FROGCALL

THE FROG AND TADPOLE STUDY GROUP of NSW Inc.
Facebook: https://www.facebook.com/groups/FATSNSW/
Email: fatsgroupnsw@fats.org.au
Frogwatch Helpline 0419 249 728
Website: www.fats.org.au
ABN: 34 282 154 794

NEWSLETTER No. 196 APRIL 2025

Litoria wilcoxii **pen, ink and watercolour illustration of breeding behaviour**

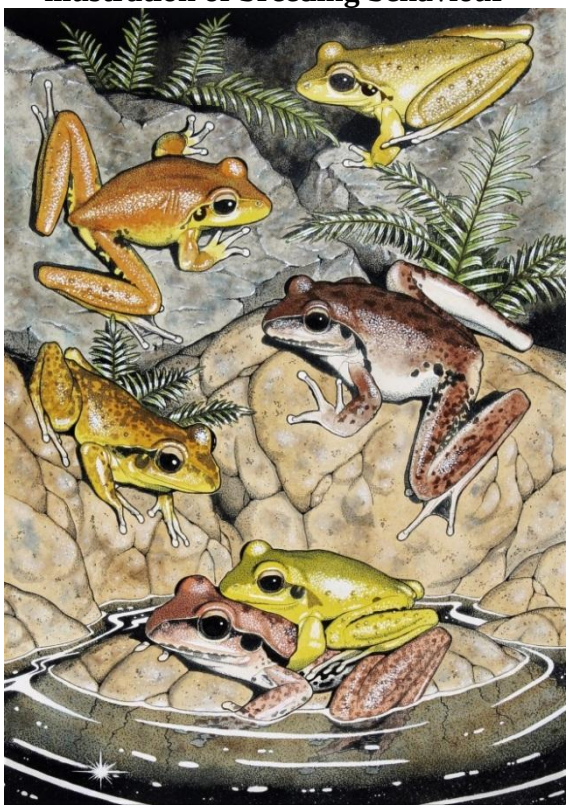


Illustration by Garth Coupland Yellow frog mystery, pages 6 to 7

PUBLIC MEETING AGENDA 7PM FRIDAY 4 APRIL 2025

6.30 PM Arrival, tea and coffee, raffle tickets, frog adoptions

7.00 PM Welcome and announcements

7.20 PM Main speakers:
Arthur White
"Conservation of the Japanese Giant Salamander"
Rhys Cairncross March 2025 Smiths Lake field trip report

9.00 PM Drinks and supper provided. Relax and chat with frog friends and experts. Show us your frog images. Tell us about your frogging trips or experiences.

A note on frog adoptions: Frogs are available for adoption at some meetings. To adopt a frog, you need to be a member and present your NSW NPWS amphibian licence. A $50 donation is required to adopt a frog to cover frog care costs. Please note as rescue frogs are from a different part of the country they can never be released. Please contact us before the night to confirm if any frogs are available for adoption.

You are invited to our public meeting. It's free. Everyone is welcome.

Date: **Friday 4 April 2025**

Time: 7PM (arrive from 6.30 PM)

Location: Education Centre, Bicentennial Park, Sydney Olympic Park, Homebush Bay, NSW

How to get there

By car: Turn left from Bennelong Parkway onto Bicentennial Drive, then turn left onto Step Up Place and park in the P10f / Badu Mangroves carpark.

Public transport: 10 minute walk from Concord West Railway Station. Walk down Victoria Ave and Bicentennial Park Pathway.

Note: the path to the Education Centre isn't well lit so it's recommended to bring a torch.

CONTENTS **PAGE**

PRESIDENT'S PAD – APRIL 2025

To all our members, both new and long standing, welcome to the April 2025 edition of FrogCall.

It's been a busy couple of months at the Frog and Tadpole Study Group, with the first two field trips of the year completed. In early February, we hosted a field trip to Dharawal National Park at Darkes Forest. Although the weather wasn't ideal, we were still able to hear and spot several frogs, with an Eastern Banjo Frog (*Limnodynastes dumerilii*) being the highlight of the evening.

In early March, we held our biannual Smiths Lake field trip, where the weather system associated with ex-tropical cyclone Alfred affected frogging (and swimming!) conditions. Frogs and reptiles were few and far between, but we did see a few species including Red-Backed Toadlet (*Pseudophryne coriacea*), Bibron's Toadlet (*Pseudophryne bibronii*), and Mahony's Toadlet (*Uperoleia mahonyi*).

Behind the scenes, the committee has been hard at work on updates and improvements to our website, social media presence, and membership process. We are also exploring options to record and broadcast our public meetings so those who can't attend in person can still listen and learn.

Looking ahead, we have some exciting events lined up, including reptile expos, an open day at the Greenacre Green and Golden Bell Frog site, and participation in the Royal Easter Show. I hope to see many of you at our upcoming meetings, field trips, and other events!

Sincerely, Michelle, President

FATS AGM NOTICE FRIDAY 1 AUGUST 2025

The FATS AGM will be held on Friday 1/8/25 commencing 7pm. FATS meets at the Education Centre, Bicentennial Park, Sydney Olympic Park however the venue may change in 2025. Please check the FATS website and most recent (August 2025) FrogCall newsletter.

If you would like to ask any questions about joining the FATS committee, please give us a call. Contact our President, Michelle Toms at least two weeks before the meeting for further information and to submit items.

We appreciate fresh ideas and need new members on our committee. No experience required. The committee meets 6 times a year. Those far away can attend via video or audio link. No task commitments or time expected of committee members, other than what you are able to spare.

See contacts details on page 11. **Michelle Toms**

FATS 2025 FROG-O-GRAPHIC COMPETITION

The FATS members' Frog-O-Graphic competition opens soon and closes on the 31 August 2025.

The most recent new category is Best "wild" tadpole/s or frog/s video. Maximum duration 30 sec, maximum file size 80 MB, maximum resolution 1080P. Format MP4. Wild frogs only, with no people visible ie frogs that are free to come and go including in back yards. No pet frog videos please.

A post in our June FrogCall 197 will advise you of the link / email for downloading submissions.

5 CATEGORIES:

Best Frog Image,
Best Pet Frog Image,
Best short "wild" frog video
Most Interesting Image and
People's Choice.

Winners are decided by a panel of judges. **People's Choice** is voted for by everyone present at the October FATS meeting.

In your submission please state:

*** your name,**

*** confirm that you are a financial member,**

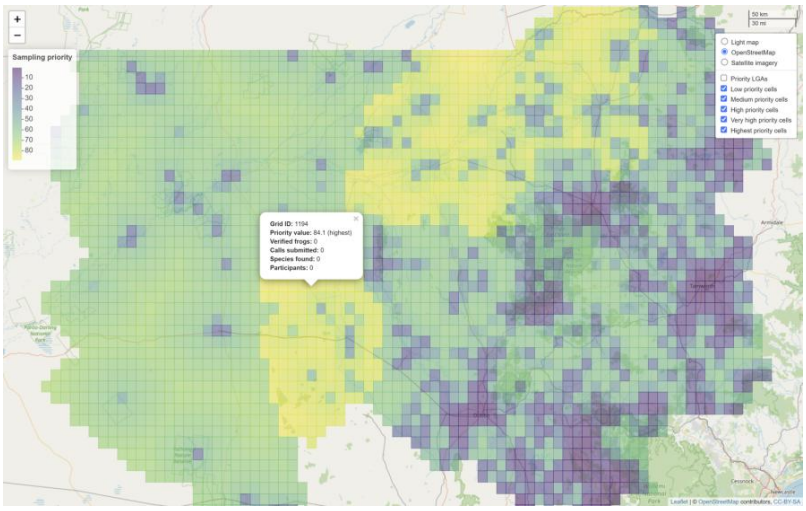
*** identify the frog species (preferably by scientific name in the file name) and location, if known,**

*** whether the image is a pet frog and**

*** your contact phone number**

Max 6 entries per person
Max image attachment size 6 MB

Fabulous prizes awarded.
Entries must be original and your own work.
They don't have to be recent images.
The entries may appear in FrogCall, FATS Facebook, our web site and other FATS publications.



Screenshot of the Northern Wheatbelt priority map. Record in grid cells with the highest priority value to maximise the value of your recordings. Image: Gracie Liu © Gracie Liu

GO WHERE NO ONE HAS GONE BEFORE – HELP US DOCUMENT FROGS IN THE NORTHERN WHEATBELT OF NEW SOUTH WALES extracts

By Dr Gracie Liu Scientific Officer, Herpetology, Australian Museum Research Institute. 25 November 2024

The frogs of the Northern Wheatbelt of NSW are poorly sampled. We need your help to document frogs and fill in data gaps so we created a priority map to highlight areas where your FrogID recordings will make the biggest difference to our understanding of frogs!

The Northern Wheatbelt of New South Wales is shrouded in mystery when it comes to frogs. Large parts of the region have no documented frog records. If we divide the region into equal-sized 100 km2 (10 km x 10 km) grid cells, more than half of the grid cells have no official frog records from FrogID or any other scientific database. It's completely unchartered territory! Does that mean there are no frogs in these areas? According to the Australian Frog Atlas, there are likely to be between 23 and 30 frog species in the region. More than likely, frogs are present across most of the region, they just haven't been recorded. If we don't know which species are there, we can't protect them, and they will continue to be overlooked in land management decisions.

We need your help! We will be undertaking scientific surveys across the region, but we can't survey everywhere at once. Some of the region is semi-arid and inhabited by burrowing frogs that only emerge from underground to breed after rain and floods. There's a narrow window of opportunity, so we need your help to record frog calls when their post-rain breeding efforts begin!

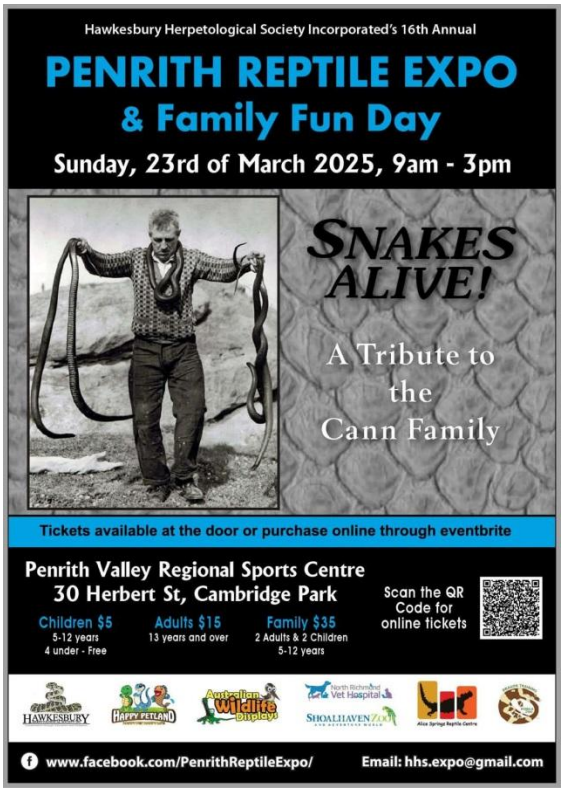
If you're a local, travelling through or visiting the area, please record the frogs you hear using the Australian Museum's free FrogID app on your smartphone. With each recording, we can gather important information about which species are present, helping us to refine their geographic distributions, study species diversity, understand the impact of land use on frogs, and identify areas of high conservation value. With more data, we will be much better placed to make conservation decisions that will have a genuine, positive impact on the local frog species. Every recording in the region will go a long way in helping us achieve this, but if you want to take it a step further and collect the most impactful data, we have created a map of priority areas. **Record in grid cells with the highest priority score to maximise the value of your recordings.** Highest priority areas are coloured yellow. Recordings from within these grid cells have the greatest potential to contribute to our understanding of the region's frogs. Refer to the section below for tips on how to use the priority map.

We are particularly interested in recordings from the local government areas (LGAs) of Bogan, Moree Plains and Walgett, from areas with no or few existing records, from sites that are less regularly sampled, haven't been sampled in a long time, or are far away from sampled areas. The priority values reflect these characteristics. We will be updating the map on a fortnightly basis with new priority values for each grid cell as sampling priority changes over time. Click here to view the latest priority map. Together, we can gather high-quality data to better understand and inform the conservation of frogs on the Northern Wheatbelt.

How to use the priority map Each grid cell is coloured according to its priority value. Priority values range from 0 (lowest priority, coloured purple) to 100 (highest priority, coloured yellow).

- Zoom in and pan across the map to view locations and their corresponding grid cells in more detail.
- Hover over or click on a grid cell to view statistics for that grid cell (including the priority value, number of calls submitted, number of verified frogs, and number of frog species).
- To filter grid cells based on priority, tick/untick the corresponding box on the right-hand side of the map. We have grouped grid cells into one of five priority categories: low (priority value of 0–20), medium (>20–40), high (>40–60), very high (>60–80), or highest (>80–100).
- To show/hide the boundaries of the priority LGAs, tick/untick the "Priority LGAs" box on the right-hand side of the map. When this box is ticked, you can hover over or click on an LGA to view statistics for that LGA.
- To switch between light map, OpenStreetMap and satellite imagery, click on the corresponding option on the right-hand side of the map.

Acknowledgements We would like to thank the NSW Department of Climate Change, Energy, the Environment and Water for supporting for this project.
https://media.australian.museum/media/dd/media/Budelah_chorus_GL.980592a.mp4 ***A chorus of frogs in the Northern Wheatbelt. ©Gracie Liu***
https://australian.museum/blog/amri-news/help-frogs-in-northern-wheatbelt-nsw/?utm_source=wordfly&utm_medium=email&utm_campaign=FrogIDeNewsJan2025&utm_content=version_A&promo=19359



WELCOME TO SCIENCE, THE MOUNT PO MA LUNG TOOTHED TOAD (*OREOLALAX ADELPHOS*)!

So honoured to be part of this collaboration scientifically describing another beautiful species from the Hoang Lien Range in northern Vietnam. ZSL EDGE of Existence is with ZSL.

A huge congratulations to EDGE alumnus Luan Thanh Nguyen and team on the publication of research on a brand-new amphibian species, a toothed toad! This new species has been described as new to science in a study published in Zootaxa, led by Luan and London Zoo's amphibian team, as well as experts from the Asian Turtle Program of Indo-Myanmar Conservation, the Chengdu Institute of Biology, The Australian Museum and Australia's Centre for Ecosystem Science.

The Mount Po Ma Photo by Luan Thanh Nguyen
Lung Toothed Toad (*Oreolalax Adelphos*)

The newly described species was encountered during field work to find the Endangered Sterling's Toothed Toad, but while surveying Mount Po Ma Lung the team came across a species that is new to science, the Mount Po Ma Lung Toothed Toad! Dr Ben Tapley, Curator of Reptiles and Amphibians at London Zoo and the paper's co-author, said: "This is a very exciting new discovery, and one that highlights the need to protect the forests of the Hoàng Liên Range and their remarkable biodiversity. Over the past 10 years, we've we have described six frogs and a snake as new species to science, now we have the important task of working with our partners to conserve them." **Head to https://mapress.com/zt/article/view/zootaxa.5514.6.1 to read the full paper. Species © Luan Thanh Nguyen**

WORLD FROG DAY 20 MARCH 2025

More than one-third of the world's 7,500 frog species are in danger of extinction, which is an alarming statistic. World Frog Day, observed on 20 March, is dedicated to raising awareness of the plight of threatened frog species and how we can help conserve them. Let's take a look at the situation closer to home. Close to 20% of Australia's 240+ frogs are threatened; in the last 25 years, 6 have already been listed as extinct.

https://www2.environment.nsw.gov.au/news/lets-talk-about-frogs

TANAMI TOADLET CALL RECORDED AFTER 43 YEARS

Meet our frog of the month, the Tanami Toadlet (*Uperoleia micromeles)*. Despite being described to science 43 years ago, the call of the Tanami Toadlet remained a mystery until now! Thanks to a FrogID submission by Dr Tim Henderson from the Australian Wildlife Conservancy's Newhaven Wildlife Sanctuary, we now have the first scientific recording of its call.

The Tanami Toadlet is a medium-sized frog species, reaching up to nearly 4 cm in body length. Found in central WA and NT, it lives an arid lifestyle, preferring desert sand dunes. It burrows underground, emerging only after heavy rain.

In March, Central Australia experienced significant rainfall, with Newhaven Wildlife Sanctuary recording its wettest month on record. This provided the perfect opportunity for Tim and colleagues to track down the elusive call of the Tanami Toadlet, armed with the FrogID app.

"The FrogID app gives us an easy way of detecting and recording frogs which can be hard to spot, or difficult to identify by appearance alone."

Dr Tim Henderson Australian Wildlife Conservancy

https://www.frogid.net.au/frogs/uperoleia-micromeles

Photo: Hal Cogger

Elusive, desert-dwelling species

Between rainfall, the Tanami Toadlet has been found over a metre deep in sand, where it can enter a low metabolic state (known as aestivation) and stay there until the next heavy rainfall event arrives. Tim's FrogID submission was certainly made at the right place at the right time in Central Australia.

There is still much to learn about this elusive, desert-dwelling frog species. Tim's timely use of FrogID has marked a milestone recording that will make it easier to detect this species in future, providing valuable insights into where the Tanami Toadlet lives, what habitats it needs to breed, and how we can better protect it. calls@frogid.net.au email

HAPPY 24TH BIRTHDAY FROGGY

I'd like to give a shout out to Froggy, my eldest, on his 24th birthday. I adopted him in April 2001 as a froglet from Martin Reuter, when we held our meetings at the Australian Museum. He was from a spawning the previous summer.

I'm hoping to be able to attend meetings now that I have a bit more time.

Froggy is a very easy going frog. Whether it's summer or winter he wears a happy face and pleasant demeanor, evidenced by him decked in vibrant green. Unlike his younger brother, Froggy 2, aka Sebastian. He's named that, because he's a touch highly strung. If he can't sleep where he wants to, because Froggy is there, you'll find him sulking. The other way around, Froggy will just find himself an alternative spot and be content with that. **Adam Crawford**

IN NSW, FROG KEEPER RECORD BOOKS NEED TO BE LODGED ANNUALLY WITH THE DEPT. OF ENVIRONMENT AND HERITAGE BETWEEN 1 & 30 APRIL 2025

Licence holders need to keep records of their native animal pets in an electronic record book / 'e-book' or hard copy book. In NSW, if you hold a Native Animal Keeper Licence you must keep records. For more than one frog, scroll down to "electronic record book" link. And follow the prompts from the link below.

https://www2.environment.nsw.gov.au/licences-and-permits/wildlife-licences/native-animals-as-pets/frog-keeper-licences

For further information on licences and renewals see:

https://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences/native-animals-as-pets/native-animal-keeper-record-book

***Litoria wilcoxii* in amplexus 15/10/2015**
Little Nerang Creek, SE Queensland
All photos by Garth Coupland

SHERLOCK HOLMES AND THE MYSTERY OF THE YELLOW FROGS.

By Garth Coupland

As Holmes' Baker Street fire crackled and we tucked into Mrs Hudson's toasted teacakes, liberally spread with melting butter, I turned my attention to an article in The Times that caught my interest. "I say Holmes, here's a scientist propounding a theory proposing that male frogs of some ninety-five species of collective, mass-breeders turn yellow when mating in order to warn off rival males! Fascinating don't you think, old chap?"

***Bufo bufo* breeding 25/3/18**
Edgefield Village Pond, Norfolk

Holmes drew deeply upon his meerschaum, let out a stream of blue smoke and then turned his lugubrious eyes towards me with that half-closed, almost contemptuous gaze that, were I not intimately acquainted with it, might have rendered me somewhat offended or even a tad intimidated.

"My dear Watson, not only do you see but not observe, but also you do possess a tendency towards believing that which is in print without questioning it or seeking evidence to prove its veracity. Yellow frogs indeed! Come, let us catch the 2.30 train to Norwich where we shall investigate this fellow's hypothesis".

"Should I go armed Holmes?" I enquired. Holmes smiled in what was as close to a kindly way as he was capable of and answered, "Oh! Absolutely Doctor, absolutely!"

Thus, within ten minutes we were hurtling in a hansom across London's cobbles on our way to Liverpool Street Station and an adventure in far-off Norfolk.

Our lanterns cast a yellow glow upon the muddy path that led through the Gorse bushes to a hollow from which a strange sound emanated. In my imagination it was somewhat like a sleeping giant's steady breathing.

"What the deuce is that Holmes?" I whispered.

***Rhinella marina* 23/1/2015 Karawatha Forest, SE Queensland**

Holmes, who, as is his way, had kept me in the dark as to where we were going and why. He had brusquely informed me that we were on Mousehold Heath, a large area of woods and heathland on the East side of the city of Norwich.

"Approach quietly Watson and behold a wonder that I discovered some years ago whilst investigating the strange case of the Thistlethwaite Ruby".

We reached the edge of a large pond from which the sound was coming; only now much louder. As instructed by Holmes I raised my lantern to my eye level and suddenly perceived thousands of lights shining in the darkness from the water.

"Good Lord Holmes! Whatever is it? I ejaculated.

"Frog eyes Watson! A thousand frog eyes reflecting your lantern's light back to your eyes my dear fellow", said Holmes, chuckling.

"Now let us test this theory published by your scientist".

We held our lanterns over the water where hundreds of frogs jostled and croaked amongst great masses of spawn. We only observed one yellow male who was gripping a beautiful, red-coloured female in the mating position, which Holmes informed me is known as amplexus.

***Litoria chloris* 11/12/2014 D'Aguilar Range, SE Queensland**

***Litoria revelata* 12/12/2014 Binna Burra, SE Queensland**

"Watson, we have just witnessed a mass spawning event of *Rana temporaria*, our European Common Frog, which does not bear out your scientist's theory.

Now, you will have to take my word for it, but when investigating the odd case of the slinking woman, which took me to the wilds of Queensland, I had occasion to observe many species of frog whilst mating, none of which I would call 'collective, mass-breeders' and only some of which had yellow males in evidence.

Similarly in America during the final stages of the singularly peculiar case of the moaning graves of Arlington Cemetery".

"So, Holmes, what do you conclude?"

We then returned to the waiting hansom which transported us back to The Maid's Head Hotel for a sumptuous supper of cold salmon sandwiches and coffee followed by a fine Scotch; all enjoyed by the roaring fire, for it had been a cold, March evening, but one filled with most interesting natural history observations and theorising upon the vexing mystery of the yellow frogs.

***Litoria tyleri* 26/1/2015 Mt Nebo, SE Queensland**

***Rana temporaria* 12/3/2022 Mousehold Heath, Norwich**

"Why my dear old fellow, I conclude nothing! One may legitimately postulate when fact is wanting but one may not conclude under such circumstances. No, no, this mystery is one that Mother Nature wishes, as yet, to hold close to her breast. And, in truth, we will never know all her secrets.

Indeed, Watson, it is nought but arrogance to consider that we may know more than an extremely small percentage of her secrets. But this should not daunt our inquisitive minds but instead act as a spur to the flanks of enquiry. How was your salmon?"

CALIFORNIA FROG REINTRODUCTION IS RARE VICTORY AGAINST FUNGAL PANDEMIC

The success of a 15-year project to help frogs in California's Sierra Nevada suggests some amphibian species could be rescued from a devastating fungal disease by evolution – and a little human help By James Dinneen 10 January 2024 extracts

Wild populations of frogs appear to have evolved resistance to a lethal skin-eating fungal pathogen. Now, researchers report that moving some of these resistant frogs to habitats where the fungus has killed all the others is an effective way to restore their populations.

The fungus *Batrachochytrium dendrobatidis* (Bd) – a chytrid fungus – is the pathogen responsible for one of the most deadly wildlife diseases, having decimated the populations of hundreds of amphibian species, and contributed to the extinction of many others.

https://www.newscientist.com/article/2411673-california-frog-reintroduction-is-rare-victory-against-fungal-pandemic/

Forwarded to FATS by Punia Jeffrey

Nature image below:

For the recovery portion, the model depicts both natural recovery and facilitated recovery via reintroductions, as well as the linkages between these two pathways. Rectangles and hexagons represent outcomes and processes, respectively. Blue text (bottom right, last four comments) indicates components that are included in the current study. The general temporal scale of the depicted scenario is provided by the timeline, with the dashed portion indicating a projection into the future.

REINTRODUCTION OF RESISTANT FROGS FACILITATES LANDSCAPE-SCALE RECOVERY IN THE PRESENCE OF A LETHAL FUNGAL DISEASE

Roland A. Knapp, Mark Q. Wilber, Maxwell B. Joseph, Thomas C. Smith & Robert L. Grasso

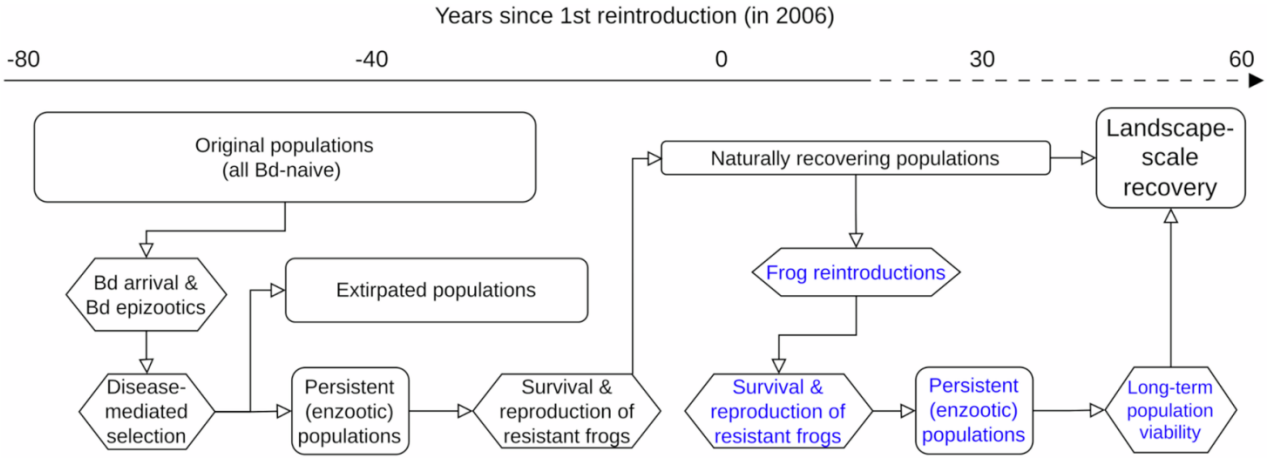
***Nature Communications* volume 15, Article number: 9436 (2024) extracts**

Abstract

Vast alteration of the biosphere by humans is causing a sixth mass extinction, driven in part by an increase in infectious diseases. The emergence of the lethal fungal pathogen *Batrachochytrium dendrobatidis* (Bd) has devastated global amphibian biodiversity. Given the lack of any broadly applicable methods to reverse these impacts, the future of many amphibians appears grim. The Sierra Nevada yellow-legged frog (*Rana sierrae*) is highly susceptible to Bd infection and most *R. sierrae* populations are extirpated following disease outbreaks. However, some populations persist and eventually recover, and frogs in these recovering populations have increased resistance against infection. Here, we conduct a 15-year reintroduction study and show that frogs collected from recovering populations and reintroduced to vacant habitats can re-establish populations despite the presence of Bd. In addition, the likelihood of establishment is influenced by site, cohort, and frog attributes. Results from viability modelling suggest that many reintroduced populations have a low probability of extinction over 50 years. These results provide a rare example of how reintroduction of resistant individuals can allow the landscape-scale recovery of disease-impacted species, and have broad implications for amphibians and other taxa that are threatened with extinction by novel pathogens……

In conclusion, we now have a proven strategy to reestablish extirpated *R. sierrae* populations. However, recovery across their large historical range will require substantial resources over many decades. The results of this study provide a hopeful starting point for that endeavour and other future efforts worldwide.

https://www.nature.com/articles/s41467-024-53608-4



HORMONE THERAPY IMPROVES CONSERVATION BREEDING OUTCOMES IN THE CRITICALLY ENDANGERED BAW BAW FROG, *PHILORIA FROSTI*

Hormone therapy improves conservation breeding outcomes in the critically endangered Baw Baw frog, *Philoria frosti* **Deon Gilbert, Damien Goodall, Phillip Byrne & Aimee Silla**

Image above. Captive breeding facility and metamorph frogs. (A, B) Baw Baw frog breeding enclosures with established natural substrate and automated irrigation and filtration, and (C) Baw Baw frog offspring generated from the present study following release to wild habitat at Mount Baw Baw.
Photos courtesy of Damian Goodall and Deon Gilbert Zoos Victoria.

ABSTRACT Conservation breeding programs (CBPs) are often the lifeline between extinction and survival for many imperilled amphibian species. With the goal of recovering wild populations, CBP success is reliant on their ability to successfully manage ex situ populations over time, breed viable offspring, and maintain genetic diversity and adaptive potential.

Reproductive technologies have emerged as an important tool in the conservation toolkit to allow managers to improve reproductive output and genetic management, and their use in amphibian conservation is expanding. To date, studies investigating the efficacy of hormone therapies in amphibians typically only report spawning and fertility rates and do not monitor offspring to later stages of development. For the first time, here we assess the effect of hormone therapies on captive breeding outcomes beyond oviposition, to the point of metamorphosis, in the critically endangered Baw Baw frog, *Philoria frosti*.

To determine the effect of hormone therapy on spawning success and offspring viability, male-female pairs were administered either 0 µg/g gonadotropin-releasing hormone agonist (GnRHa), 0.5 µg/g GnRHa, or 0.5 µg/g GnRHa + 10 µg/g metoclopramide (MET) (n = 12 pairs/treatment), and the number of pairs ovipositing, time to oviposition, clutch size, metamorph mass, and the proportion and number (mean and total) of offspring to metamorphosis were quantified.

Overall, the percentage of pairs that oviposited was high across all treatment groups (92-100%). The percentage of fertile clutches was highest in the GnRHa group (92%) and lowest in the GnRHa + MET group (82%), though differences were not statistically significant. Both hormone treatment groups took significantly less time to oviposit than the control pairs. Notably, the proportion of eggs developing to metamorphosis was significantly higher in the GnRHa group, resulting in 74% (total eggs=539) metamorphosing compared to approximately 50% in the control and GnRHa+MET treatments (total eggs= 273 and 264, respectively).

Interestingly, weight at metamorphosis was statistically similar across all groups, and results are consistent with previous studies in this species that show a narrow range in size at metamorphosis.

The continued application of GnRHa is recommended to improve conservation outcomes for the critically endangered Baw Baw frog. The outcomes of this research advance our understanding of the impact of hormone therapies on reproductive outcomes and will inform amphibian conservation breeding programs globally.
Conserv. Sci., 4 October 2024 Volume 5 - 2024

https://doi.org/10.3389/fcosc.2024.1464730

https://www.frontiersin.org/journals/conservation-science/articles/10.3389/fcosc.2024.1464730/full?utm_source=Email_to_authors_&utm_medium=Email&utm_content=T1_11.5e1_author&utm_campaign=Email_publication&field&journalName=Frontiers_in_Conservation_Science&id=1464730&fbclid=IwY2xjawFxeuNleHRuA2FlbQIxMAABHaw5HH1kiYtjtxcC1TgBmBSbe54m9T6f_OTiPwSu6q7z5tFdMMVW6f4E1g_aem_nNya0vbGQiv64091AgA3sA **Correspondence: Deon J. Gilbert, dgilbert@zoo.org.au**

RESEARCHERS UNCOVER WORLD'S OLDEST-KNOWN TADPOLE, A 161-MILLION-YEAR-OLD GIANT

By science reporter Jacinta Bowler

The fossil of a tadpole found in Argentina is so well preserved that eyes and nerves are visible. ***Credit: Chuliver et al., Nature, 2024***

Abstract:

Anurans are characterized by a biphasic life cycle, with an aquatic larval (tadpole) stage followed by an adult (frog) stage, both connected through the metamorphic period in which drastic morphological and physiological changes occur. Extant tadpoles exhibit great morphological diversity and ecological relevance, but their absence in the pre-Cretaceous fossil record (older than 145 million years) makes their origins and early evolution enigmatic. This contrasts with the postmetamorphic anuran fossil record that dates back to the Early Jurassic and with closely related species in the Late Triassic (around 217–213 million years ago (Ma)). Here we report a late-stage tadpole of the stem-anuran *Notobatrachus degiustoi* from the Middle Jurassic of Patagonia (around 168–161 Ma).

This finding has dual importance because it represents the oldest-known tadpole and, to our knowledge, the first stem-anuran larva. Its exquisite preservation, including soft tissues, shows features associated with the filter-feeding mechanism characteristic of extant tadpoles. Notably, both *N. degiustoi* tadpole and adult reached a large size, demonstrating that tadpole gigantism occurred among stem-anurans.

This new discovery reveals that a biphasic life cycle, with filter-feeding tadpoles inhabiting aquatic ephemeral environments, was already present in the early evolutionary history of stem-anurans and has remained stable for at least 161 million years. **Mariana Chuliver, Federico L. Agnolín, Agustín Scanferla, Mauro Aranciaga Rolando, Martín D. Ezcurra, Fernando E. Novas & Xing Xu**

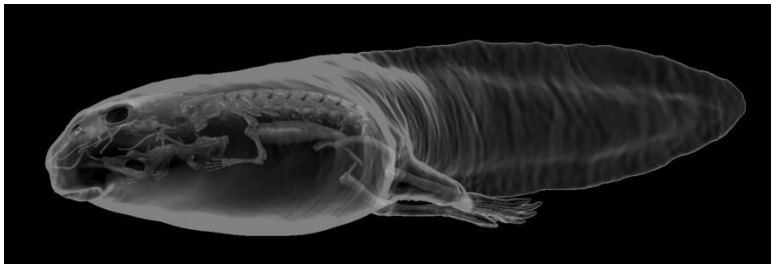
Scientists have found a fossil of the earliest-known tadpole, which lived around 161 million years ago, during the Jurassic period. The large Argentinian fossil suggests that many features of tadpoles today have remained stable for millions of years. The area where the tadpole was found has not been heavily investigated, and may contain other interesting fossils. Millions of years ago, a 16-centimetre tadpole met an untimely end, sinking to the bottom of a pond where it would stay for millennia.

Research on the Jurassic amphibian, which has today been published in Nature, found that the resulting fossil from Patagonia, Argentina, is the earliest-known tadpole specimen. The finding sheds new light on early frog evolution, suggesting that even at their earliest evolutionary stages, frogs and toads had a tadpole life stage, according to John Long, a palaeontologist at Flinders University who was not involved in the new research.

The tadpole is a juvenile of the extinct species *Notobatrachus degiustoi*, and likely lived in shallow ponds which would dry out and reform with the seasons. The adult frog would have looked extremely similar to frogs today. They likely ate insects and lived along the tadpole ponds, according to Mariana Chuliver Pereyra, palaeontologist from Maimónides University and the lead author of the new paper.

Fossils of the frogs found nearby in earlier digs showed that the creature grew to between 9 and 15cm in size. But the newly found tadpole is even bigger. The specimen measures 16cm from tip to tail, and the team suggest it may have died just before its frog metamorphosis.

Giant tadpoles aren't particularly unusual. Paradoxical frog tadpoles — yes, that's actually the name of a type of frog that still lives in South America today — grow up to 27cm, double the size of the fossil tadpole, before shrinking back down to a normal-sized frog. The researchers analysed these soft tissues and were able to confirm that many features of tadpoles today — like being filter feeders — existed even during the Jurassic period.



The tadpole was surprisingly large, stretching 16 cm from tip to tail. ***(Supplied: Santiago Miner)***

The team discovered the tadpole fossil and adult frog fossils from the La Matilde Formation in the Santa Cruz Province of Argentina. Scientists have found other fossils from the Middle and Late Jurassic period in the formation, but until now most of the fossils discovered were dinosaurs and plants, not frogs. For Professor Long, the location is one of the most exciting parts of the research, as most of the best fossil finds come from a small number of sites.

https://www.abc.net.au/news/science/2024-10-31/tadpole-giant-fossil-argentina/104531222 extracts

***Nature* volume 636,pages 138–142 (2024) 31 Oct 2024**

https://www.nature.com/articles/s41586-024-08055-y

Sent to FATS by Peter Vickery and Community Independent Councillor, Andrew Nelson, who has been elected to Willoughby City Council. Congratulations Andrew!

The free FATS meeting commences at 7 PM, (arrive from 6.30 PM) and ends about 10 PM, at the Education Centre, Bicentennial Park, Sydney Olympic Park, Homebush Bay. FATS meetings are usually held on the **first Friday of every EVEN month** February, April (**except Easter Friday**), June, August, October and December**. If the FATS meeting falls on Easter Friday, then the meeting will probably be one week earlier. Occasionally other meeting dates are changed. Please check our website and your emails for notices.** Call, check our web site, Facebook page or email us for further directions. We hold 6 informative, informal, topical, practical and free meetings each year. Visitors are welcome. We are actively involved in monitoring frog populations, field studies and trips, have displays at local events, produce the newsletter FROGCALL and FROGFACTS information sheets. FATS exhibit at many community fairs and shows. Please contact Events Coordinator Kathy Potter if you can assist as a frog explainer, even for an hour. No experience required. Encourage your frog friends to join or donate to FATS. **Please note new bank account number.** Donations help with the costs of frog rescue, student grants, research and advocacy. All expressions of opinion and information in FrogCall are published on the basis that they are not to be regarded as an official opinion of the FATS Committee, unless expressly so stated. Credit cards can be used for raffle and other purchases over $10.

FATS ON FACEBOOK: FATS has over 5,320 Facebook members and visitors worldwide. Posts vary from husbandry, disease and frog identification enquiries, to photos and posts about pets, gardens, wild frogs, research, new discoveries, jokes, cartoons, events and habitats, from all over the world. The page was created about 13 years ago and includes dozens of information files. Just keep scrolling to see them all. https://www.facebook.com/groups/FATSNSW/

RESCUED FROGS are at our meetings. Contact us if you wish to adopt a frog. A cash donation of $50 is appreciated to cover care and feeding costs. FATS must sight your current amphibian licence. NSW pet frog licences, can be obtained from the NSW Department of Planning, Industry and Environment (link below). Please join FATS before adopting a frog. This can be done at the meeting. Most rescued frogs have not had a vet visit unless obviously sick. Please take you new, formerly wild pet to an experienced herpetological vet for an annual check-up and possible worming and/or antibiotics after adoption. Some vets offer discounts for pets that were rescued wildlife.

https://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences/native-animals-as-pets/frog-keeper-licences

Thank you to the committee members, FrogCall supporters, talented meeting speakers, Frog-O-Graphic competition entrants, event participants, FrogCall editor and organisers. The FrogCall articles, photos, media and webpage links, membership administration and envelope preparation are greatly appreciated.

Special thanks to the April newsletter contributors:

Robert Wall, Michelle Toms, Andrew Nelson, Punia Jeffery, Luan Thanh Nguyen, Kathy Potter, Garth Coupland, the FrogID team, Peter Vickery, Gracie Liu, Adam Crawford and Hal Cogger

FROGWATCH HELPLINE 0419 249 728 **FATS COMMITTEE** **Email fatsgroupnsw@fats.org.au**

Michelle Toms	President		fatsgroupnsw@fats.org.au
Peter Spradbrow	Vice President and Assistant Editor		fatsgroupnsw@fats.org.au
Rhys Cairncross	Chairperson	0474 092 341	rhyscairncross@gmail.com
David Potter	Treasurer and Public Officer Secretary	0413 210 789	david@the-pottery.org
Cassie Thompson	Secretary and Memberships Officer		membership@fats.org.au
Hugh Speck	Webmaster		fatsgroupnsw@fats.org.au
Kathy Potter	Exhibitions Coordinator	0403 919 668	kathy@the-pottery.org
Robert Wall	Field Trips Coordinator	02 9681 5308	rjw2008@live.com.au
Harriet Potter	Frog Helpline Coordinator and adoptions		0419 249 728
Monica Wangmann	Editor		monicawangmann@gmail.com

General Committee Members: Peter Vickery Andre Rank Punia Jeffery Luc Streit

INVASIVE SPECIES COUNCIL MESSAGE

The federal election is fast approaching and our wildlife needs your help to make sure action and funding to tackle invasive species is a priority for all sides of politics. This is our once-in-3-year opportunity to set the next government's agenda for tackling Australia's extinction crisis. Every day our unique wildlife found nowhere else on Earth are being pushed to the brink by invasive species. Our precious places are being trashed and trampled by feral animals and choked by weeds. Time is running out for them. But with your help we can seize this moment to change this. Will you send a message to the candidates in your local electorate to ask them to make action and funding on invasive species a priority? **https://invasives.org.au/how-to-help/take-action/federal-election-take-action/ https://invasives.org.au/about-us/our-story/ https://invasives.org.au/our-work/ending-extinctions/**

FATS MEMBERSHIP

If you aren't a member but would like to join in any of these events it's easy to sign up! Please complete the membership form on the website www.fats.org.au Student memberships are $20 annually with electronic FrogCall but no hard copy mail outs. https://www.fats.org.au/membership-form

NEW FATS BANK ACCOUNT

Account Name: Frog and Tadpole Study Group of NSW

BSB 082 001 Account No: 313 033 719

FIELD TRIPS NOTES

Rain is generally ideal for frogging, however in the event of uncertain conditions (ie storms, hazardous rain, strong wind, bushfires, etc), please phone Robert on 02 9681 5308 to confirm the field trip is going ahead. All children must be accompanied by an adult. Please wear enclosed shoes that can get wet (gumboots are preferable), torch, warm clothing and raincoat. Please be judicious with the use of insect repellent as frogs are sensitive to chemicals. All fieldtrips are strictly for members only. Newcomers are welcome to take out membership before the commencement of the field trip. All participants accept that there is some inherent risk associated with outdoor fieldtrips and by attending agree to: a release of all claims, a waiver of liability, and an assumption of risk.

ROYAL NATIONAL PARK FIELD TRIP

Arrive between 6pm and 7pm Saturday 29 March 2025 Leader: Arthur White Looking at frog sites on the upper Hacking River and at Bola Creek and Toonum Brook. Enter the Royal National Park via the Waterfall entrance. Meet at the upper causeway of the Hacking River. Look for the picnic area on the right-hand side. Bring a light meal to eat at the picnic ground before we head off spotlighting. Please check the day before, that the outing is still on, as it is the same day as Greenacre open day. At present, there is no way to move either date. Register your interest in attending by contacting **Robert Wall 02 9681 5308 or Arthur White.**

GREENACRE OPEN DAY 10am-1pm Sat 29 March

The Greenacre site will be open to everyone in the community to come and learn about tadpoles and frogs. Helpers will be needed to liaise with the public and act as guides. Contact Arthur White at arfawhite@gmail.com or 02 9599 1161 if you can help on the day. Invite your friends.

Strathfield Council is hosting the open day at the Greenacre GGBF site to coincide with the Wurridjal Festival https://cooksriver.org.au/wurridjal-festival During the months of March and April, Cooks River People gather for Wurridjal Festival to celebrate the annual migration of the mullet and the First Nations cultural practices during mullet season. In 2025, Wurridjal Festival will take place from 29 March to 12 April. The festival marks the start of a season when thousands of mullet (known as 'Wurridjal') enter the Cooks River during their pre-spawning migration along the east coast of Australia.

FATS AT THE SYDNEY ROYAL EASTER SHOW

FATS will be at the Royal Easter Show, Pet Pavilion Monday 21 and Tuesday 22 April 2025. The last 2 days of the show. https://wildexpo.com.au/eastershow/ **We could really use some help at our stand.** Please contact Kathy Potter if you can help, even for an hour. See any FrogCall newsletter for contact details. Mobile number contact is best. **https://wildexpo.com.au/eastershow/**