FROGCALL

THE FROG AND TADPOLE STUDY GROUP NSW Inc.
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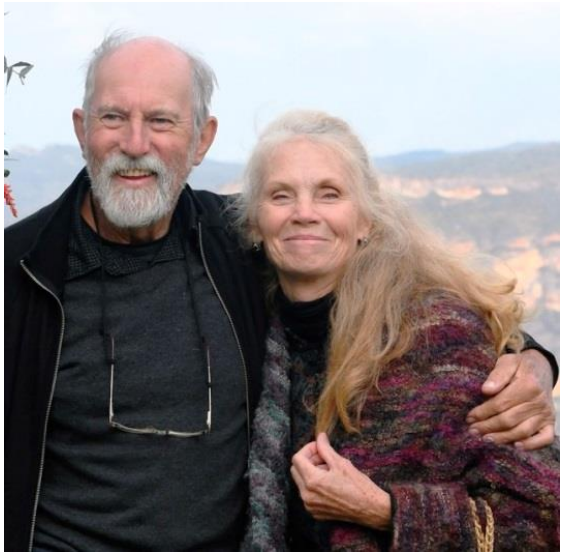
NEWSLETTER No. 192 AUGUST 2024

THANK YOU TO OUR SOCIETY'S LONG TERM COMMITTEE MEMBERS

Photo: current President Arthur White and Treasurer Karen White



Your Chance to be President of FATS

At the August 2024 AGM, there will be a new executive taking over. Some positions, such as President and Vice-President have not received any nominations yet. If you would like to be part of FATS as it heads off in a new direction, now is the time to put yourself forward and join the executive. Contact Arthur ASAP if you want to be included.

WILL OUR FROG SOCIETY CONTINUE? IT'S UP TO YOU!

FATS AGM & MEETING 7PM FRIDAY 2 AUGUST 2024

6.30 PM Lost frogs seeking forever homes: Please join FATS on the night or bring your membership card. There is also a $50 donation, if you wish to adopt a frog, to cover FATS care costs. **CREDIT CARDS ACCEPTED** (but bring cash for the raffle, unless you spend over $10). Your NSW NPWS amphibian licence must be sighted on the night, if adopting a frog. Rehomed frogs can never be released into your garden or "the wild". Contact us before the night and FATS will confirm if any rescue frogs are ready to be rehomed.

7.00 PM Welcome, announcements and AGM.

8.00 PM Main speaker palaeontologist Lachlan Hart from UNSW, is talking about "What the FROG is a temnospondyl?" Sydney Basin's distant amphibian fossils.

9.30 PM Show us your frog images. Tell us about your frogging trips or experiences. Guessing competition **Credit cards can be used for raffle purchases over $10, (but we prefer cash if spending less than $10),** frog adoptions continue, supper, relax and chat with frog friends and experts.

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

Arrive from 6.30 pm or a 7pm start.

Friday 2 August 2024

FATS meets at the Education Centre, Bicentennial Pk, Sydney Olympic Park

Easy walk from Concord West Railway Station and straight down Victoria Ave. Take a torch in winter.
By car: Enter from Australia Ave at the Bicentennial Park main entrance, turn off to the right and drive through the park. It's a one way road. Turn right into P10f car park.
Or enter from Bennelong Rd/Parkway. It's a short stretch of two way road. Turn left. Park in P10f car park, the last car park before the Bennelong Rd. exit gate.

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FATS AUGUST MAIN SPEAKER, PALAEONTOLOGIST LACHLAN HART

Lachlan Hart will be talking about distant amphibian fossils from the Sydney basin, "What the frog is a temnospondyl?" Lachlan is a vertebrate palaeontologist undertaking a PhD at the University of New South Wales and the Australian Museum. His research focuses on the evolution, systematics and palaeobiology of Mesozoic tetrapods, including temnospondyl amphibians, crocodyliformes and dinosaurs. Lachlan is particularly interested in exploring what can be learnt about extinct animals from studying their living descendants. He has had a life-long fascination with vertebrate palaeontology, which he loves sharing with others and completed a Masters in 2019. Prior to dedicating his life to palaeontology, Lachlan was a primary school teacher for over a decade.

Arenaerpeton supinatus was a predatory amphibian that lived over 240 million years ago. The fossil was found whilst building a retaining wall in 1996. A few months later, this impressive fossil inspired Lachlan, to become a budding 12-year-old palaeontologist. He now works at the Australian Museum and has formally described the species!

240-million-year-old fossil of amphibian *Arenaepeton supinatus*. Image: Richard Freeman © UNSW Sydney

Dr Warren identified the fossil as belonging to a temnospondyl, a group of extinct amphibians which look a little like a cross between a crocodile and a giant salamander. After comparing it to many other temnospondyl amphibians, he discovered that it was indeed a new genus and species, which Lachlan named *Arenaerpeton supinatus* (pronounced Ah-ree-nah-er-pet-on / soo-pin-ah-tus). "*Arena*" means "sand", and "*erpeton*" means "thing that creeps" in Latin. This is a reference to the sandstone block in which it lies, and the fact that it was an amphibian that was probably doing its fair share of creeping around. "*Supinatus*" translates to "supine", or "lying on its back", which is how the animal is preserved. So, the name therefore means "supine sand creeper".

Through studying *Arenaerpeton* Lachlan learnt a tremendous amount about temnospondyl amphibians. Temnospondyls are an important case study in the fossil record, as they survived two of Earth's "Big 5" mass extinction events, including the "Great Dying" at the end of the Permian period which wiped out over 80% of all living things. *Arenaerpeton* belongs to a group of temnospondyls called chigutisaurids, which also contains the last-ever temnospondyl, *Koolasuchus cleelandi* from Victoria.

An artist's impression of *Arenaerpeton supinatus*, the distant relative of today's Chinese Giant Salamander. Image: Jose Vitor Silva © Jose Vitor Silva

Koolasuchus was enormous, perhaps up to 5 metres long. *Arenaerpeton*, while not so big (probably about 1.2 – 1.5 metres long) was still quite large for its time, as other chigutisaurids that lived during the early-middle part of the Triassic period were smaller. This shows that this amazing group of survivors was already starting to evolve into large sizes not long after the most catastrophic extinction event in Earth's history. *Arenaerpeton supinatus* is a key part of Australia's fossil heritage. Not only is it a unique fossil with incredible preservation, that adds a vital data point in understanding the evolution of vertebrates in Australia, but it also holds a treasured place in the memories of many who would recall its discovery. This is highlighted by Lachlan's personal connection with this fossil, from seeing it as a child to being lucky enough to work on it for his PhD.

Perhaps one day another kid like Lachlan will see it at the Australian Museum and be as inspired as he was.

Lachlan Hart Image: Richard Freeman © UNSW Sydney

Extracts from https://australian.museum/blog/amri-news/when-an-ancient-amphibian-fossil-met-a-12-year-old-palaeo-fan/

FATS NEEDS YOUR HELP
AGM 2 AUGUST 2024

At the 2023 Annual General Meeting, I addressed those present to inform them of a dire situation facing FATS. The executive of FATS was re-elected without any new faces. This is not new - the same people get re-elected to the same positions year after year. A number of FATS councilors have been running the Society for more than 25 years. It is not good for any Society to have the same people in charge for a long period of time. While saying this, I acknowledge that the executive is very competent and willing- but they (and I) have been there too long.

I have asked the membership for a number of years now to consider stepping up and joining the executive. This request has not produced new blood. Quite the reverse, the members keep telling us that they are happy with what we are doing and for us to continue on.

We have reached crunch time. A number of the executive (including myself) have indicated that they will stand down at the next AGM. If there are no people prepared to take up the vacant positions, the Society will fold. FATS is an incorporated society and must have a number of designated executive officers. So this is a call for help and a warning. Societies survive through the input of its members and not through the input of the same people over and over again.

Please think carefully about how you might help FATS. If you are worried about not being able to do the tasks at hand, don't. The outgoing executive will still be around to help you with the work and to show you the ropes. A new executive may choose to operate FATS quite differently to the present administration and may choose to drop a number of our current activities, or they may choose to add new ones.

The future of FATS is in your hands. As a member of FATS, you need to think carefully about how much you value the Society and whether you want to see it continue or not. IF you want to discuss any of this, feel free to contact any of the FATS executive (including myself). Be brave and do what you can for FATS. **Arthur White President 1999-2023**

THE FATS AGM starts 7pm Friday 2/8/2024,
at the Education Centre,
Bicentennial Park, Sydney Olympic Park.

If you would like to ask any questions about joining the FATS committee, please give us a call. Contact our President Arthur White as soon as possible before the meeting for further information and to submit items. We **URGENTLY need new members on our committee as our executive are retiring in August 2024.** No experience is required. The committee meets 6 times a year. No task commitments or time expected of committee members, other than what you are able to spare. See page contacts details on page 11.

Arthur White

Image by Cooper Tamayo *Litoria verreauxii*
2023 Frog-O-Graphic entry

FATS 2024 FROG-O-GRAPHIC COMPETION

The FATS members' Frog-O-Graphic competition closes on the 31 August 2024. There is a newer category. 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. Send the link or file to be downloaded in an email to photos@fats.org.au

Categories:

Best Frog Image,
Best Pet Frog Image,
Most Interesting Image
Best short video 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.

All entries are by email to photos@fats.org.au

In the 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 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 page, our web site and other FATS publications.
Arthur White

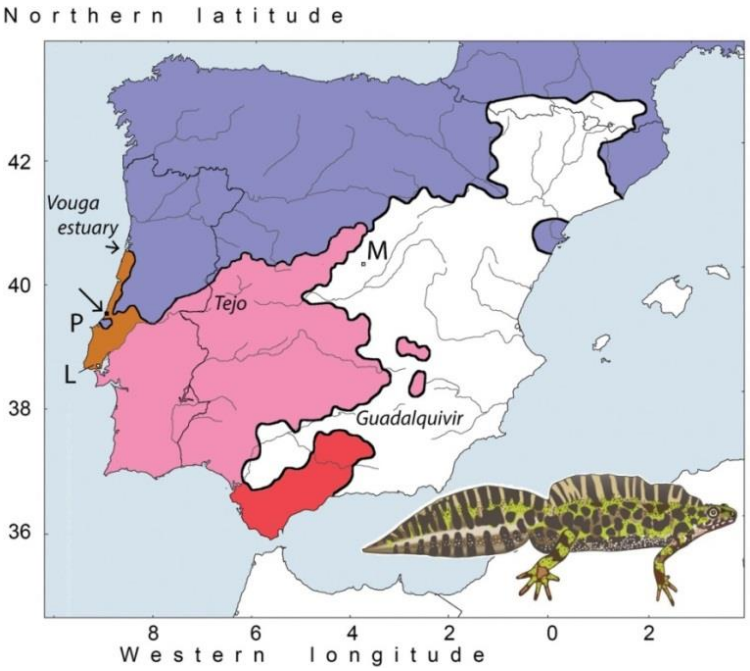
MORPHOLOGICAL AND GENETIC DIVERSIFICATION OF PYGMY AND MARBLED NEWTS, WITH THE DESCRIPTION OF A NEW SPECIES FROM THE WIDER LISBON PENINSULA (*TRITURUS, SALAMANDRIDAE*)

In: Contributions to Zoology Author Jan W. Arntzen 8/3/2024 *Triturus rudolfi* sp. nov. from Serra de Sintra (top) and from the Colares and Janas region (middle and bottom). Citation: Contributions to Zoology 93, 2 (2024) 10.1163/18759866-bja10057 Photo Malkmus (extracts below)

Abstract Iberian populations of large-bodied newts, with *Triturus marmoratus* in the north and *T. pygmaeus* in the south of the peninsula, were studied for external morphology, mitochondrial DNA and for a panel of single nucleotide polymorphisms. This confirmed the species' low level of interspecific hybridization and their parapatric, mosaic-like mutual range border across the peninsula. The genetic data also revealed substantial variation within *T. pygmaeus*, with narrow (0.43–35.2 km) clinal transitions in the very centre of Portugal.

Similar clines were observed for body size and colouration pattern. Pygmy newts in the west of Portugal are larger, with a more striped (less reticulated) green dorso-lateral colouration pattern than those in the east and south of the country.

The western group of populations is described as a new species, *Triturus rudolfi* **sp. nov.**, on account of a long, ca. 2.5 Ma, independent evolutionary history and limited hybridization with its sister-species *T. pygmaeus*, suggesting selection against hybrid offspring. The range of the newly described species may be restricted to the wider Lisbon Peninsula, stretching northwards along the Atlantic coast to the river Vouga estuary. Inland, the range border may be set by the lower Tejo River, or by the currently wide area of agricultural land at either side of that river, that may accommodate a residual hybrid zone. The close contact between both pygmy newt species is effectively limited to a ca. 20 × 40 km area directly north of the town Entroncamento, where *T. rudolfi* **sp. nov.** is sandwiched in between *T. marmoratus* and the river Tejo.
https://brill.com/view/journals/ctoz/93/2/article-p178_004.xml



The Iberian Peninsula with the approximate distributions of four taxa of large-bodied newts. Colour codes are:

blue – *Triturus marmoratus*,

dark red – *T. pygmaeus pygmaeus*,

light red – *T. p. lusitanicus* and

brown – *T. rudolfi* **nov. sp.**, i.e., the newly described species from the wider Lisbon Peninsula.

Letters indicate the capital cities Lisbon, Portugal (L) and Madrid, Spain (M) as well as Peniche (P) at the Atlantic coast. Major rivers partially coinciding with (sub)species borders are the Guadalquivir, the Vouga and the Tejo. The new species' type locality Lagoa Seca near Valado dos Frades is indicated by a long arrow. The insert shows an adult male *T. marmoratus*.

ANIMAL DRAWING BY BAS BLANKEVOORT Citation: Contributions to Zoology 93, 2 (2024) ; [10.1163/18759866-bja10057](https://doi.org/10.1163/18759866-bja10057)

The consistent genetic, morphological and ecological differentiation of western and eastern pygmy newt population groups warrants the description of a new taxon. The sharp genetic transition, in combination with a readily diagnosable differential morphology, particularly in colouration pattern and body size, justifies description at the species level. Because the type locality of '*T. pygmaeus'* is the province of Cadiz, it is the western taxon that needs recognition. The formal description for *T. rudolfi* sp. nov. is in the Appendix, the taxonomic status at the species level is briefly discussed below and three individuals photographed alive. The coastal zone of Portugal has for long gone unnoticed for a high level of amphibian diversity. However, with the uprise of molecular systematics, two endemic amphibian species, the newt *Lissotriton maltzani* (Boettger, 1879) and the frog *Pelodytes atlanticus* Díaz-Rodríguez, Gehara, Márquez, Vences, Gonçalves, Sequeira, Martínez-Solano and Tejedo, 2017 were resolved as different from *L. boscai* (Lataste, 1879) and *P. ibericus* Sánchez-Herráiz, Barbadillo, Machordom and Sanchiz, 2000 (Díaz-Rodríguez et al., 2017; Dufresnes et al., 2020; Sequeira et al., 2020). Whereas the former are morphologically cryptic taxa, *T. rudolfi* **sp. nov.** is readily diagnosable because the signal from nuclear and mitochondrial DNA is paralleled by morphological differentiation, most prominently in the species' dorso-lateral coloration pattern. **Editor: M. Laurin**

THREATENED SPECIES DAY 7 SEPT. 2024

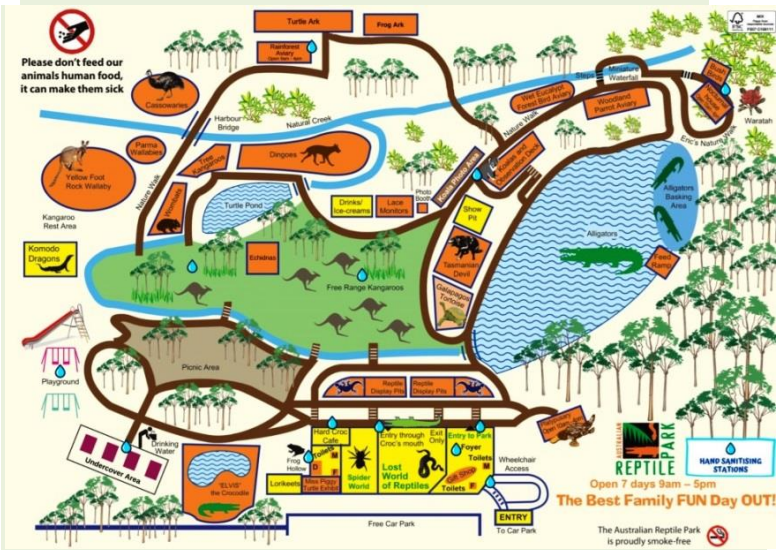
Image Cassie Thompson ***Litoria aurea***

AUSTRALIAN REPTILE PARK HERP GROUPS BBQ SUNDAY 1/12/2024

The ARP has invited financial members of FATS and any other herpetological groups to a Christmas BBQ on Sunday 1 December 2024. Please bring your herp society membership card.

For further details and times contact the ARP directly.

Location: Pacific Highway, Somersby, NSW, 2250
Phone +612 4340 1022
Email admin@reptilepark.com.au



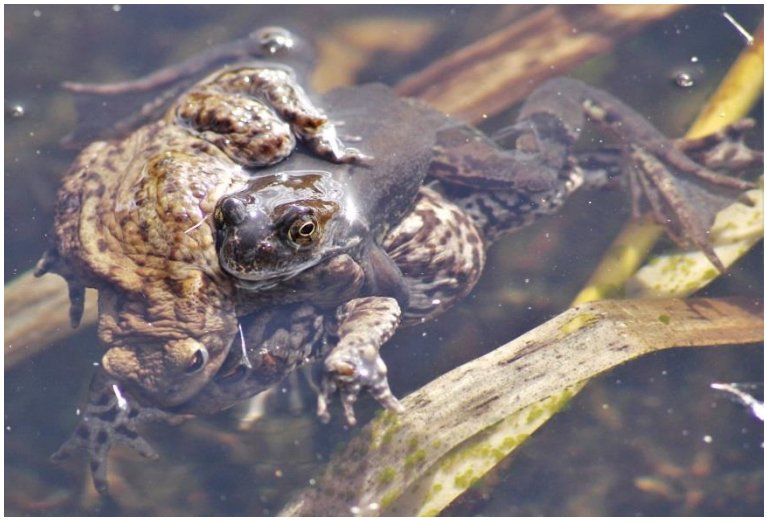


Image Garth Coupland *Bufo bufo* male trying to remove male *Rana temporaria* 27/3/21 Edgefield, Norfolk

THE COMMON TOAD BY GARTH COUPLAND

Bufo bufo

I think they played the wordsmith's game,
When they gave the Toad its name.
Bufo bufo, plump and tough,
with skin of warts, dry and rough.
I feel great sadness when I'm told,
that they are ugly to behold.
Inoffensive, understated, unassuming, underated,
quiet, mouldly colourated.

How much more gentle than calendars and clocks is the telling of where one is in the universal round by the appearance of certain wildflowers. Or perhaps it might be the first toads of the year, seen out and about on a mild, damp night.

Your first introduction to the Common Toad might be the sad spectacle of the nightly carnage on a road that has been built across ancient toad migration routes at breeding time. This is usually in early to mid-March in Norfolk. In the season of 2018, following my return from Australia, I became aware of many good and dedicated folk around the County who formed 'Toad Patrols'. These kind people would spend what should be their sleeping hours assisting toads to keep off the roads and to reach their breeding waters safely. This has been a growing occupation over the past years and as a result thousands of anuran lives are saved by these conservationists. In some places of traditional, annual slaughter there are significantly fewer smashed and destroyed bodies to see. I hail you as shining examples of how our species should interact with other species and I thank you. Unfortunately there are many remote or lesser known sites where toads are still killed during the season. I cannot understand how any driver can fail to see and then avoid them.

Illumined by the blue light's flash,
Another fatal motor crash,
While quietly crossing that same road,
Could be an unobtrusive Toad.
Then would we take the same great care,
Of who, at night, might be out there?
You hear the crack of broken back and splat as bellies burst to flat, And for millions that is that.

Image Garth Coupland *Bufo bufo* 19/3/22 Edgefield Pond, Norfolk

It was not until I reached the age of eight, when I moved to a new village, that I had much contact with the species. Even then it would only be an occasional finding of a female living her quiet life in a garden or young toads found under wet sacks or trapped in cattle grids. (Cattle grids! Check them routinely for there will be interesting prisoners down there to release!)

Probably it was late Winter in the year of 1965, whilst rowing a boat on the very secluded and very private lake named Upton Broad, that I first discovered toads breeding. I was watching vast shoals of enormous Bronze Bream stirring up the mud in the shallower parts at the West end of the broad when I heard sounds that reminded me of a Coot's call but much less strident. A small, quiet chirp coming from the reeds. Then I saw them. Male Common Toads calling at the surface and hundreds more on the shallow bottom and among the reed stems. Single individuals and pairs in amplexus and something else. These were the balls of frenzied males who cluster around a female, often killing her if not removed and distracted which then allows them to carry on to find a mate in a more polite fashion.

Thrilled, I netted an amplexing pair and brought them home and placed them in an old tin bath to observe proceedings. They sat there, seemingly miserable and failed to spawn and so I returned them after two days to the broad. I was learning that you cannot make assumptions about animal behaviour. Clearly it was Upton Broad that had the magical qualities that triggered spawning in these toads.

Throughout my teenage years I discovered many other breeding sites around East Norfolk. However, as with the frog, it was difficult to always catch them at it in spite of a more prolonged breeding time than their more athletic cousins. It became clear to me that the toad prefers larger bodies of water and deeper water than the frog. But just as their breeding times overlap so do the sites sometimes and both species may be found breeding alongside each other....or with each other! The two species cannot produce froads or toogs but males of each will amplex the wrong females during this frenzied time of the year.

Bufo bufo **spent female 24/3/18 Woodbastwick, Norfolk Image Garth Coupland**

Male toads will amplex almost anything in fact. Tales abound in literature of fish and rats being amplexed to death. I have experienced them amplexing a convenient ball of mud, my hand and my boots. Amplexus can take place on land or in water and male toads may ride in style for long distances before entering the aquatic environment with their lady.

Image Garth Coupland *Bufo bufo* 'toad ball' around female 25/3/18 Edgefield Village Pond, Norfolk

Image Garth Coupland *Bufo bufo* male ready to breed 13/3/22 Woodbastwick Fen, Norfolk

NIGHT - 4TH FEBRUARY 2024 –

WOODBASTWICK FEN, NORFOLK

The darkness is profound, rendering me blind.
That is until I light my torch to see what I might find.
Drizzled rain has wet the ground, the air thirteen degrees.
The silence echoes not a sound from the Alder trees.

Whose eyes are there reflecting my bright and searching light.
A Toad I am detecting. The first one of the night.
The first Toad of the year, the first Toad of the Spring.
Evangelising better times than Winter's drab can bring.

This male he toadly trudges on with ungainly gait,
off to the dykes where his call will bring to him a mate.
That plaintive call, Spring's herald, is given 'mongst the reed,
to bring a spawn-plump female and then her eggs to seed.

Every year, at this time, when night is damp and mild,
I venture forth with my light to places dark and wild.
These first Toads of the season bring Summer into sight.
They brighten my horizon. They are my heart's delight.

The Eastern Stony Creek Frog – *Litoria wilcoxii* from central eastern Australia was one of the first frogs that I became familiar with in that country when I emigrated in 2013. The males, whilst calling and throughout the long, Summer, breeding season, turn various shades of yellow and brown. However, at the point of amplexus and mating they turn completely lemon yellow.

This appears to be a phenomenon associated with many

Continued P8

species of frog across the Globe. I have seen it in the European Edible Frog – *Pelophylax kl. esculentus* and the Common Toad also exhibits this trait. In a breeding population one can observe the males turning yellow as mating reaches its final goal.

13/3/22 Woodbastwick Fen, Norfolk Image Garth Coupland

In 1974, at the age of 20, I joined the City of Glasgow Police and lived for 3 years near a small loch in which toads bred every year. As always there were road casualties. With this abundance of corpses I determined to study the internal toad with a very old, brass microscope that I had been given by my uncle. I would spend long hours dissecting the poor creatures. Two observations from this yearly practice remain in my memory. The first was the enormous amount of parasitic worms found in the gut of every individual. The second was how the limbs would move, when certain nerves were stimulated, many hours after death by the rolling wheel.

Image Garth Coupland *Bufo bufo* showing yellow male 25/3/18 Edgefield Village Pond, Norfolk

The Common Toad occasionally falls prey to a parasite whose life history is one that causes me to shudder at the sheer horror of it. A Greenbottle Fly, *Lucilia bufonifora* preys only upon adult, Common Toads. Around 60 eggs are laid on the rear of the toad. These hatch and quickly climb to the lower eyelid from whence they make their way into the nasal chamber. This blocks the toad's nose-breathing and the distressed animal will wander around, mouth gaping, over the 2 to 3 days it takes for the maggots to eat away the flesh from around the skull. Thankfully the toad then dies and after consuming all but the skin and the skeleton the parasites leave their victim in order to pupate in the soil. I would encourage the reader to make a study of parasites. Some have the most extraordinary and convoluted life histories of any species upon the Earth.

Two particular Common Toads stand out in my memory. Sophie, a large female, was a loved, Summer pet for my young children and another, again named Sophie, by pure coincidence, delighted my step-daughter Imogen. Both Toads had fearsome appetites. So unstoppable was their feeding reflex that live worms or maggots would eventually pass from their vents; thus giving a fairly clear indication that they must surely be replete!

***Bufo bufo* 19/3/23 Barningham, N. Norfolk Image Garth Coupland**

Observing them shedding their skins was fascinating. Toads and frogs pass shed skin into their mouths and swallow it. This practice is believed to be a way of not wasting the nutritious value of the old skin. I have observed this in Australian and American species too. A theory that I have is that the drawing of the skin into the throat aids its removal from the body. Thus, it may be untrue that it is nutrition that drives the behaviour.

Head-torching for toads in suitable habitats or even around a garden may often produce a specimen; in my case, always a female. It seems extraordinary but I have never found a male Common Toad outside the breeding season in Britain. I once found several, in May, on a French golf course? This presents a mystery that literature has failed to resolve for me and I can advance no theory as to why this might be.

To have a large, female toad in residence in your garden is a wonderful thing. As I highly disapprove of chemical control of so-called pest species of

invertebrates, a large toad will devour them in vast quantities in the most natural way. I have heard of these toads taking Honeybees as they return to a hive and Meston Batchelor, my father's old headmaster, showed me one that climbed to the top of a flowering hedge at night in order to catch moths that visited the flowers. Toads will sit under lights to which insects are attracted and feast upon them as they fall from above. Enormous quantities of ants are eaten by toads and, as with the Slow Worm, the small, grey slug *Deroceras reticulatum* is a delicacy to a toad.

They become visibly excited when seeing these slugs and appear to delight in their consumption. These large, old toads will take up their residence in a favoured spot year after year. Toads of between forty and fifty years old have been recorded. They should always be cherished.

***Bufo bufo* Male showing nuptial pads 20/2/22**
West Runton, Norfolk Image Garth Coupland

Along with most species, the Common Toad is decreasing in numbers in Norfolk as a direct result of the doings of our species. Colonies are becoming separated, depleted or destroyed as we build, tidy and plough up the County. However, in spite of our worst efforts there are still places where toads can be seen in large numbers during the breeding time. There the gentle croaking of the males can be heard ushering out the Winter and welcoming in the Spring.

Bufo bufo male hurrying to breed 20/2/22
Selbrigg Lake, Norfolk Image Garth Coupland

RARE MUTATION TURNS FROG BRIGHT BLUE

A rare pigment mutation has caused this magnificent tree frog to have blue skin. Supplied: Jake Barber

A spectacular, blue-skinned tree frog has astonished scientists at a remote wildlife sanctuary in the Kimberley region of Western Australia. The Magnificent Tree Frog is normally green with white spots across the back, but this individual, photographed recently by a team from Australian Wildlife Conservancy (AWC), was uniquely coloured bright blue, due to a rare genetic mutation.

Jake Barker, AWC Field Ecologist, was part of the group who first encountered the unusual frog at Charnley River-Artesian Range Wildlife Sanctuary (Wilinggin Country). "It was after dark when we first spotted it, perched on a bench in the workshop near our research centre," he said. "It was very exciting. Magnificent Tree Frogs are already spectacular, but to see a blue one is a once-in-a-lifetime chance."

As far as AWC scientists are aware, this is the first recorded instance of a blue colour mutation in the Magnificent Tree Frog. According to Curator of Amphibian & Reptile Conservation Biology at the Australian Museum, Dr Jodi Rowley, the mutation is an extremely rare occurrence. "Very occasionally, a green frog is missing yellow pigment in its skin, and it results in an entirely or mostly blue frog," she said. "I've seen tens of thousands of frogs over the years, and only seen one blue frog - and it was nowhere near as spectacular as this Magnificent Tree Frog. A rare encounter and one that highlights the spectacular diversity of Australia's frogs!"

This Magnificent Tree Frog *Litoria splendida* is found only in the northern Kimberley and adjacent parts of the Northern Territory. It is one of the largest species of amphibians in Australia, growing to about 12cm.

"This is one of a number of north-west endemics that we come across pretty regularly around here," according to Jake. "They're not found anywhere else. That's the great thing about working in the Kimberley – you never know what rare wildlife you're going to see each day," he said.

Continued on page 10

From page 9 Charnley River-Artesian Range Wildlife Sanctuary is part of the traditional lands of the Ngarinyin People, and has been managed for conservation by AWC since 2011. AWC ecologists and partner groups run extensive biodiversity surveys in the Kimberley, carrying out thousands of survey nights across the region each year. The data helps to inform conservation land management programs such as improving fire patterns and tackling feral animals and weeds. **Derby, WA, 8 July 2024 Australian Wildlife Conservancy is a global leader in conservation, providing hope to Australia's wildlife with a science-informed, land management partnership model that delivers high-impact results. AWC is a national leader in landscape scale conservation land management, reintroductions of threatened species and the establishment of feral predator-free areas.**
Nahrain John, Communications Associate AWC
Email Nahrain.john@australianwildlife.org

LET'S TALK ABOUT FROGS

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.

Booroolong frog *Litoria booroolongensis*
Credit: **DCCEEW Christopher Edmunds**

Australia is home to more than 240 different frog species, many of which are not found anywhere else on Earth. Close to 20% of Australian frogs are threatened; in the last 25 years, 6 have already been listed as extinct. Every species that disappears is a sign of biodiversity decline. Many threatened frog species are unlikely to survive without help.

At Saving our Species, we are committed to securing the future of New South Wales's threatened frogs and currently have conservation projects in place for 16 of the most threatened frog species. Our conservation projects include actions like establishing insurance populations, breeding and release programs, the delivery of water for the environment to wetlands, habitat protection, scientific research and monitoring. **See link below for the complete article and videos.**

The Booroolong frog *Litoria booroolongensis* was once widespread, but disease caused by the amphibian chytrid fungus has caused it to disappear from more than half its range. This endangered frog is now restricted to isolated populations in rocky streams on the tablelands and slopes of New South Wales.

Gondwana Rainforest mountain frogs A group of incredibly rare and special mountain frogs in the genus *Philoria*, are surviving within the Gondwana World Heritage-listed rainforests of northern New South Wales and south-east Queensland.

Southern Heath Frog *Litoria watsoni* is an endangered tree frog that is only known to occur from Budderoo National Park in the Illawarra region of New South Wales, along the eastern fall of the Great Dividing Range. Threats include disease caused by the amphibian chytrid fungus, habitat disturbance from bushfire or sand mining, climate change and predation by native and introduced fish.

The critically endangered Spotted Tree Frog *Litoria spenceri* belongs to an ancient group of Gondwanan tree frogs and has evolved alongside the environment over millions of years. This species lives in only a few high mountain streams in Victoria, and a single location in New South Wales, within Kosciuszko National Park.

Did you know? The primary threats to Australian frogs are:

- disease caused by amphibian chytrid fungus *Batrachochytrium dendrobatidis*, capable of causing sporadic deaths in some frog populations and 100% mortality in others
- climate change-induced pressures such as drought and fire
- habitat loss, destruction and fragmentation from human development.

Looking ahead Saving our Species is fortunate to have some of Australia's leading conservation biologists in frog research and ecology developing and delivering collaborative strategies, informed by research and monitoring, to improve the long-term prospects of threatened frogs. Conservation strategies for these species build on decades of research and management as well as longstanding partnerships between different agencies and individuals.

Calling citizen scientists **FrogID** is a national citizen science project that is helping scientists learn more about what is happening to Australia's frogs. Download the FrogID app and you can discover which frogs live around you and help monitor Australia's frog population.

Learn more Find out more about how we are securing a future for our threatened species and the Saving our Species program. Learn more about how to spot a sick frog, and the threats to frogs. Learn how to take precautions against the amphibian chytrid fungus. Learn more about the fascinating world of frogs, listen to their calls, and find out how you can help protect them.
https://www.environment.nsw.gov.au/news/lets-talk-about-frogs#:~:text=More%20than%20one%2Dthird%20of,we%20can%20help%20conserve%20them

The FATS public 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 Good 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. 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 now be used for raffle and other purchases over $10.

FATS ON FACEBOOK: FATS has about 5,000 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 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. We have EFTPOS for payments over $10. 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

FATS has student memberships for $20 annually with electronic FrogCall (but no hard copy mail outs). https://www.fats.org.au/membership-form

Thank you to the committee members, FrogCall supporters, talented meeting speakers, Frog-O-Graphic competition entrants, event participants and organisers David, Kathy and Harriet Potter, Sarah and Ryan Kershaw. The FrogCall articles, photos, media and webpage links, membership administration and envelope preparation are greatly appreciated. Special thanks to regular newsletter contributors: Robert Wall, Karen & Arthur White, Andrew Nelson, Wendy & Phillip Grimm, Marion Anstis, George Madani and Punia Jeffery.

FATS WEBSITE www.fats.org.au **FROGWATCH HELPLINE 0419 249 728**

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THE CONVERSATION - OUR 'FROG SAUNAS' COULD HELP SAVE ENDANGERED SPECIES FROM THE DEVASTATING CHYTRID FUNGUS

27/6/2024 Author Anthony Waddle Schmidt Science Fellow in Conservation Biology, Macquarie University

All over the world, frogs are being wiped out by the chytrid fungus. At least 500 species have declined, including as many as 90 species now presumed extinct. This catastrophic and ongoing biodiversity loss surpasses the devastation wrought by other notorious invasive species such as cats, rats and even cane toads. Short of removing species from the wild and treating them in captivity, few strategies exist to deal with the chytrid threat. Our new research, published today in the journal Nature, offers a promising option. Outbreaks of chytrid are more common in cold winter months – just like seasonal human flu. We found a way to combat these winter outbreaks using heat. Our purpose-built "frog saunas" allow affected amphibians to warm up and bake off their infections. They are so simple you can build a frog sauna using supplies from the hardware store.

Why should we care about frogs? If frogs' good looks are not enough for you to care about their welfare, perhaps learning how they contribute to the environment or human health will pique your interest. Frogs eat insects that carry and spread human diseases. Their skin is also a rich source of new medicines that could help us combat antibiotic-resistant "superbugs" or curb the startling increase in opioid addiction. The frogs themselves are food for many predators, including humans. Often starting life as a tadpole eating algae, before morphing into a carnivorous adult, frogs carry energy from aquatic ecosystems onto land – where it can be transferred throughout the food web. losing a frog species can have serious flow-on effects.

Chytrid harms frogs by disrupting the integrity of their skin, depleting electrolytes needed for heart function. Infected frogs can die of cardiac arrest. Chytrid has spread worldwide through the trade of amphibians, becoming a seemingly permanent part of ecosystems. As eradicating chytrid from the wild is not possible, we need a way to help frogs battle infection.

Introducing frog saunas: Research has shown chytrid is worse in winter. My colleagues and I wondered whether, if frogs had access to warmth during winter, could they fight off infection? The fungus can't tolerate high temperatures, so if we gave frogs a place to stay warm, even for a few hours a day, perhaps they could survive and recover. We tested this idea, both in the laboratory and in outdoor experiments. First we established that endangered Green and Golden Bell Frogs (GGBF) will select temperatures that reduce or eliminate chytrid infections, when given the opportunity. Then we conducted experiments in the lab, with 66 infected frogs. The group given the option of choosing the temperature they liked best rapidly cleared their infection. The group placed in a set, warm temperature also cleared their infection, but it took longer. The low-temperature control group remained infected.

Next, we wanted to see what would happen if frogs that cured infections with heat would still get sick. Or were they immune? The group of 23 heat-cured frogs were 22 times more likely to survive the second infection than the 23 frogs that were heat-treated but not previously infected. So frogs cured with heat acquire resistance to future infections.

Finally, we wanted to see if this could work in a natural setting. We ran outdoor experiments with 239 frogs. Half were infected with chytrid one week before the experiment began. Then they were placed in enclosures with artificial structures that heat up in the sun, called "frog saunas". But the frogs could choose from shaded and unshaded areas, with or without saunas. We found frogs flocked to the sunny saunas, heated up their little bodies, and quickly fought off infection. Think of frog saunas as little factories that pump out healthy, chytrid-resistant frogs. The frog saunas could be used on a wider scale. We believe they would be best suited to supporting populations of Australian GGBFs, but they could be useful for other species too. The saunas are made of inexpensive materials that can be found at your local hardware store, making them accessible to the general public and wildlife managers alike. We are already building shelters at Sydney Olympic Park, working with Macquarie University and the Sydney Olympic Park Authority. The park is home to one of the largest remaining populations of Green and Golden Bell Frogs.

Want to get involved? You can become a citizen scientist and help save frogs from extinction. Start by downloading the FrogID app to learn how frogs are faring. Record frog calls with the app for scientists to identify them. This helps provide valuable data for frog conservation. Build a frog sauna for your backyard, to help keep them healthy through winter. It's essentially a brick-filled greenhouse, warmed by sunlight. All you need is some common clay ten-hole masonry bricks, black paint and cable ties – and a little greenhouse to put the sauna inside.

Changing the fate of frogs Since the discovery of chytrid more than 25 years ago, the pathogen has been a seemingly insurmountable challenge to endangered frog conservation. Now, we have developed a promising, inexpensive and widely applicable strategy to combat chytrid. Amphibians are such a diverse group that no single approach will be suitable for all species. So this is no silver bullet, but a useful tool for even one threatened or endangered species is cause for optimism. The concept could also be applied to other wildlife diseases, where differences between the physiology of the host and pathogen can be exploited.
https://theconversation.com/our-frog-saunas-could-help-save-endangered-species-from-the-devastating-chytrid-fungus-231605 (Extracts) Forwarded by Marion Anstis