but vary rarely seen, a very common species.

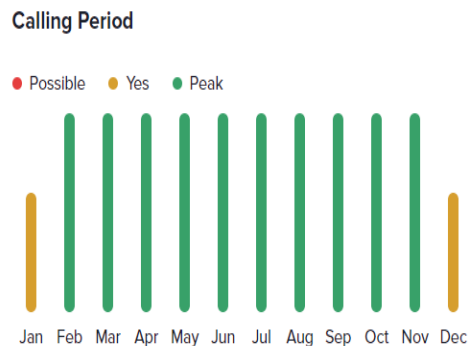


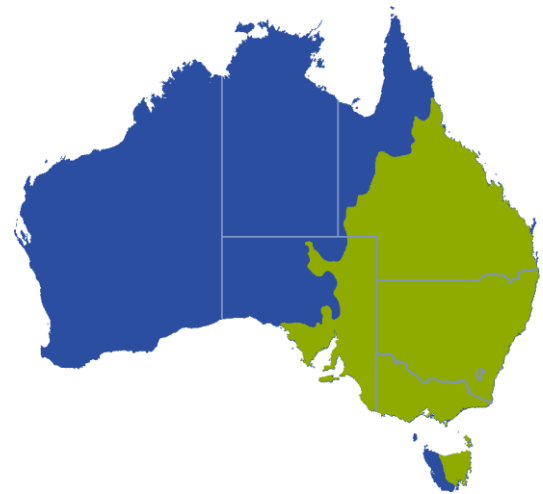


Photo credit: Judy Cardwell,
Mitta Valley resident, 2022.

Spotted Marsh Frog

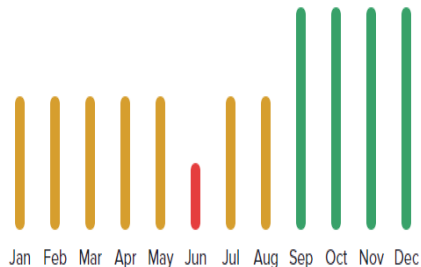
Limnodynastes tasmaniensis

- Size: up to 5 cm.
- Grey-brown or olive-green back with darker patches. Pale cream or red stripe down back (not always present). Cream stripe from under eye to top of arm. Belly is white and male has yellow throat during breeding season.
- Pupil nearly round, iris gold.
- Fingers unwebbed and toes are slightly webbed. No disks.
- Breed during spring to autumn or in winter after heavy rain.
- Eggs laid in foamy masses on surface of dams, temporary or permanent pools, flooded paddock and roadside ditches.
- Tadpoles up to 7 cm long. 3.5 months to develop into adult frog.
- These reached very high numbers this year with sequential wet years and plenty of breeding habitat they have received some media attention after mass numbers get caught in swimming pools.



Calling Period

• Possible • Yes • Peak



Litoria ewingii species complex

- The frogs under this name cannot be differentiated without DNA testing.
- Their calls are very similar.
- Whistling tree frog (*Litoria verreauxii*) also has a similar call and appearance but has black spots on the groin.

Victorian Tree Frog



Brown Tree Frog



Whistling Tree Frog





Photo credit: Adam Parsons.
Australian Museum FrogID

Victorian Tree Frog

Litoria paraewingi

- Size: up to 3.5 cm.
- Cream, brown, yellow/brown back with wide dark stripe along middle starting between the eyes. White stripe from eye to jaw. Belly is white. Male has grey throat.
- Pupil horizontal, iris gold.
- Fingers unwebbed and toes are nearly fully webbed. Small disks.
- Breed any time of year.
- Clusters that stick to vegetation under surface of water in temporary or permanent ponds, dams and stream pools.
- Tadpoles up to 5.5 cm long. 6-7 months to develop into adult frog.
- Similar to Brown Tree frog but has different call. Whistling tree frog has black spots on groin that are not present in Brown tree frog.



Calling Period

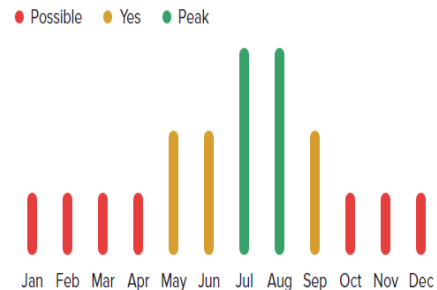




Photo credit: Stephen Mahony.
Australian Museum FrogID

Brown Tree Frog

Litoria ewingii

- Size: up to 4.5 cm.
- Cream, brown, yellow/brown back with wide dark stripe along middle starting between the eyes.
- Pupil horizontal, iris gold.
- Fingers unwebbed and toes are half webbed. Small disks.
- Breed any time of year.
- Clusters that stick to vegetation under surface of water in temporary or permanent ponds, dams and stream pools.
- Tadpoles up to 5.5 cm long. 6-7 months to develop into adult frog.
- Similar to Victorian Tree frog but has different call. Whistling tree frog has black spots on groin that are not present in Brown tree frog.

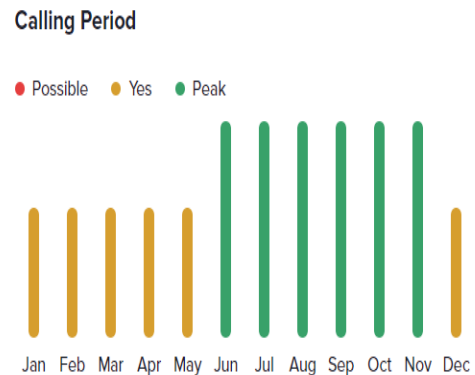




Photo credit: Jodi Rowley. Australian Museum FrogID

Eastern Banjo Frog

Limnodynastes dumerilli

- Size: up to 7.5 cm.
- Pupil horizontal, iris golden brown.
- Fingers unwebbed and toes are one-quarter webbed. No disks.
- Breed from spring to autumn.
- Foamy egg mass on surface of water.
- Tadpoles up to 7 cm long. 4-5 months to develop into adult frog.
- Burrowing frog often found around water sprinklers when you dig up the garden.

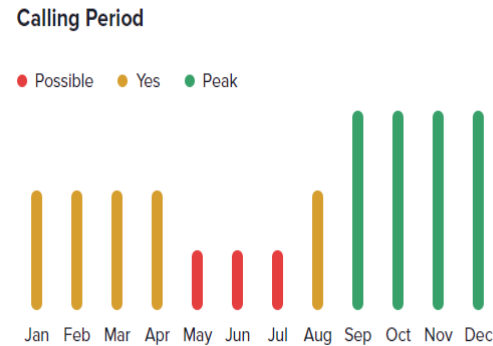


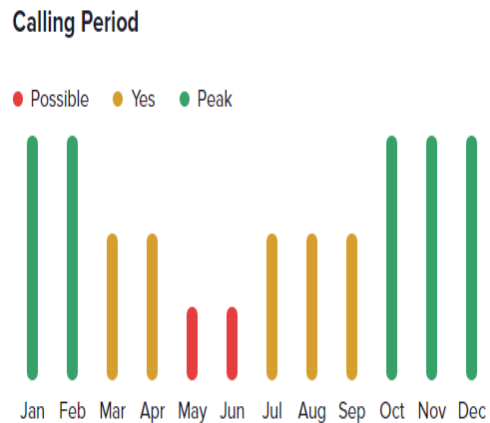


Photo credit: Stephen Mahony.
Australian Museum FrogID

Smooth Toadlet

Uperoleia laevigata

- Size: up to 3 cm.
- Pupil nearly round, golden iris.
- There is a pale triangular patch on the head, and a dark, horizontal bar between the eyes. Groin and backs of thighs are bright red.
- Fingers and toes unwebbed. No disks.
- Breed any time of year after rain.
- Single eggs on vegetation under the surface of the water in permanent pools.
- Tadpoles up to 4.5 cm long. Remain on bottom of waterbodies and take 3-4 months to develop into adult frog.



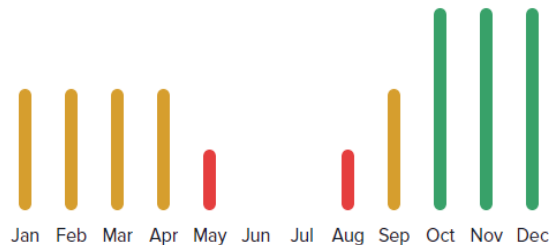


Male (top), Female (bottom)
Photo credit: Australian Museum
FrogID (top)



Calling Period

● Possible ● Yes ● Peak



Stony Creek Frog

Litoria lesueuri

- Size: up to 6 cm.
- Grey-brown or reddish black. Black strip from eye to the side. Black speck or mottling on inner thigh. Males yellow when active at night.
- Pupil horizontal, iris gold in the upper half and dark brown in lower half.
- Fingers unwebbed and toes are three-quarters webbed. Both with small disks.
- Breed during spring and summer.
- Single cluster of eggs attached to rocks in creek and stream pools.
- Tadpoles up to 4.5 cm long.
- Tadpoles use their mouthparts to stick to rocks to avoid being swept away by current. 2 months to develop into a frog.



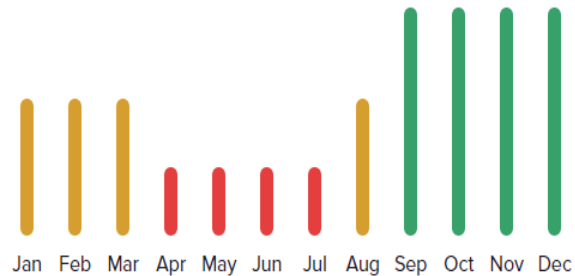
Photo credit: Stephen Mahony.
Australian Museum FrogID

Eastern Dwarf Tree Frog *Litoria fallax*

- Size: Small- up to 2.5 cm.
- Bright green or bronze back, bronze stripe from nose and along sides. White stripe under eye to arm.
- Pupil horizontal, iris gold.
- Fingers slightly webbed, does three-quarters webbed. Both with small disks.
- Breed any time of year.
- Small clusters of eggs attached to vegetation near surface of water in swamps, permanent ponds and dams.
- Tadpoles up to 5 cm long. Remain near surface of water bodies. 2.5-4 months to develop.
- More of a subtropical/ tropical frog which has been accidentally transported to the Yackandandah area and is now spreading.

Calling Period

● Possible ● Yes ● Peak





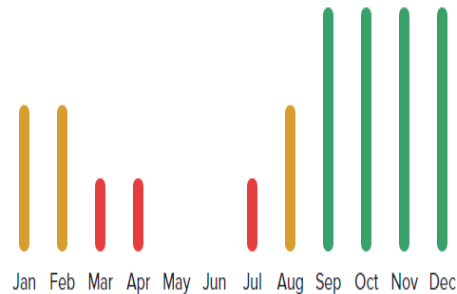
Southern Bell Frog (Growling Grass Frog) *Litoria raniformis*

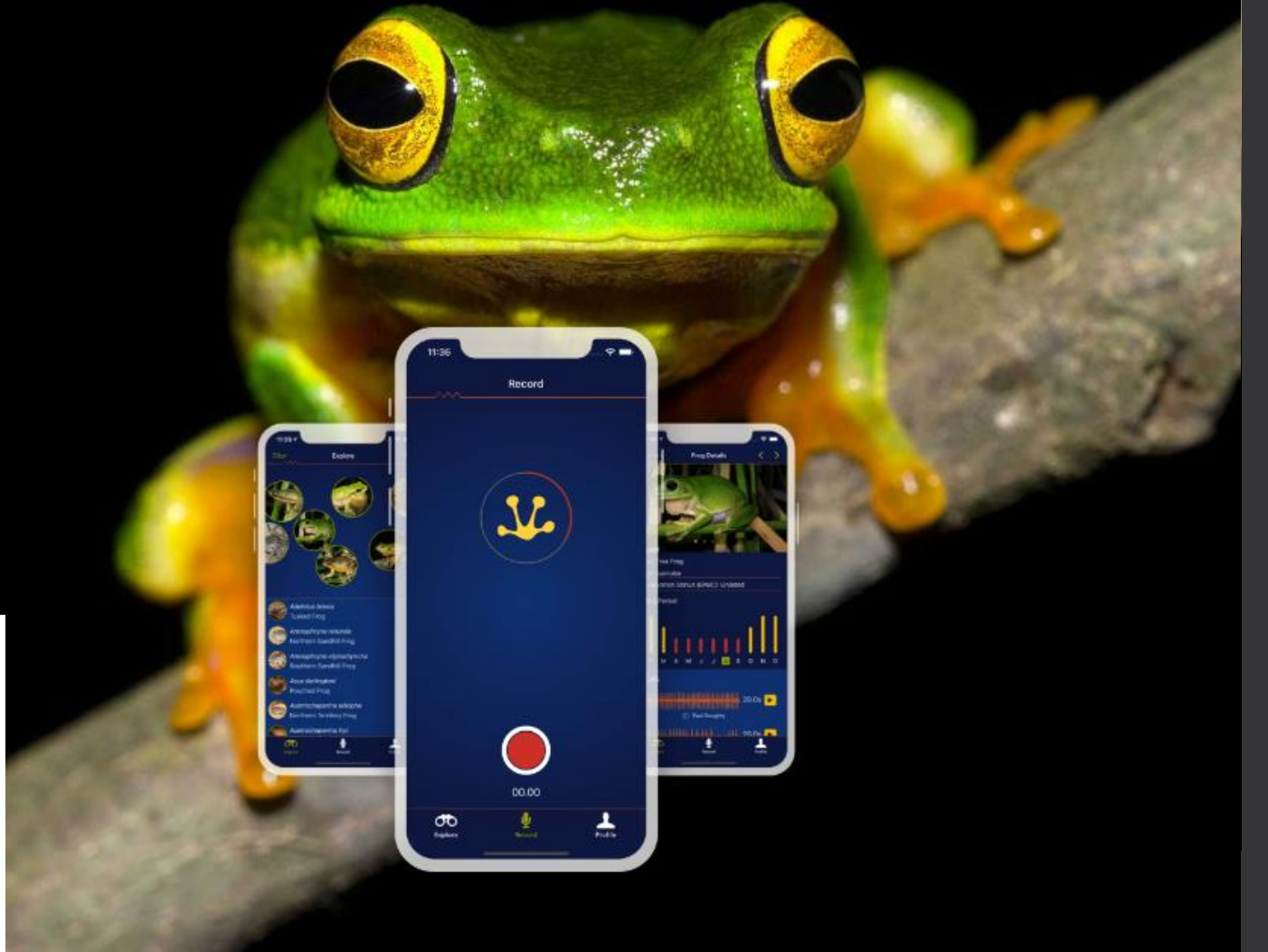
- Last detected during frog surveys in 2009 in Mitta Valley.
- Listed as endangered in NSW and Vulnerable in Victoria.
- Large frog up to 10 cm.
- Green-brown back with brown or bronze patches. Dark stripe from nostril to eye. Cream stripe from behind eye that widens down sides.
- Fingers and unwebbed and toes fully webbed, both with small discs.
- Breeds in spring and summer. Triggered by rise in water levels.
- Eggs laid in clusters under the surface of the water in permanent ponds, dams, swamps and creek pools.
- Tadpole reach 9.5 cm and can take up to 8 months to develop.
- Make loud, deep call similar to revving motorbike.



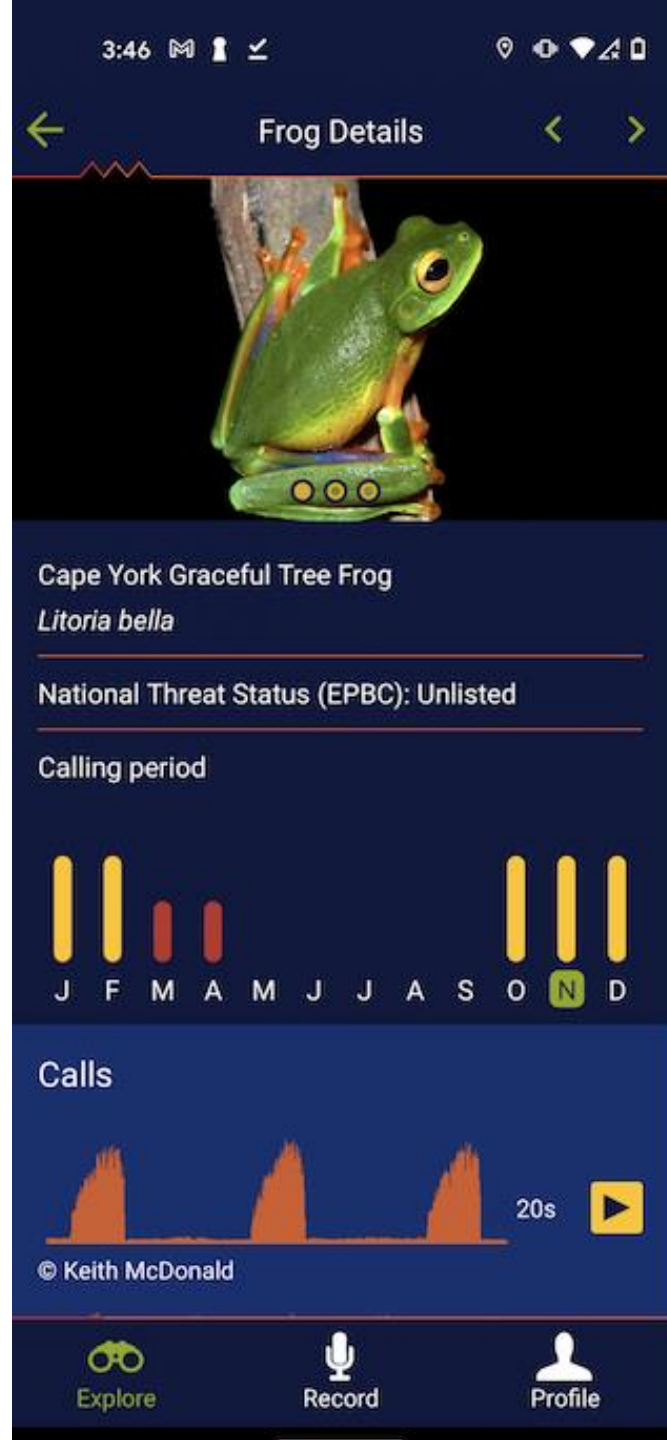
Calling Period

● Possible ● Yes ● Peak





<https://www.frogid.net.au/>



Record



00.00

22

Potential
Species



Status: Not Submitted

3:45 PM | 04/11/2021 | 33.6829°S, 150.558°E

Habitat: Rural

Water Body: Small Pond

Choose the frog calls that sound like your recording.

(Showing 22 calls of 22 potential frogs.)

Crinia parinsignifera
Eastern Sign-bearing Froglet



20s



© Jodi Rowley

Crinia signifera
Common Eastern Froglet

Questions about Frog ID?



Tree frog by Danielle "DJ Mate" Sullivan

Frog Surveys in the Mitta Valley



Charles Sturt
University

Gulbali Institute

Agriculture Water Environment



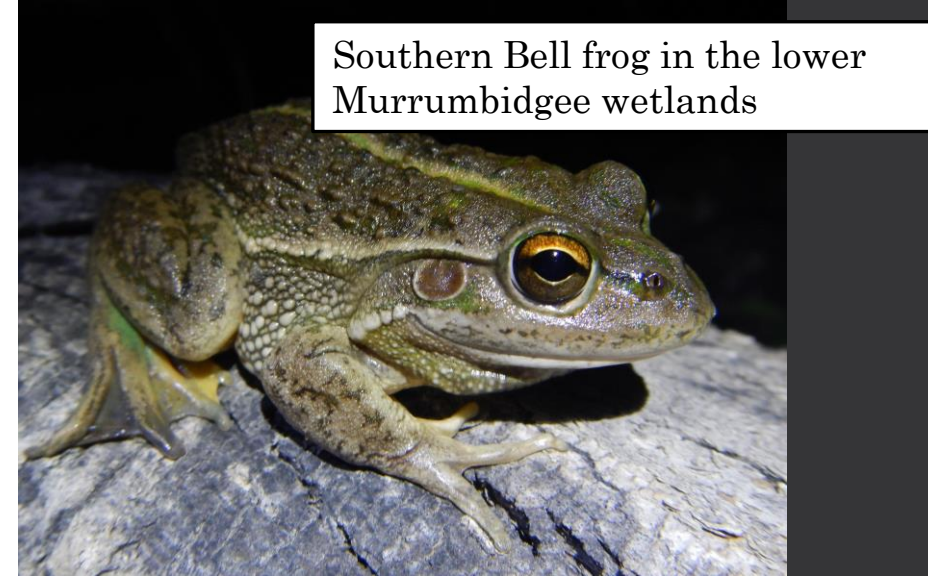
Mitta Valley during frog surveys December 2019



Mitta Valley during frog surveys December 2022

Frog surveys in the Mitta Valley

- Southern Bell frogs are known to have historically inhabited the Mitta Valley.
- Current residents recall having these large and easily distinguished frogs in house dams and wetlands in the Mitta Valley.
- Surveys by Ecology Partners Pty. Ltd in 2007 and 2009 detected bell frogs at 9 sites along the Mitta River between Tallangatta and Tallandoon.
- Targeted frog surveys in 2016 by Dr David Hunter did not detect bell frogs.
- Frog surveys targeting Southern Bell frogs conducted by Anna at CSU during 2019-20, 2020-21 and 2022-23 bell frog breeding seasons did not detect bell frogs.
- Recent surveys have helped to have a better idea of what frog species are inhabiting the Mitta Valley and have guided conservation actions to improve habitat for these species.



Southern Bell frog in the lower Murrumbidgee wetlands

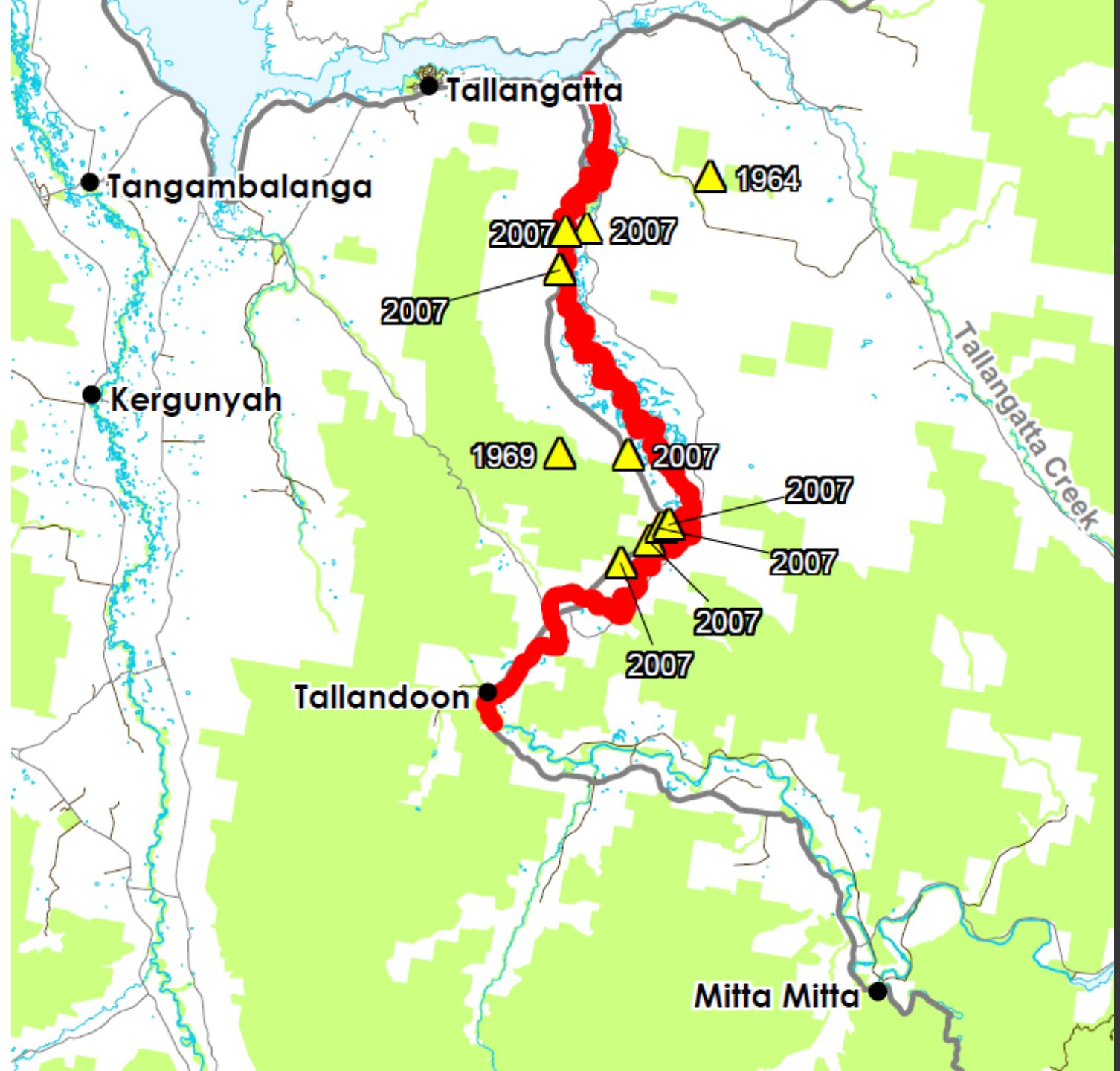


Recording wind speed and air temperatures during frog surveys

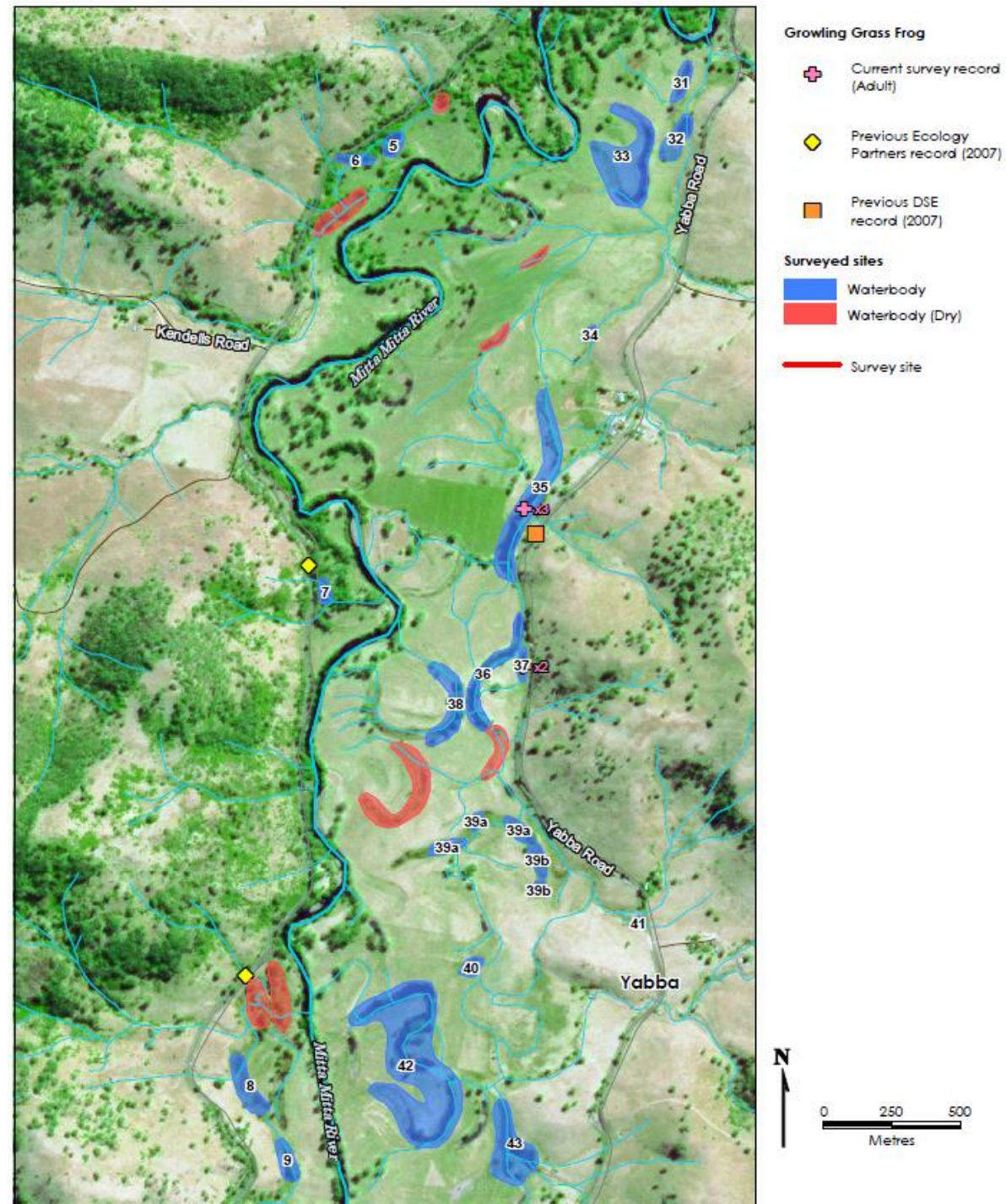
Records of Southern bell frogs during Ecology Partners Pty Ltd 2007 Surveys.

Key

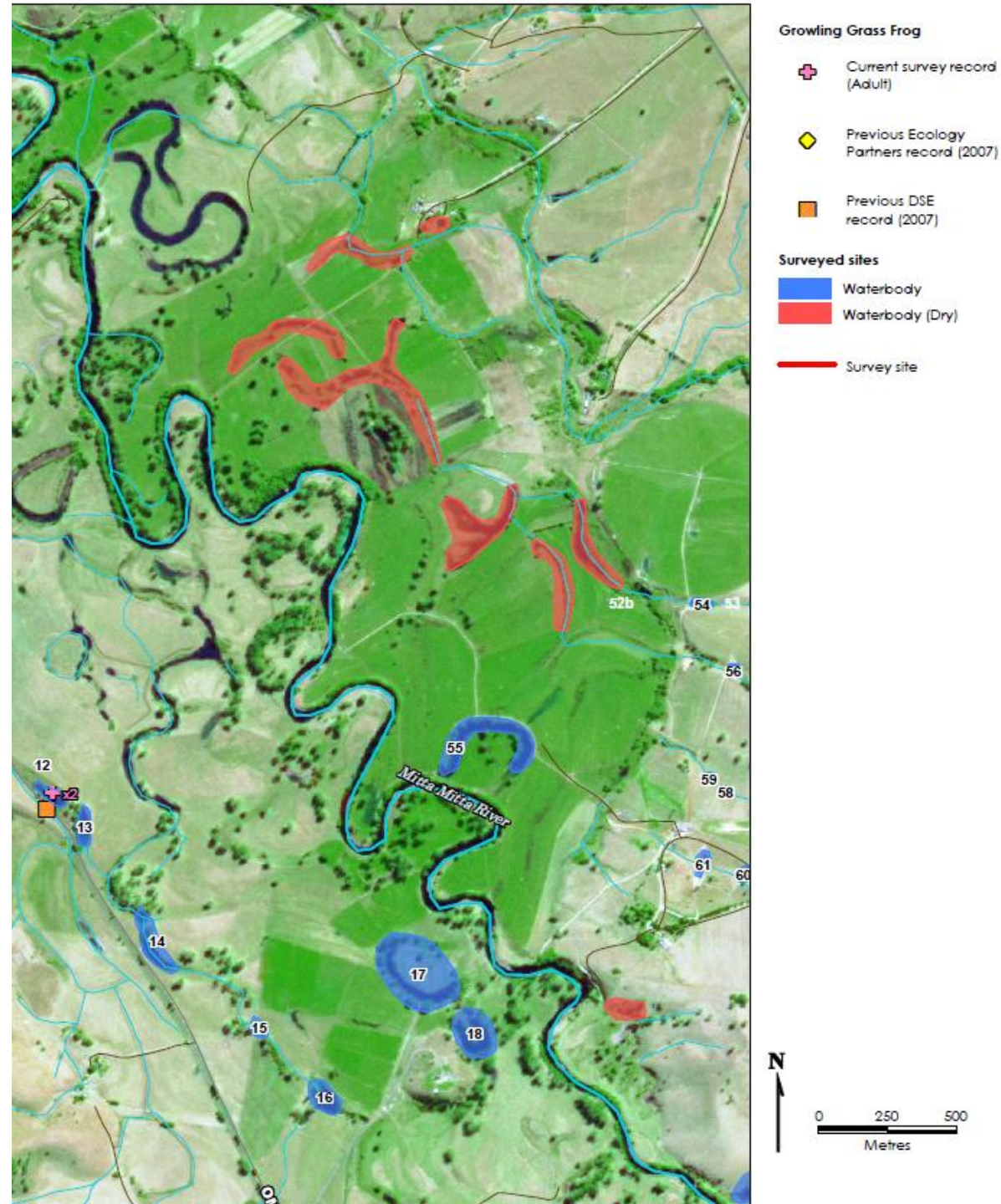
 1964 Southern bell frog record



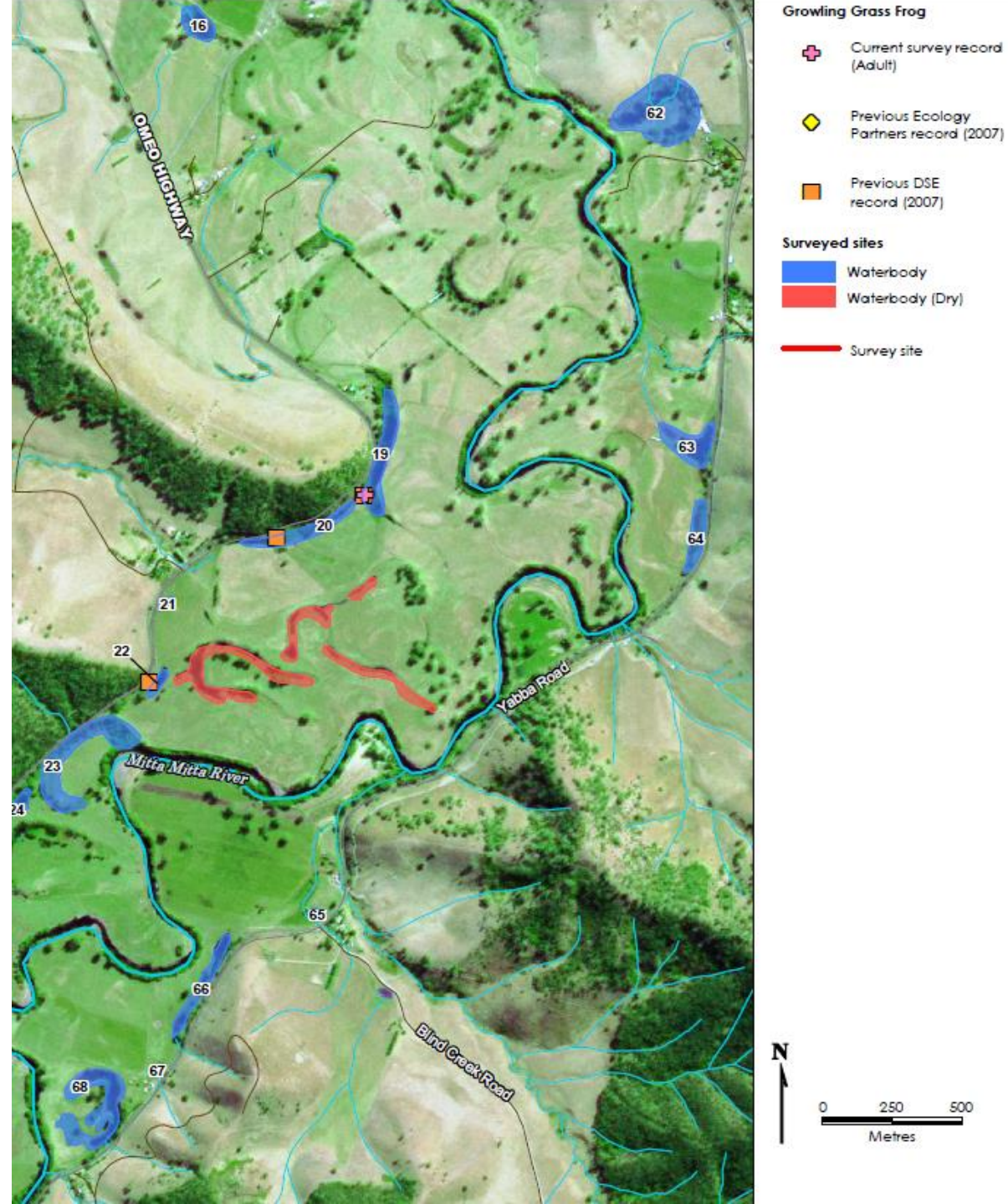
Records of Southern bell frogs during Ecology Partners Pty Ltd 2009 Surveys.



Records of Southern bell frogs during Ecology Partners Pty Ltd 2009 Surveys.



Records of Southern bell frogs during Ecology Partners Pty Ltd 2009 Surveys.

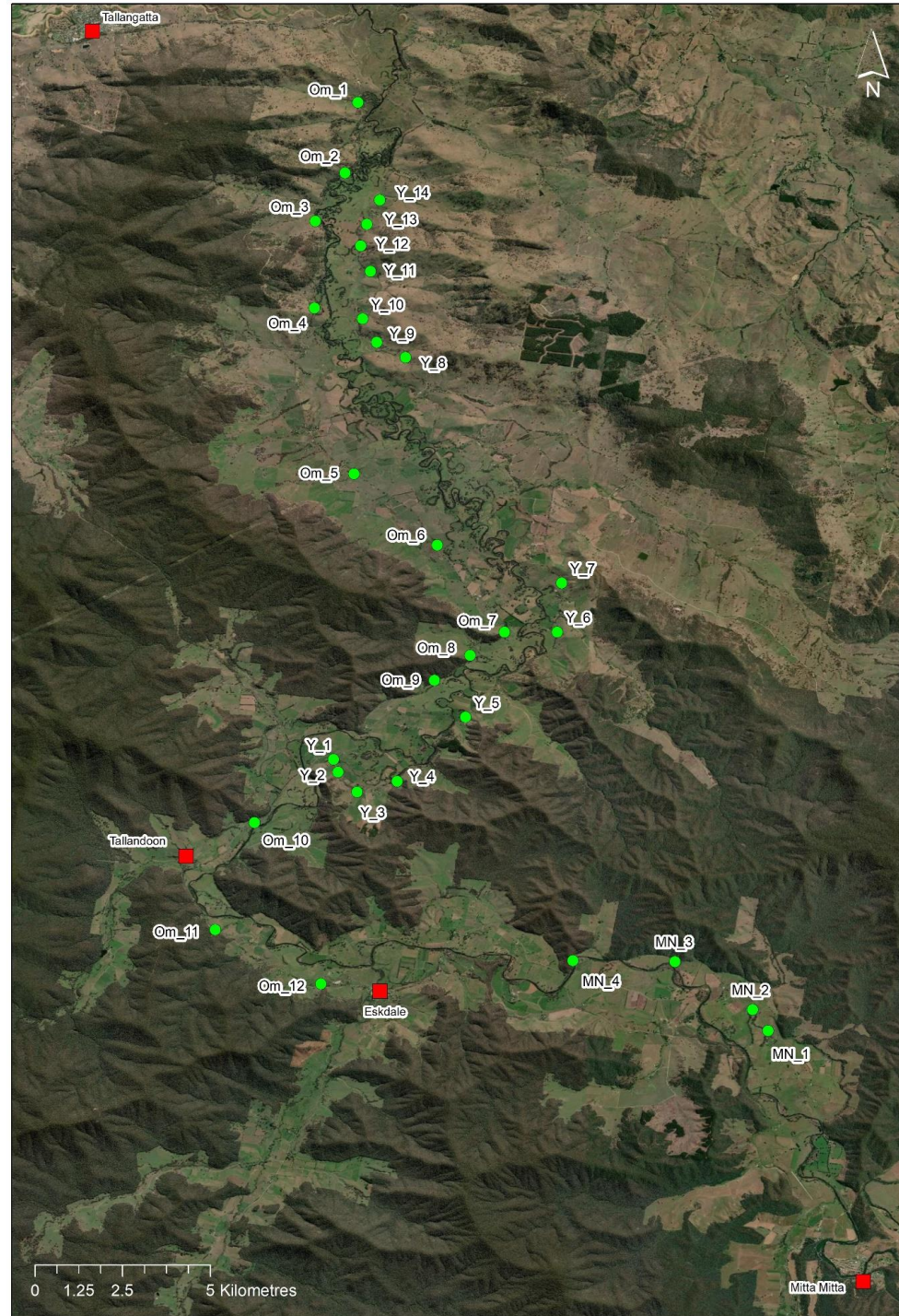


Frog survey sites 2019 and 2022

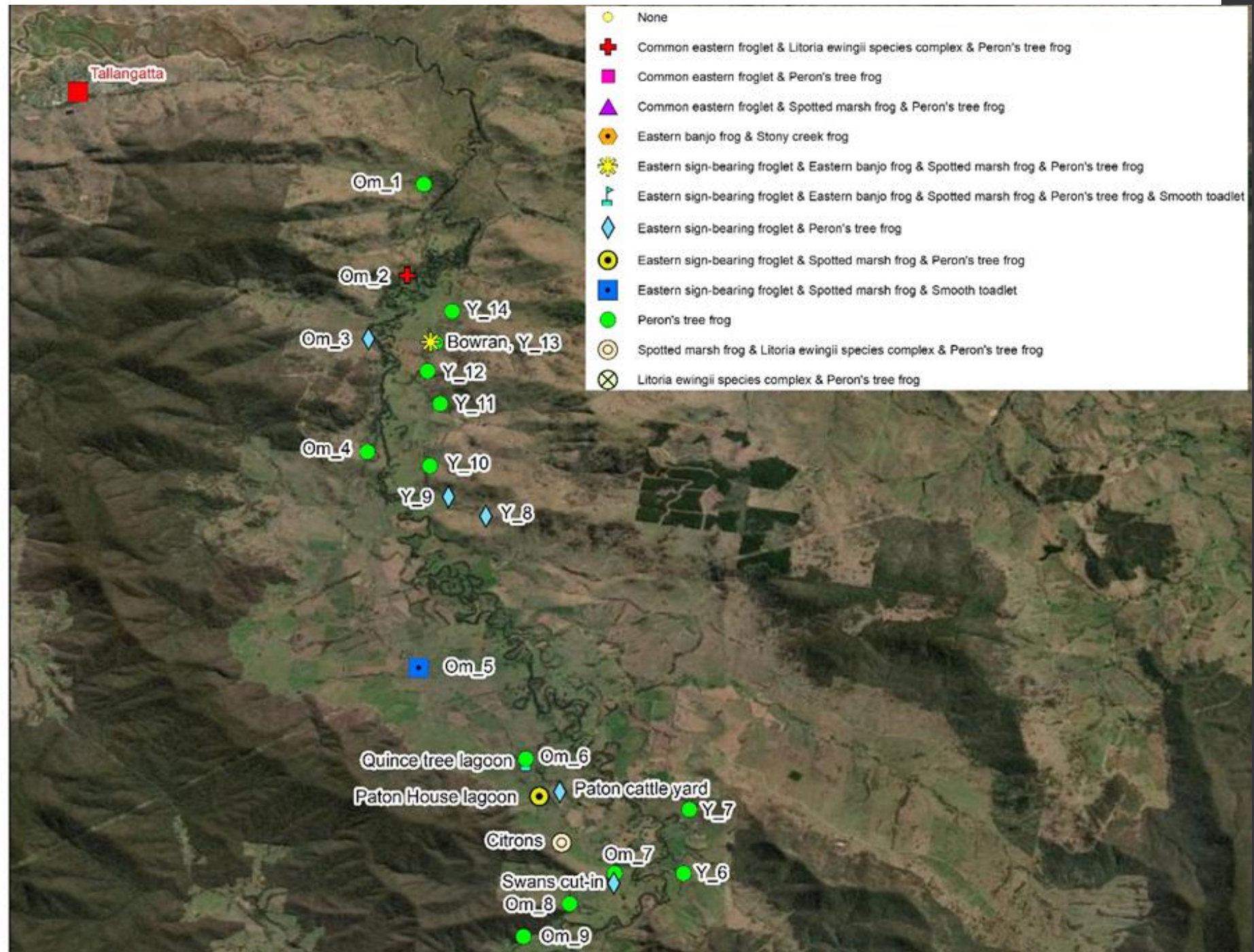
x12 on Omeo Hwy
x4 on Mitta North Rd
x14 on Yabba Rd

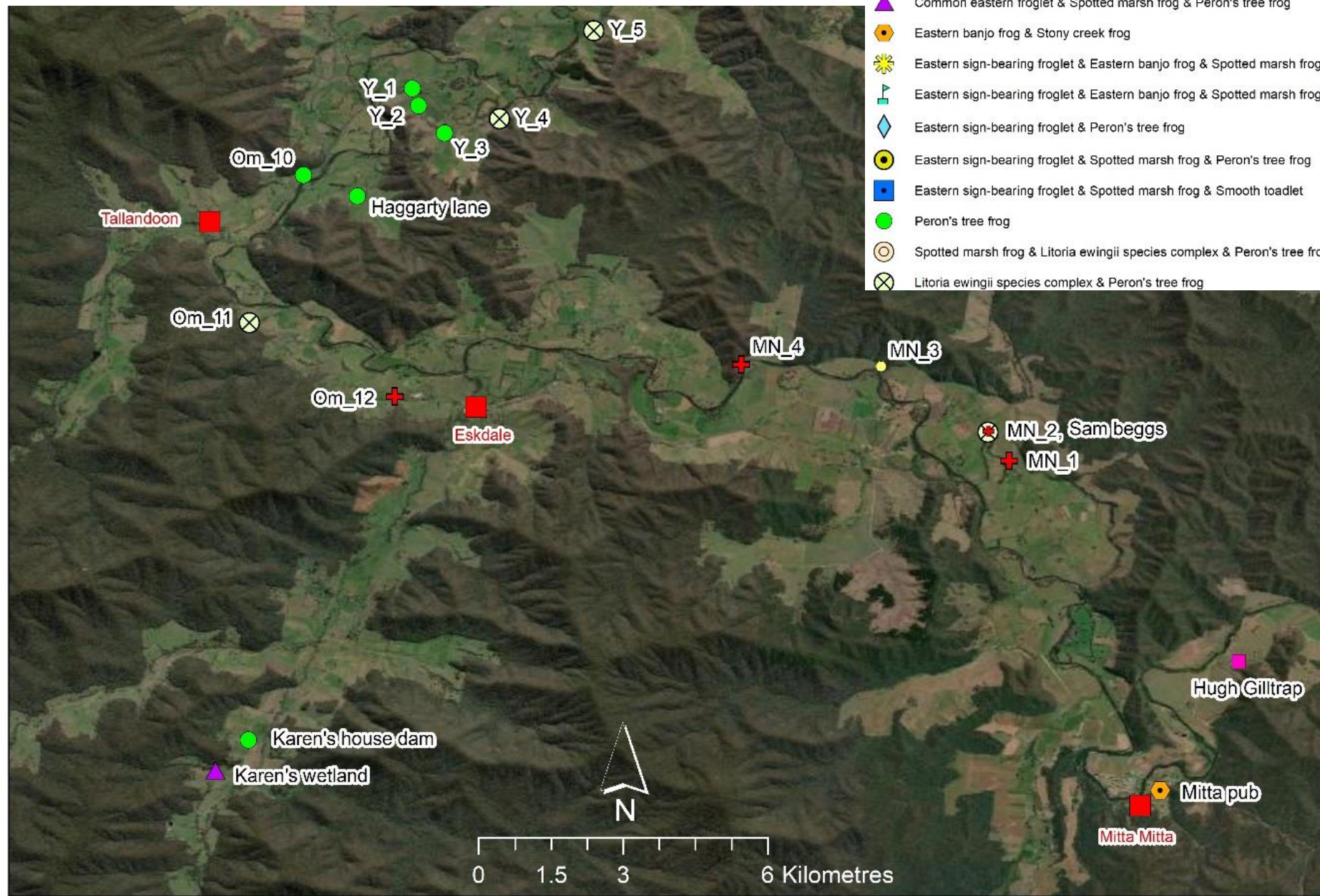
-Audio surveys only

-Shape of valley means
you can hear the frogs
calling from along the
roads



Frog survey results 2019 and 2020





- None
- ⊕ Common eastern froglet & Litoria ewingii species complex & Peron's tree frog
- Common eastern froglet & Peron's tree frog
- ▲ Common eastern froglet & Spotted marsh frog & Peron's tree frog
- ⬢ Eastern banjo frog & Stony creek frog
- ✱ Eastern sign-bearing froglet & Eastern banjo frog & Spotted marsh frog & Peron's tree frog
- ⚑ Eastern sign-bearing froglet & Eastern banjo frog & Spotted marsh frog & Peron's tree frog & Smooth toadlet
- ◊ Eastern sign-bearing froglet & Peron's tree frog
- ⊙ Eastern sign-bearing froglet & Spotted marsh frog & Peron's tree frog
- Eastern sign-bearing froglet & Spotted marsh frog & Smooth toadlet
- Peron's tree frog
- ⊙ Spotted marsh frog & Litoria ewingii species complex & Peron's tree frog
- ⊗ Litoria ewingii species complex & Peron's tree frog

● Karen's house dam
 ▲ Karen's wetland

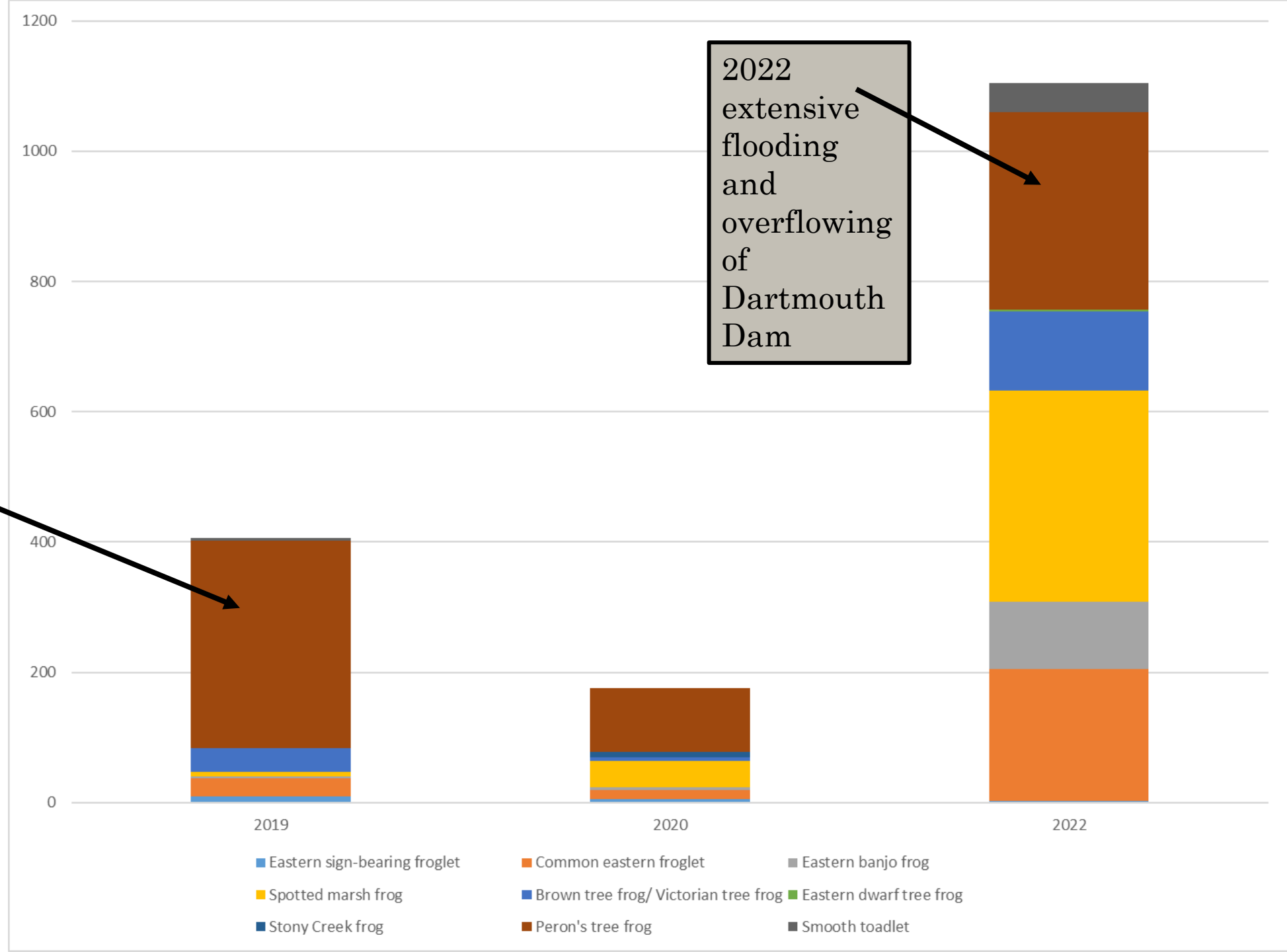


■ Hugh Gilltrap
 ■ Mitta pub
 ■ Mitta Mitta

Results of CSU 2019, 2020 and 2022 frog surveys

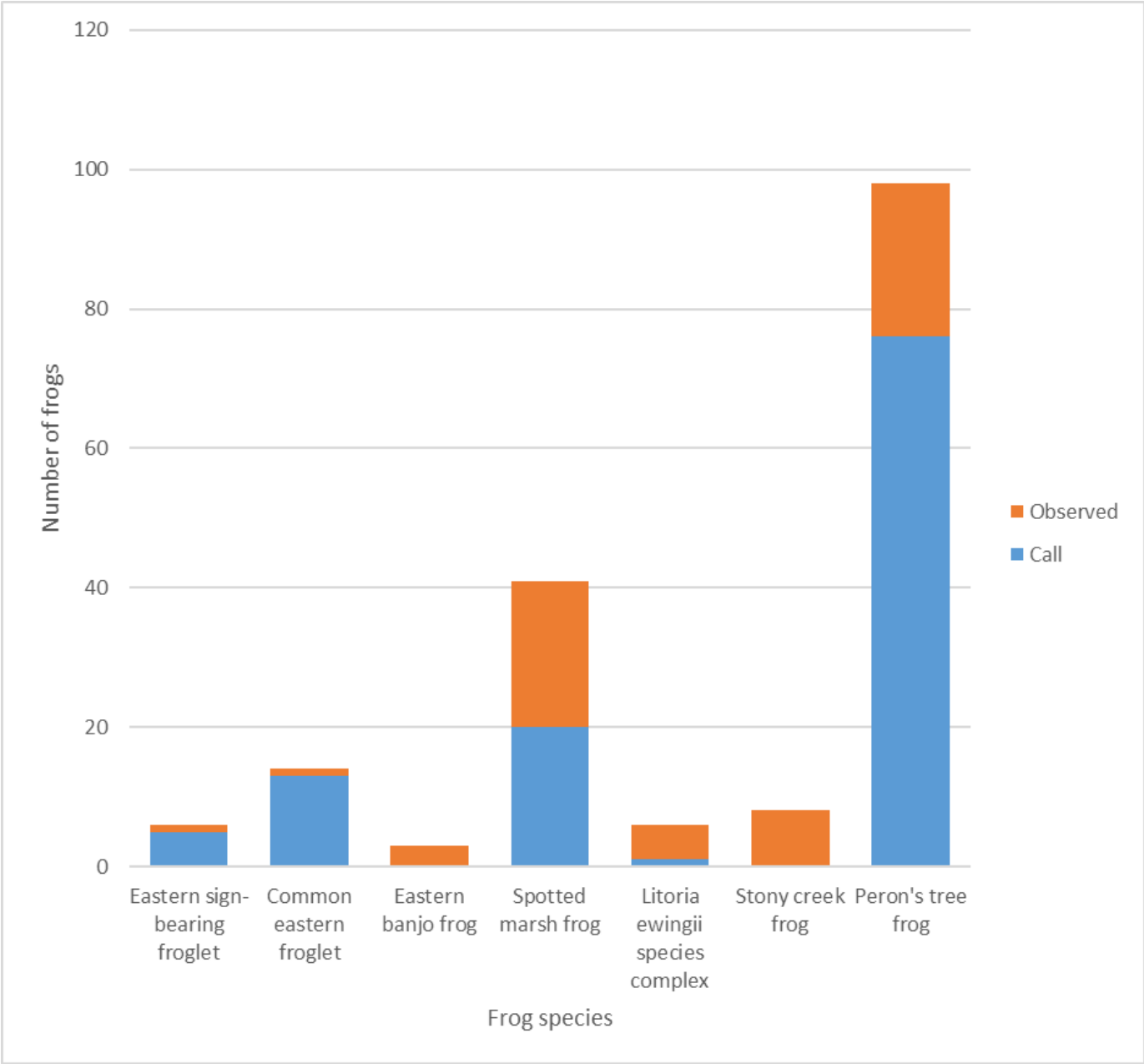
2019 annual rainfall driest 10% of records

2022 extensive flooding and overflowing of Dartmouth Dam



Calling vs observed

Number of frogs heard calling versus those visually observed for each species during 2020 surveys.



Questions about Mitta frog surveys?



Tree frog by Danielle "DJ Mate" Sullivan

Importance of healthy wetlands

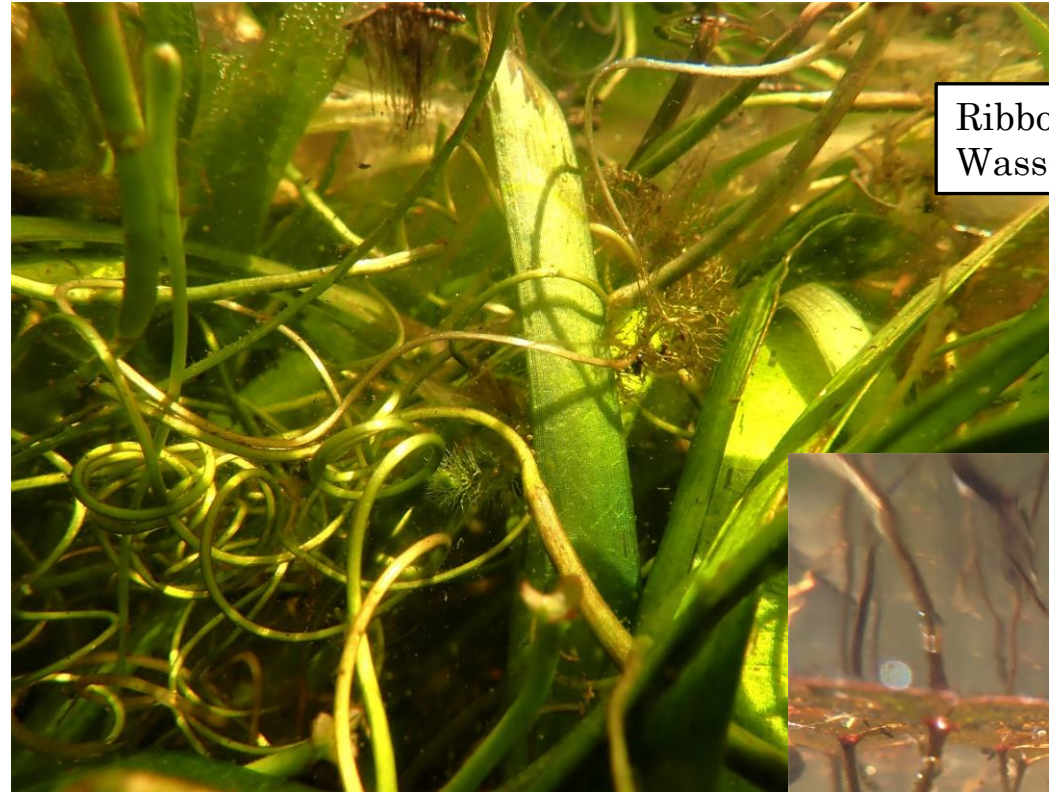
- Wetlands maintain and improve water quality
- Captures, slows and filters water before it goes into our river systems.
- Captures and slows water to fill our groundwater supplies.



Red water milfoil, azola, giant spike rush in a seasonally inundated wetland in western NSW. Credit: Skye Wassens

What does a healthy wetland look like?

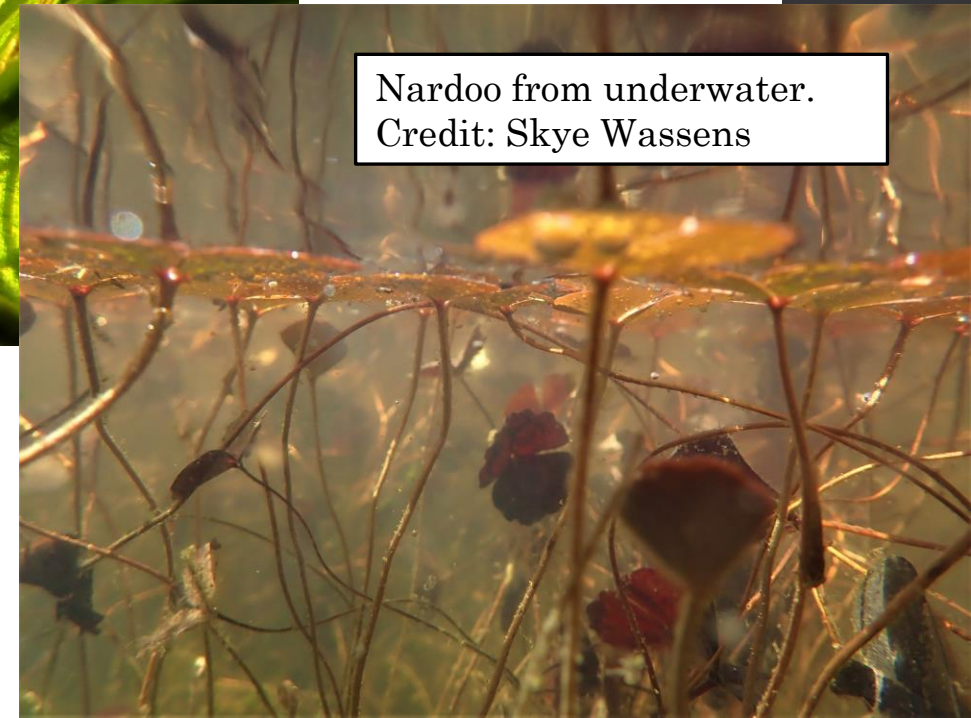
- Natural wetting and drying regimes
- Diversity of vegetation
- Banks undisturbed from erosion or pugging from livestock



Ribbon Weed. Credit: Skye Wassens



Nardoo from underwater. Credit: Skye Wassens



Nardoo from underwater. Credit: Skye Wassens

Ways to improve your wetlands, waterways and farm dams

- Limit access to wetlands from stock.
- Fencing off wetland habitats and riparian areas to protect from stock.
- Crash grazing fenced areas for weed control.
- Provide stock troughs away from watercourse to reduce erosion and pugging.
- Pest control- foxes
- Fenced areas will revegetate to some extent. You can also plant suitable native plants within fenced areas.
- Leave fallen trees and branches around waterways. These help slow water movement and provide habitat for native animals.



What you can do to help the frogs

- Learn as much as you can about what species inhabit your area and what sort of habitat they require.
 - FrogID app is great for this
 - Local field days such as this one
- Protect the environment
 - Frogs are sensitive to the environment such as chemicals in waterways.
 - They have species specific breeding requirements, protecting vegetation around waterways can help support breeding.
 - Don't put prescription drugs down the loo they end up in our waterways (return to pharmacy for disposal).
 - Reduce use of pesticides and herbicides where possible.
- Support conservation
 - Clean-Up Australia Day
 - Tree Planting/ revegetation days with Landcare



Questions about wetlands?



Tree frog by Danielle "DJ Mate" Sullivan

Wetland and Creek walk with Dr Alex Knight

- 30-40 min
- Covered walking shoes/boots, sun hat, water bottle, camera
- Lunch time



Frog call activity

- Get a frog card
- Are you male or female? Only males call!
- Males find a spot with 'good acoustics' and start calling based on the sound described on your card.
- Females- listen to the calls and find the male which matches your species who has the best call.
- Once you found your match give each other a high five!