

FROG CALL

THE FROG AND TADPOLE STUDY GROUP NSW Inc.

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NEWSLETTER No. 193 OCTOBER 2024

Image by Garth Coupland Natterjack *Epidalea calamita* male calling



Syderstone Common Norfolk UK 21/5/2020 see pages 6 to 8

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

**THE MEETING VENUE
MAY CHANGE IN 2025**

Arrive from 6.30PM or a 7pm start.

Friday 4 October 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.

FATS MEETING 7PM FRIDAY 4 OCTOBER 2024

6.30 PM Lost frogs seeking forever homes: Please join FATS on the night or bring your membership card. There is a \$50 cash donation, if you wish to adopt a frog - to cover frog care costs. **The option to use CREDIT CARDS will recommence in 2025.** 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 rehome.

7.00 PM Welcome, announcements and 2024 Frog-O-Graphic voting for People's Choice award.

8.30 PM Main speaker is Roy Farman from UNSW talking about "It's all in the hips - uncovering Australia's froggy past. Australian Fossil Frogs."

9.30 PM Show us your frog images. Tell us about your frogging trips or experiences. Guessing competition, frog adoptions continue, supper, relax and chat with frog friends and experts.

CONTENTS

PAGE

- Final Herpetofauna journal 2
- Frog-O-Graphic competition
People's Choice voting
- Meet the FATS new committee
- ARC Taronga Zoo 3
- ACTHA Snakes Alive, in 2025
- Roy Farman
October 2024 main speaker
- Some FATS talks and events
- John Gould's talk at Frogs Vic 4 - 5
- Natterjacks by Garth Coupland 6 - 8
- Watson's Tree Frog 9
- Pathogen resistant frogs 10
- FATS contacts and information 11
- FATS Field trips 12



WELCOME AND THANK YOU

As the Frog and Tadpole Study Group enters a new chapter we extend our heartfelt gratitude to the previous committee members for their enthusiasm and hard work. Your commitment has been invaluable and we deeply appreciate the time and effort you've invested in the organisation.

A special thank you to Arthur and Karen White, who have led FATS with exceptional expertise and tireless dedication since the 1990s. Their leadership has been instrumental in transforming FATS into a successful and impactful community organisation. We wish them a well-deserved retirement filled with joy and relaxation. Despite stepping down from the committee we expect (and hope!) they'd like to remain active in many facets of FATS for years to come.

We'd also like to acknowledge the dedication of Marion Anstis and Phillip Grimm who are also moving on from the committee. Marion and Phillip have devoted countless hours to the organisation, and their contributions including running field trips, editing newsletters, managing the website and memberships, have been crucial to our success. We are extremely grateful for their hard work and commitment.

We are also incredibly thankful to the existing committee members who have decided to stay on. This will assist us greatly with the transition - we definitely have big shoes to fill!

On that note, a warm welcome to the new committee members! We are excited to embark on this new chapter together and look forward to the contributions and fresh perspectives you will bring.

As we continue to build on a strong foundation, we look forward to achieving new milestones and advancing our mission of frog awareness and conservation together.

Thank you all for your ongoing support and commitment.

Sincerely, Michelle Toms, on behalf of the new committee

FROG-O-GRAPHIC COMPETITION PEOPLE'S CHOICE AWARD VOTING

All those attending the FATS October 2024 FATS public meeting on 4/10 will be able to vote for their favourite 2024 Frog-O-Graphic images and video entries, submitted to the FATS competition this year.

FINAL HERPETOFAUNA ISSUE

The final issue of Herpetofauna is due to be produced shortly. The issue is 106 pages long, in colour and contains some frog, as well as reptile, articles. The cost is about \$18 each. FATS have made a limited bulk order. They will be available to purchase at a future FATS public meeting.

Herpetofauna is a journal of Australian and New Zealand herpetology, first published in 1963 by the Australian Herpetological Society (AHS). In 1976, with Volume 8, publication was transferred to the Australasian Affiliation of Herpetological Societies, of which the AHS and FATS are members. Until a few years ago it was produced twice a year, with two issues per volume.



Sample copies of Herpetofauna front page 1998–2001

Herpetofauna is a peer-reviewed journal publishing original papers on the reptile and amphibian fauna of Australia, New Zealand, New Guinea and Pacific Oceania. (Ed: The administration, editing and reviewing of manuscripts for the journal is voluntary, carried out by unpaid volunteers. The only costs are typesetting, printing and postage.) Manuscripts were invited from authors on any aspect of the herpetofauna of this region, but particularly shorter papers involving field observations, husbandry and reproduction that may be difficult to publish in larger journals. Herpetofauna especially encouraged submission of manuscripts from field naturalists and non-professional herpetologists.

Manuscripts were in the form of Articles (manuscripts longer than two pages) or Notes (manuscripts of shorter length). Herpetofauna also publishes Book Reviews and Letters to the Editor. Authors did not need to be members of one of the societies in the Australasian Affiliation of Herpetological Societies.



Roy Farman is our main speaker at the October 2024 FATS meeting. He researches fossil frogs from the World Heritage Site Riversleigh, and the Early Eocene Murgon deposits of Queensland, Australia. He is also continuing work on Triassic fossil traces from the Sydney Basin, Australia.

EXPERIENCE ARC TARONGA

Enter the dragon's den and get up close to curious creatures that jump, slither, and crawl. From the Tuatara, a living fossil and a friend of the dinosaurs, to the Veiled Chameleon, a master of disguise, capable of blending seamlessly into any surroundings. Discover both the bold and the beautiful, from the daring Frilled Lizard to the stunning Eyelash Viper along with 42 other unique reptiles and amphibians from all around the world.

This brand-new experience will take you on a journey through six immersive zones, transporting you from the frosty sub-alpine to the scorching desert and to many other habitats in-between. Discover the incredible adaptations these reptiles and amphibians have developed to survive in challenging climates and learn how you can become a Climate Hero to help secure a future for these remarkable creatures. Be the first to slither into Taronga Zoo Sydney and experience the Amphibian and Reptile Conservation Centre, ARC. Come for a day or grab an annual pass. **Taronga's insurance colonies are a lifeline for the Corroboree Frogs, two of Australia's most critically endangered species.**

Fighting fungus Chytrid fungus is a disease which has impacted on frog populations globally, and has been identified as the primary cause of decline in frogs worldwide. The fungus is spread through water or direct contact with other frogs. It attacks their skin and affects their heart. Chytrid fungus does not cause immediate death therefore can spread quickly among frog species and bodies of water. Other threats to the Corroboree Frog include climate change, with the resulting impacts of droughts, flooding and bushfires. The impact of exotic plants include smothering breeding grounds and shading ponds rendering these spaces unsuitable for frogs. Feral animals like pigs and horses can also create havoc to frog habitats and breeding sites. There is also a possibility of these animals carrying

and spreading the chytrid fungus between breeding grounds. Taronga is heavily involved in breeding and releasing Corroboree frogs into the wild in a National Recovery Program to help save the species. The Zoo's breeding program has been so successful that we have released hundreds of frogs and thousands of eggs to increase wild population numbers in Kosciuszko National Park and Brindabella National Park. Saving the Corroboree Frogs will represent a major achievement for the conservation of amphibians globally.

<https://taronga.org.au/news/2024-06-26/sydneys-newest-reptile-experience>

In a milestone bulk release, more than 3,000 Southern Corroboree Frog *Pseudophryne corroboree* eggs have been released in Kosciuszko National Park. ABC website: <https://www.abc.net.au/news/2024-06-16/bulk-egg-release-southern-corroboree-frog-kosciuszko/103974198>



ACT Herpetological Association ACTHA will host Snakes Alive event in January 2025 in partnership with the Australian National Botanic Gardens ANBG. The annual week long exhibition showcases a variety of Australian reptiles and amphibians, many of which are threatened, endangered and very rarely seen in the wild or captivity. Find more information at <http://www.actha.org.au/> Members of the public receive an exceptional educational experience with the opportunity to learn about reptiles and amphibians in a hands-on way from dedicated ACT Herpetological Association volunteers.

SOME RECENT FATS EXHIBITIONS AND TALKS

FATS had a display at Canterbury Bankstown World Heritage Day on 1 June. We attended *Science in the Scrub on Sunday*. There was an exhibit for National Tree Day on 28/7 at Strathfield Park, by FATS. We were at Lizard log Amphitheatre, Western Sydney Parklands on 11/8 and *Science in the Swamp* at Centennial Park, both run by UNSW. Arthur White spoke at North Ride pre-school, at the Greenacre site for the Hawkesbury Herps group and at MacArthur Herps. From 12 to 17/8 the Australian Museum had Science Week.



Photo by Jayden Walsh Crucifix Frog *Notaden bennettii*

FROGS VICTORIA MAIN SPEAKER JOHN GOULD



John Gould was the main speaker at the Frogs Victoria, 5 September 2024 meeting, held at the Elgin Hotel, Hawthorn, Melbourne on Thursday at 7.30pm. He spoke about taking a closer look at the role of natural history in amphibian monitoring, conservation, and understanding. **My husband Bill and I attended the meeting. Since 2020, John has been a post-doctoral research fellow, at the School of Environmental and Life Sciences, University of Newcastle.**

John is currently exploring the population ecology and conservation management of the threatened Green and Golden Bell Frog, *Litoria aurea*. His research interests lie in understanding the adaptive purpose of animal behaviours, as well as how species have evolved in response to the selecting pressures of their environment, not only from a natural history perspective but to apply this knowledge to improve the efficacy of management programs. John has co-authored 54 publications.

The September meeting of Frogs Victoria was held in a cosy and comfortable first floor room of the Elgin Hotel, Hawthorn, inner Melbourne, Victoria. The meeting started at 7.30pm after a tasty dinner at this very popular hotel. Eating at the hotel before the meeting is optional. Frogs Vic holds events on the first Thursday of the month, March to November.

Frogs Vic president David De Angelis

& secretary Colin McHenry



John had invited attendees to ask questions during his presentation. The talk centred around a variety of images on a screen. John described the history of each image, in detail. The meeting had animated conversation, was very relaxed, friendly and highlighted the importance of taking time to observe nature in detail. A lively debate ensued at the end of John's talk.

John's research outputs are linked to policy change and decision-making: Persistence of a threatened frog in a modified landscape. Dr Gould has led population monitoring of the threatened Green and Golden Bell Frog population on Kooragang Island, exploring the impact of constructed wetlands on providing breeding habitat within habitat mosaics. His work on the population has also informed translocation of individuals within construction zones.

<https://neslandscapes.edu.au/about/people/john-gould/>

Images displayed at the meeting included a tadpole eating mosquito larvae, colour variations ranging from yellow to blue in frogs "Its not easy being green", tadpoles eating conspecific eggs as food source in ephemeral pools, food not friend (see abstract below), the importance of trees in GGBF habitat (see abstract below) and larger clutches of spawn protecting internal eggs.

Food, not friend: tadpoles of the sandpaper frog (*Lechriodus fletcheri*) cannibalise conspecific eggs as a food resource in ephemeral pools abstract

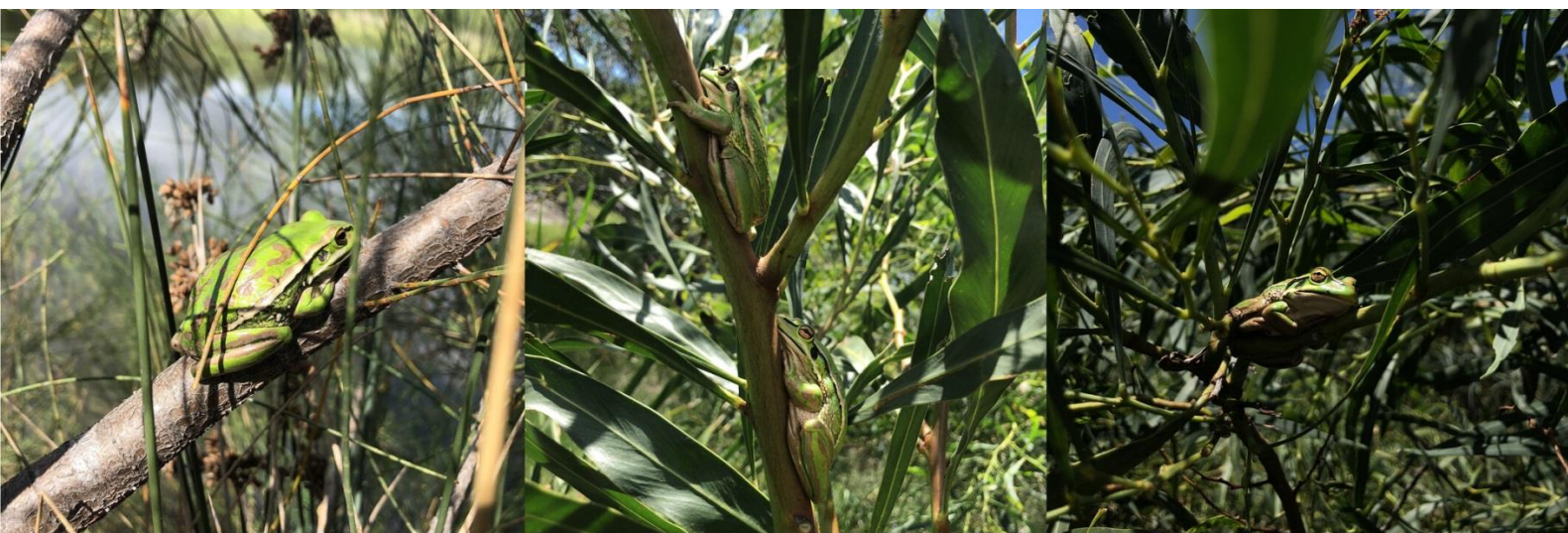
Among the Amphibia, cannibalism is most commonly associated with tadpole species that exploit ephemeral systems. This behaviour may confer significant fitness benefits to those that cannibalise, given that these systems generally possess limited food resources, but will incur significant fitness costs to the cannibalised. Herein, we describe cannibalism of recently oviposited eggs of the sandpaper frog (*Lechriodus fletcheri*) by conspecific tadpoles as a likely adaptation to limited nutrient availability within highly ephemeral pools in which it is an obligate breeder.

Field observations revealed *L. fletcheri* tadpoles actively preyed on conspecific eggs of recently oviposited spawn bodies, which were commonly consumed whole. When tadpoles were exposed to spawn for the first time in laboratory trials, they quickly engaged in extended periods of consumption, gorging themselves until they appeared to be full.

We found this behaviour to be common in the field and suggest that conspecific eggs form a significant food resource for tadpoles of this species in the otherwise nutrient-poor systems in which they breed.

This feeding strategy might be common among anurans exploiting temporary aquatic systems that are nutrient-poor and gives rise to many questions surrounding how individuals can utilise cannibalism to increase their fitness while simultaneously avoiding becoming victims of this behaviour themselves.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/eth.12995>



(a)

(b)

(c)

<https://onlinelibrary.wiley.com/doi/full/10.1111/aec.13468>

Don't take my trees: Re-evaluating the importance of trees when it comes to managing green and golden bell frog, *Litoria aurea*, habitat image by John Gould

Abstract: *Litoria aurea* basking in trees during the day in the vicinity of waterbodies on Kooragang Island, Australia during the breeding season. Images show adult frogs on (a) *Casuarina* branch (60 cm above-ground), (b) *Acacia* stem (140 cm above-ground), and (c) *Acacia* branch (140 cm above-ground).

It is vital to identify habitats used by each life stage of a species to formulate effective conservation management and restoration guidelines. For the threatened Green and Golden Bell Frog, *Litoria aurea*, it is currently recommended that, to prevent waterbody shading, managed or constructed habitat for the species should not include trees. Shading has been reported to prevent adults from sun basking, reduce breeding activity, and lower water temperatures, which may impede tadpole growth and development and provide optimum conditions for the amphibian chytrid pathogen, *Batrachochytrium dendrobatidis*.

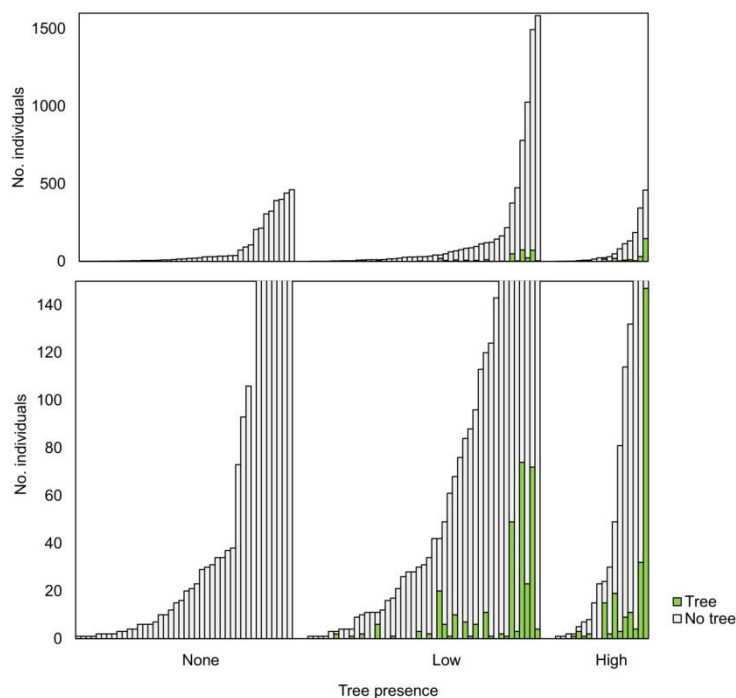
However, the complete exclusion of trees, which are naturally present in *L. aurea* habitat, warrants evidence that supports this recommendation.

In the present study, we used a multi-year dataset on an *L. aurea* population on Kooragang Island, NSW, Australia to determine the occurrence of tree use by post-metamorphic individuals. These data included information on nearly 12 500 individuals captured from 86 waterbodies across 8 consecutive breeding seasons.

We found that tree use by juveniles, adult males, and adult females was widespread and common, occurring both during the day and night, with more than one out of every 20 individuals captured in trees. Our findings suggest that trees are a potentially important attribute of the terrestrial component of wetland habitats occupied by *L. aurea*. We hypothesize that trees may (i) create microhabitat for foraging and/or increased diversity of prey species, (ii) provide refuge from predators, and (iii)

allow sun basking off the ground, thereby offering protection against the chytrid fungus while removing them from chytrid-prevalent environments such as water and moist soils.

We call for the careful reconsideration of tree exclusion within *L. aurea* habitat and further research into the benefits of allowing trees to grow near waterbodies to accommodate the ecological needs of this threatened species.



Tree use among *Litoria aurea* individuals at wetland sites on Kooragang Island, NSW. Each bar shows the number of individuals detected in trees (green) versus all other structures per pond. Ponds have been grouped based on tree presence (none, low, and high); temporal changes in tree presence has resulted in some ponds being included in multiple groups. The chart has two panels; the top panel shows all detection data, while the bottom panel is a close-up of the bottom part of the x-axis for better visualization of tree use data in particular. - Trees were present at 57 out of 86 (66%) sites at some point during the study period.

Graph by John Gould

<https://www.frogsvic.org/copy-of-about>

THE NATTERJACK *Epidalea calamita*
article and all images by Garth Coupland

*I see the beauty of creation in a toad's patterned skin,
And the secrets of the Universe its golden eye within.
Of green and dripping havens where Summer's frogs do dwell,
And of adventures seeking them this child does love to tell.*



**Natterjack *Epidalea calamita* male in calling position
20/6/20 Syderstone Common, Norfolk**

In later life I penned this small poem for a girlfriend so that she might better understand me! In its sentiments I have not changed since the moment I turned over an ancient, mossy paving slab in the village of Reedham, Norfolk, when I was three years old. What I found beneath it had a profound effect upon me and changed my life forever.

In the Spring of 1953 Doctors Michael and Kirsteen Coupland and I, their eight week old son, arrived in Reedham, Norfolk from Sussex. Michael was to start in practice as the local GP and we lived in The Old Mill House, a large, Georgian house with a garden to match. Lawns, an orchard, flower beds, wonderful, dark, spider-webbed sheds, greenhouses, old, mellow brick walls upon which grew pear trees rooted in the sandy soil and a view across the flat marshland all the way to Great Yarmouth.

The house sat on the site of a windmill which burned down earlier in the century. I presume that the placing of the mill on top of the sandy bluff, the former coast of the ancient Yare estuary before the draining of the marshes, was to catch the maximum wind. The fact that the village was clustered upon this sandy bluff, with the River Yare running below, is an essential part of this story.

Michael had a deep love of natural history.

His mother drew and exquisitely painted the flowers and butterflies of southern England and his interest was encouraged and nurtured by his preparatory school headmaster, Meston Batchelor, an outstanding naturalist. Michael had been sent off to board at the age of four! This and a boyhood and youth spent wandering the Sussex Downs in his baggy, corduroy shorts, was to become a legacy passed on to his grandchildren. So it is not surprising that Michael encouraged his little boy to take an interest in all the wonders of the other species sharing our planet. But I should return to that moment when I turned over the slab.

This memory is incredibly vivid and desperately important to me. My father took me along a path that ran through an herbaceous border. The path was made of concrete slabs fashioned to look like old, flat stones. They were rough and moss encrusted and I distinctly remember liking their natural appearance. I suspect that he already knew what was under the slab but let me lift it. There, hunched up in a hole of its own making in the loose soil beneath was an animal. It was dry, had warty skin and was much the same colour as its surroundings but with a thin, yellow stripe down the centre of its back. I picked it up and it felt deliciously alive, soft and cold and its eyes were golden and shone from the fascinating, camouflaged head. I was informed that I had found a Natterjack. A Natterjack! What a perfect name for such a captivating creature! I remember feeling unbelievably excited by this find. There was something about this animal that I liked more than anything I had ever seen. I now recognise this as my aesthetic appreciation of, and attraction to, the anuran form. I was hooked as surely as a greedy trout, and from that moment until today I have loved frogs and toads and their habitats and have travelled in many countries seeking their company.



Natterjack *Epidalea calamita* Reedham Norfolk circa mid 1950s taken by Mr Brown Reedham Postmaster

I left Reedham at age eight to live in Acle, some six miles away, and life was never as good again. In Reedham, Natterjacks, Grass Snakes and Viviparous Lizards filled my time and my imagination in what seems now to have been endless Summer days. What I could not have known was that I was enjoying the last of the Natterjacks of Reedham. My experience, married to what my father told me, leads me to believe that the colony became extinct in 1962, due, I have no doubt, to the works of Man.



Natterjack *Epidalea calamita* male underwater employing nictitating membranes 18/4/2011 Winterton on Sea Norfolk

Natterjacks are a burrowing species of loose and sandy soils and so are often coastal and dune dwelling. To my knowledge the Reedham colony clung very closely to the sandy bluff, all that remained of the old coast, and did not venture beyond the village unless it was to breed in the shallow dykes of the grazing marshes. My experience of other colonies suggests that they do not wander from their preferred, specific habitat.

My father told me that the little creatures would swim the River Yare to breed but I never witnessed this. Mr Brown, the Reedham Postmaster, gave my father a black and white photograph that he had taken on those marshes of a male Natterjack calling at night. This photo, in a cheap, mint green, plastic frame, always had pride of place in my father's consulting room wherever he worked. Even today some of his patients remember it. I remember it as part of what defined my father and finding it recently in a box was a deeply emotional moment. The image and glass is held in place with medical, sticking plasters, no doubt put on by my father's healing hands! He died in 2011. In the photo the Natterjack straddles the ground in a manly stance amongst the grass stems and calls with his throat immensely distended. I used to find the image completely fascinating.

Natterjacks were the only toad I knew until, aged seven, I discovered Common Toads at a prep school chum's house. This was Edward Jewson's home at Mergate Hall, Bracon Ash in South Norfolk. I never have seen a Common Toad in Reedham but know that they breed nearby at Acle and Hassingham in dykes on the marshes. It was as if the

Natterjack were the only anuran to inhabit the sandy bluff as I never found a Common Frog in the main village either. At Winterton-on-Sea, among the dunes, heaths and woods, I have seen all three species together.

I remember that Natterjacks were quite easy to find if one knew where to look. I had three places that seemed productive: any suitable slabs in our garden, under Mr Brown's solid, cast iron doorstep at the back of the Post Office and another, much more magical place, particularly for a small natural historian – the 'pits'.

A visit to the 'pits' always started thus: "Garth, would you like to go hedgehog hunting?" My father's quite unnecessary question would always have my heart beating just that little bit quicker than normal. Between our house and the marshes the sandy bluff had been cut by 'the cut'. The cut contained the railway line that turned south to cross the river via the famous swing-bridge and then on across the marshes to Lowestoft. Running along the top of the high bank above and parallel with the line was a concrete, U-shaped ditch with four pits spaced along its length to capture any water that would otherwise have eroded the sandy bank. From each pit was a large pipe to another pit by the side of the line with a similar concrete ditch.

Animals would fall into the ditches and then hide and die in the pits so it became a regular duty to save them. Hedgehogs were the main casualties and the damp earth at the bottom of the pits was full of their bones. Grass Snakes were also caught and were a most exciting find. Natterjacks would seemingly miserably burrow into the muck and await death or my saving hands after my father had lowered me down into the pits.



Natterjack *Epidalea calamita* male showing nuptial pads 18/4/2011 Winterton on Sea Norfolk

When around six or seven years old I sunk a ceramic basin into the ground as a pond and staked chicken wire around it with bamboo canes. In this enclosure I kept some Natterjacks. One day, just as my great aunt Acky arrived from Glasgow to stay with us, a Grass Snake penetrated the security fence and devoured a Natterjack.

Continued on Page 8

Continued from page 7 It then failed to escape back through the wire due to the bulge of its meal so it was captured and placed in a pail to show Acky. She was horrified when the snake regurgitated the Natterjack in front of her. She never visited again! I remember vividly how the skin and diagnostic yellow, dorsal stripe were unaffected by the time spent enduring the snake's digestive juices.

Speaking of the diagnostic, yellow stripe reminds me of my time serving as a police officer in Great Yarmouth. Us cops became exasperated by the triage applied to the cases we presented to the newly formed Crown Prosecution Service. It seemed to us cowardly to only present cases with an almost certain chance of success. Consequently many cases we felt were important were never put before the courts and victims never received justice. We thought the CPS had 'a yellow streak up their back'. We called them 'Natterjacks'!

When I found Common Toads in Jewson's garden I brought a large female home and kept her with some Natterjacks in one of our greenhouses where they roamed free among the tomato plants and the grape vine. On failing to find her one day I was informed that some people from the BBC had visited whilst I was at school and taken a Natterjack to make a film about witchcraft. They had actually taken the Common Toad by mistake. My father telephoned the naturalist presenter, Dick Bagnall-Oakley, only to learn that they had finished filming. It was shown sitting in the lychgate of the attractive country church at Woodbastwick. I have never understood the injustice of not being allowed to see my toad on television and consequently never forgave my parents for this terrible sin!



**Natterjack *Epidalea calamita* dune and heath habitat
4/7/2016 Winterton on Sea, Norfolk**

The television people met me outside school when they eventually returned the toad. She had lost a great deal of weight and I was horrified. They had also placed a 'lizard' for me in the box with her. My mother would delight in telling of the utter disdain in my voice as I informed them that their lizard was, in fact, a newt. I was paid one Guinea for the supply of the animal and it paid for the taxidermy of a Weasel that my father found dead on the road.

A year after I left Reedham so did the Natterjacks. When about twelve years old I wrote to Dick Bagnall-Oakley to enquire if he knew of any other places where I might find

Natterjacks and he wrote back telling me of the colony at Winterton-on-Sea. Until my emigration to Australia in 2013 I regularly visited Winterton Dunes on a warm, early Summer night to sit by the ponds and watch and listen to the Natterjacks calling. The loudness and pulsating nature of a chorus of even a few males would bring on a feeling of nausea after a while which was most extraordinary.



**Natterjack *Epidalea calamita* egg strings in shallow pool
14/6/2016 Winterton on Sea Norfolk**

I feel that at Winterton and Horsey numbers have declined terribly and steadily in the last fifteen years, although the species can still be found in other parts of the County, notably the sandy coastline of North Norfolk. The Natterjack now receives the highest level of protection from British and European conservation law.

Time and tide took me to Queensland's shores and subsequently brought me back after five years. My children have built lives out there and instead of Natterjacks they have the equally wonderfully named Pobblebonks and some 240 species of frog! My daughter Bridie has a degree in animal science, works professionally with animals and paints pictures of mammals and birds. My son Ross is an astounding naturalist and skilled photographer of natural history. When I find frogs and toads across the Globe each new species brings the same thrill to my spirit as that first Natterjack.

The legacy of that single animal, my dear father, Meston Batchelor and my grandmother lives on in my children and me as we find, observe and admire the other species and recreate those moments of joy with our art.



***Epidalea calamita* Natterjack 11/6/16
Winterton on Sea Norfolk**

ENDANGERED WATSON'S TREE FROGS FOUND IN MORTON NATIONAL PARK

By James Tugwell 25/7/2024 extracts



Genetic testing only identified the Watson's tree frog as its own species in four years ago. *Supplied: Stephen Mahony*

The Watson's Tree Frog was listed as endangered in 2022 after bushfires burnt through large areas of their habitat. Rediscovering a frog population on a rock formation known as The Castle led to finding two new populations living on neighbouring monoliths.

What's next? Genetic testing will determine how closely related the new populations are to other Watson's Tree Frogs. Genetic testing only identified *Litoria watsonia*, as its own species in 2020.

NSW Department of Climate Change, Energy, the Environment and Water senior threatened species officer Rachel Melrose described the frog as being "mottled and golden, like sandstone with glitter on it, with gold eyes and bright red thighs". The NSW Threatened Species Scientific Committee reports there is insufficient data to determine the total population size of the frog, which lives in south-east NSW and northern Victoria. So when fire ripped through vast patches of their habitat during the black summer fires, Dr Melrose wanted to rush out to save them. "But you can't," she said. "You have to trust they have some evolutionary tactics to recover from fire and deal with it." In 2022, the committee listed the species as endangered, citing a "suspected ... large reduction in population size due to bushfires". And so began the search for a frog in a forest, not knowing if it was even there to be found.

'A treasure hunt' Dr Melrose set up microphones throughout Morton National Park, near Ulladulla on the NSW south coast, intermittently recording sound at night for several weeks. She listened back to the recordings while cooking dinner, waiting for the frog's distinct call. She eventually rediscovered historical populations of the frog in the park after the fires, but was unable to find any on the landmark known as The Castle. The Castle is an almost 850-metre-high sandstone mesa in the heart of the national park that is accessible only by a 10-hour hike involving scrambling up cliff faces. The mystical allure of the monolith made Dr Melrose desperate to rediscover the once-thriving frog population at the site. "It's sort of like a treasure hunt," she said. For two years, she climbed The Castle every few months, searching the shallow pools on the top for tadpoles or signs of the frogs. With each unsuccessful trip, her concerns grew. "With a lot of work on threatened species, we worry

and worry and then there's a big fire and we worry again, and we weren't finding them," she said.

Think like a frog When heavy rain set in on the coast in December 2023, Dr Melrose allowed time for eggs to become tadpoles and then climbed the now well-trodden route up The Castle. "You do kind of have to get in the mind of the animal a bit," she said. "You have to try to imagine what they are doing. "If I was a tree frog and the weather is setting in and the pools will be topped up for a while ... I thought, 'They are definitely breeding.'" To her dismay, there was nothing in the first few pools. "Then we found them right on the edge of the cliffs, then we found them all over," she said. "Boom — there were just thousands of tadpoles everywhere. "They live on this little lost world. It's a paradise of cliffs and beautiful habitat.

Finding the frogs on The Castle opened a world of new possibilities. "Once we found them breeding on The Castle, we're like: 'Right, let's go and explore other monoliths with similar breeding habitat,'" Dr Melrose said. She found two new populations living in locations where the frog had never been recorded. Dr Melrose said finding new populations allowed National Parks and Wildlife Services to implement protection policies for the species, for example not lighting controlled burns in the frog's habitat. She also collected tissue samples that will be genetically analysed to determine how closely related the different populations are to other Watson's Tree Frogs.

'Jewel in the crown' University of Newcastle emeritus professor Michael Mahony has been studying the Littlejohn's Tree Frog — the southernmost distribution of which he later helped identify as the Watson's Tree Frog — since 1994. He said Dr Melrose's work was highly significant. "Every time we find new populations, and in this case an isolated population of an endangered species, it is like the jewel in the crown," Professor Mahony said.



Michael Mahony says the rediscovery of the frogs on The Castle monolith is highly significant.

Supplied: Michael Mahony

"The frog has survived there presumably for tens of thousands of generations. "It gives us great scope for hope. The more populations we have the more chance we know the animal will persist into the future."

<https://www.abc.net.au/news/2024-07-25/watsons-tree-frog-castle-morton-national-park/104109412>



Photo by Craig Broadfield *Litoria burrowsae*

EVOLUTIONARY RESCUE AND REINTRODUCTION OF RESISTANT FROGS ALLOWS RECOVERY IN THE PRESENCE OF A LETHAL FUNGAL DISEASE

Authors: Roland A Knapp Mark Wilber
Allison Byrne Maxwell B Joseph

Abstract

Vast alteration of the biosphere by humans is causing a sixth mass extinction, driven in part by an increase in emerging infectious diseases. The emergence of the lethal fungal pathogen (*Batrachochytrium dendrobatidis* ; “Bd”) has devastated global amphibian biodiversity, with hundreds of species experiencing declines or extinctions.

With no broadly applicable methods available to reverse these impacts in the wild, the future of many amphibians appears grim. The once-common mountain yellow-legged (MYL) frog is emblematic of amphibians threatened by Bd. Although most MYL frog populations are extirpated following disease outbreaks, some persist and eventually recover.

Frogs in these recovering populations have increased resistance against Bd infection, consistent with evolution of resistant genotypes and/or acquired immunity.

We conducted a 15-year landscape-scale 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, results from viability modelling suggest that many reintroduced populations have a low probability of extinction over 50 years.

To better understand the role of evolution in frog resistance, we compared the genomes of MYL frogs from Bd-naïve and recovering populations. We found substantial differences between these

categories, including changes in immune function loci that may confer increased resistance, consistent with evolutionary changes in response to Bd exposure. These results provide a rare example of how reintroduction of resistant individuals can allow the landscape-scale recovery of disease-impacted species.

This example has broad implications for the many taxa worldwide that are threatened with extinction by novel pathogens.

Significance Statement Understanding how species persist despite accelerating global change is critical for the conservation of biodiversity. Emerging infectious diseases can have particularly devastating impacts, and few options exist to reverse these effects. We used large-scale reintroductions of disease-resistant individuals in an effort to recover a once-common frog species driven to near-extinction by a disease that has decimated amphibian biodiversity. Introduction of resistant frogs allowed reestablishment of viable populations in the presence of disease. In addition, resistance may be at least partially the result of natural selection at specific immune function genes, which show evidence for selection in recovering populations.

The evolution of resistance and reintroduction of resistant individuals could play an important role in biodiversity conservation in our rapidly changing world.

https://www.researchgate.net/publication/371029279_Evolutionary_rescue_and_reintroduction_of_resistant_frogs_allows_recovery_in_the_presence_of_a_lethal_fungal_disease May 2023
DOI: [10.1101/2023.05.22.541534](https://doi.org/10.1101/2023.05.22.541534)

further information:

<https://www.newscientist.com/article/2411673-california-frog-reintroduction-is-rare-victory-against-fungal-pandemic/> New Scientist
20/1/2024 Forwarded to FATS by Punia Jeffery

Photo by Cassie Thompson *Litoria barringtonensis*



The 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. 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. From 2025, credit cards can be used for raffle and other purchases over \$10.

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FATS ON FACEBOOK: FATS has over 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 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. Our EFTPOS facility at the meeting is likely to be unavailable until 2025 due to a change over of the FATS committee. 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.



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FATS MAILING ADDRESS: P O Box 296 Rockdale NSW 2216 **MAILING ADDRESS MAY CHANGE IN 2025**

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Harriet Potter	Frog Helpline Coordinator and adoptions
Monica Wangmann	Editor Email monicawangmann@gmail.com
General Committee Members: Peter Vickery Andre Rank Punia Jeffery and Luc Streit	

FIELD TRIPS. Please book your place on field-trips; due to strong demand, numbers are limited. Be sure to leave a contact number. Regardless of prevailing weather conditions, we will continue to schedule and advertise all monthly field-trips as planned. It is **YOUR** responsibility to re-confirm in the last few days, whether the field trip is proceeding or has been cancelled. Phone Robert on 9681-5308.

Friday to Sunday 15 – 17 November Smiths Lake Camp-Out Leaders: Karen and Arthur White

Smith's Lake has become such a popular field trip destination that changes were needed to ensure that everyone gets a chance to go. Previously, it has been first in goes to the head of the list, but this approach has meant that the same people often get to go and newcomers miss out. In addition, we have people cancel late, so their place goes unfilled. To overcome both of these problems we have changed the booking arrangements, which will include a **non-refundable** pre-payment for the booking. Most people will still be able to attend. This arrangement is in case we have too many people wanting to go on the field trip.

1. Email Karen White white.kazzie@gmail.com by the 25 October and indicate that you (and others in your group) want to attend and what day you intend to arrive. Karen will then put your name on a list. If you attended the previous Smith's Lake field trip, you will automatically go on the Reserve List.
2. Karen will send you a reply email to let you know which list you are on. If you are on the A list you must pay your accommodation by the 25 October to confirm your booking. If you do not pay by this date you will be removed from the A list. You can pay electronically to the FATS account:- **Account Name: Frog and Tadpole Study Group BSB 082 342 Account No. 285 766 885 Cost is \$25.00 per person, per night**
3. Karen will send you confirmation of your booking when your payment has been received.
4. Karen will email people on the Reserve list, a couple of weeks before the field trip dates. You will be told if there are spaces available for you or not. If are able to go, you will now need to forward your payment to guarantee your place. Payment must be received by the 1 November. If not, your place will be given to the next person on the list. We think that this will be the fairest way to ensure that everyone gets a chance to go to Smith's Lake.

Sunday 1 December Australian Reptile Park, Somersby Christmas Party BBQ

Meet inside the Reptile Park, Pacific Highway, Somersby. Free entry for FATS members. The annual interclub ARP Christmas party BBQ commences at 10.00AM, but you may turn up at anytime before 3PM. There is a behind-the-scenes look at the reptile centre and free shows throughout the day. Free entry to FATS members. You need to present your current membership card upon entry. There are picnic facilities, so you can bring your own lunch or purchase from the kiosk. No need to book for this one, just turn up! It's best to call the ARP and confirm details.

Saturday 18 January The Watagans Leader: Cassie Thompson

PLEASE NOTE OUR NEW MEETING PLACE FOR THIS FIELDTRIP!

Meet at the McDonalds Restaurant, Morisset. Only 400m from our previous meeting point. From Sydney, take the freeway north. After approximately 83 km, take the Morisset/Cooranbong exit. Turn right and travel about 2.5 km to the corner of Mandalong Rd and Ourimbah St, Morisset. McDonald's is on the corner. Meet in the carpark.

Historically, when a plant or animal was first discovered and collected, it was sent off to the authorities, usually the museum or herbarium, and the specimen was formally "described". It was then preserved and stored with accompanying notes (usually the date, location of collection and by whom it was collected). This became known as the *Type specimen* (technically, the "*Holotype*" but often abbreviated and simply referred to as the "*Type*"). This became a very important reference point for future researchers. Today, many scientific articles will refer to the *Type* or the *Type locality* (i.e the place where it was found). There will also be frequent references to a species being "described". It is important for all biology students to understand and be familiar with these terms. This weekend, Cassie will be on hand to explain the importance of, and protocols accompanying, *Type specimens*. We will also discuss why museum collections are not merely antiquated items of curiosity but in fact serve a crucial research role.

Cassie is a biodiversity specialist working with the State government. She works to find solutions to complex ecological problems, particularly as these relate to linear infrastructure and the impact on biodiversity. She has been visiting the Watagans for many years, and worked on a project with State Forests getting breeding ponds built and a citizen science program started for local threatened frog species.

In the event of uncertain frogging conditions e.g. prolonged/severe drought, hazardous and/or torrential rain, bushfires etc., please phone 02 9681 5308. Remember rain is generally ideal for frogging! Children must be accompanied by an adult. Bring enclosed shoes that can get wet (gumboots are preferable), torch, warm clothing and raincoat. Please be judicious with the use of insect repellent – frogs are very sensitive to chemicals! Please observe all directions that the leader may give. Children are welcome, however please remember that young children especially can become very excited and boisterous at their first frogging experience – parents are asked to help ensure that the leader is able to conduct the trip to everyone's satisfaction. All fieldtrips are strictly for members only – newcomers are however, welcome to take out membership before the commencement of the fieldtrip. 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.