

FROG CALL

THE FROG AND TADPOLE STUDY GROUP NSW Inc.

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NEWSLETTER No. 157 OCTOBER 2018

Male *Mixophyes balbus* photo by Josie Styles



January 2018 The Watagans FATS field trip with Brad McCaffery

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

Arrive from 6.30 pm for a 7pm start.

Friday 5 October 2018

**FATS meet at the Education Centre,
Bicentennial Pk, Sydney Olympic Park**

Easy walk from Concord West railway station and straight down Victoria Ave.

Take a torch.

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.

Or enter from Bennelong Rd / Parkway.

It is a short stretch of two way road.

Park in P10f car park, the last car park before the Bennelong Rd. exit gate.

FATS meeting, Friday 5 October 2018

6.30 pm Lost frogs seeking forever homes: 2 Green Tree Frogs *Litoria caerulea*, 1 *Litoria infrafrenata* White-lipped Tree Frog, 1 half grown *Litoria gracilentata* Dainty Tree Frog and 1 Perons Tree Frog *Litoria peroni*. Priority to new pet frog owners. Please bring your membership card and cash \$50 donation. Sorry, we don't have EFTPOS. Your current NSW NPWS amphibian licence must be sighted on the night. Rescued and adopted frogs can never be released.

7.00 pm Welcome and announcements

8.00 pm Our main speaker:

Marion Anstis "Living Grasslands of Serengeti"
Punia Jeffery Axolotls and reproduction

9.00 pm Frog-O-Graphic competition entries displayed. We will announce the winners at the October meeting after the People's Choice judging (by those in attendance). Prizes will be presented at the December FATS meeting.

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.

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LAST FATS MEETING AND AGM 3 AUGUST 2018

Arthur White welcomed visitors. The FATS Annual General Meeting was conducted. Thank you and congratulations to the newly elected committee who are listed on page 11. FATS would like to especially thank our outgoing secretary Wendy Grimm for her many years of work on behalf of members and frogs.



Photo by Wendy Grimm *Pseudophryne covacevichae*, near Millaa Millaa Atherton tablelands

One of many enjoyable and easy FATS field trips
Pictured: Punia Jeffery, Karen White and Wendy Grimm



The President's Report will be in our December FrogCall No 158 - a glossy, hard copy, collector's colour edition, which is also sent out electronically to financial members via email. The financial accounts will be in February's FrogCall.

The FATS committee are concerned that our emailed newsletter with important information is not being read. We believe that members receive so much mail electronically, that they run out of time to check the newsletter for field trips and announcements. We trialled only mailing out two hard copy FrogCalls a year (with 6 electronic ones, as before). But we have now gone full circle. It has been decided to reintroduce hard copy editions, starting in 2019. Some of the future editions may be leaner. The June and

December editions will continue at their current size. Six newsletters a year will still be sent out as colour pdf email attachments. They will continue to be publically available on our web site, a few months after being mailed out to financial members.

FATS meetings continue to be well attended.



Changes to the State and Federal legislation on keeping, costs and completing paperwork for licences, field trips and exhibiting frogs will have significant impacts on FATS, our expenses and activities. We will report further. Thank you David and Kathy Potter for a huge amount of time, ploughing through the paperwork involved. Continued on page 3

Rescued *Litoria peroni* female Perons Tree Frog



Please let Arthur White know if you are interested in joining FATS in November and December for the auditory surveys of Green and Golden Bell Frogs at Sydney Olympic Park



Litoria ewingi Tasmania, photo by Craig Broadfield

Kathy Potter announced the FATS upcoming events and science month activities. Thank you to those who came to help at our displays. August is a very busy month and we appreciate any help. Mostly it's identifying photos of Perons Tree Frogs.



Our main speaker Michael McFadden is in charge of the threatened species frog program for Taronga Zoo. Michael spoke about the geographically focused frog recovery plans at zoos, Australia wide. The "insurance policy" breeding programs are a collaborative process with State governments and universities. His talk focused on the current remote reintroduction sites, high quarantine facilities at zoos, disease control practices, the use of protected artificial pools providing a Chytrid free environment in the wild and controlled breeding programmes for corroboree frogs and the Bellinger River Turtle (right).

<https://www.youtube.com/watch?v=icw03noDUQI>

breeding and proposed classes and licences. FATS have made a submission. Whether OEH permit frogs to be kept or not, there is a risk (to frogs and people) no matter what the final decisions are. FATS submitted that there are a number of common frogs that can easily be kept as pets and that should not require a licence. Codes of practice for keeping frogs need to be followed. People wishing to keep frogs needing complex care should demonstrate their ability to care for those species.

Bellinger River Turtle
(*Myuchelys georgesii*)

- From the five mature females, four clutches were successfully obtained in the first breeding season, resulting in 22 hatchlings.
- In the second breeding season, another four clutches resulted in 31 additional hatchling turtles.



Bellinger River Turtle
(*Myuchelys georgesii*)

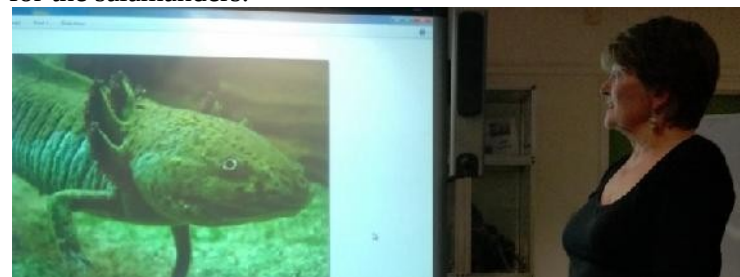
The capacity Taronga Zoo is currently estimated to be up to 45 adults and 60-70 juveniles.

An additional room at the zoo has been established for the incubation and early rearing of young turtles.



Natalia Sabatino talked about the FATS pin design options. Punia Jeffery spoke about critically endangered axolotl amphibians. There are more in captivity than in the wild – a total conservation paradox. As of 2010, wild axolotls were near extinction due to urbanization in Mexico City, water pollution and invasive species.

Surveys in 1998, 2003, and 2008 found 6,000, 1,000, and 100 axolotls per square kilometre in its Lake Xochimilco habitat, respectively. A four-month-long search in 2013, however, turned up no surviving individuals in the wild. Just a month later, two wild ones were spotted in a network of canals leading from Xochimilco. The city is currently working on conserving axolotls by building "axolotl shelters" and conserving remaining and potential habitats for the salamanders.



Thank you to all the speakers for their interesting talks. The meeting ended with supper, raffle and friendly chat. **MW**

South-eastern Australia

South-eastern Australia

- 9 Species
- 5 Institutions
 - Taronga Zoo
 - Melbourne Zoo
 - Healesville Sanctuary
 - Tidbinbilla Nature Reserve
 - Amphibian Research Centre

TARONGA
CONSERVATION SOCIETY AUSTRALIA

Yellow-spotted Bell Frog
(*Litoria castanea*)

The species was thought to be extinct for 30 years until a small population was discovered in a rural creek.

A small population is being held in a quarantine facility at Taronga Zoo for the purpose of breeding and reintroduction.

Pam Tremlett and Diane King entertained us with a skit on catching Striped Marsh Frogs *Limnodynastes peroni* at night, to relocate them in a better part of their garden.

Arthur White spoke about the DPI Department of Primary Industries and the NSW Office of Environment and Heritage (OEH) discussion paper, draft codes of practice, revisions on the keeping of wildlife, commercial and not for profit backyard



FATS MEET AT THE EDUCATION CENTRE BICENTENNIAL PARK (left)

QUEENSLAND GARDEN EXPO

Remember Pobbles, our Scarlet-sided Pobblebonk mascot? He's been underground for a while so about time he made an appearance. Turns out Costa Georgiadis Official was passing by! Thanks for your time on and off camera Costa and Gardening Australia



SMITHS LAKE MARCH 2016
 Leaf tailed Gecko *Saltuarius swaini*
 Photo by Josie Styles



NEWS FROM FROGS.ORG.AU AND THE AMPHIBIAN RESEARCH CENTRE - ARC

Frogs.org.au had a film and talk night on Saturday 15 September for the Melbourne premier of a new film about frogs and frog conservation talk by Gerry Marantelli. Watch the full half hour doco here: <https://vimeo.com/275382423>



CONSERVATION Several of their projects have had a recent break waiting to see results of prior actions and to learn more about techniques that might move those projects forward. Several years of waiting has revealed an amazing success story: the Spotted Tree Frogs released to a chytrid free river have grown and are breeding – there is now have a large and growing population - reversing the extinction of this species in NSW.

Now, with the NSW government, we have found two more suitable rivers, and this season they will commence breeding for several releases over the next three years. Hopefully they will repeat the above success and will soon have several rivers in NSW full of Spotted Tree Frogs making the species more secure against the future.

SUPPORT FROGS.ORG.AU You can help with the above project or any other support here:

<https://frogs.org.au/live-foods/product/donation/>

INSECTS and the ARCADE The ARCADE was established to support the work of the ARC. It continues to support frogs.org.au with all sales helping us grow and improve our conservation work. In recent times, they have produced and sold fewer insects and raised less funds for projects as some of our projects were reduced or in hiatus. We are increasing again now to support the growing activities listed above. Please take a look and see if you can support us again with your purchases of insects: <https://frogs.org.au/live-foods/>

NEW FROG GROUP IN VICTORIA For those wanting to meet up with other local froggy people, a new Victorian frog group has just launched. Check it out here: <https://frogsvic.org/>

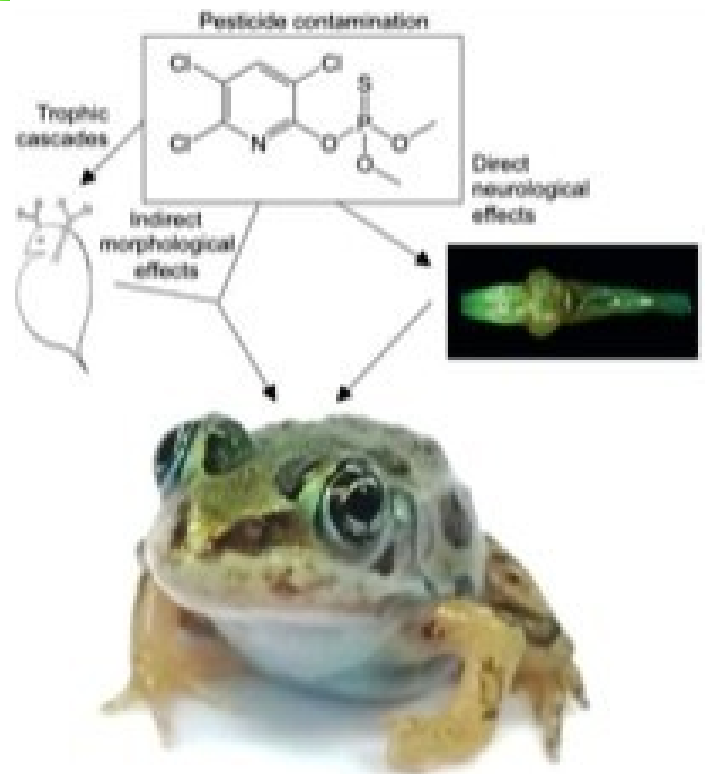
COMMON PESTICIDE INHIBITS BRAIN DEVELOPMENT IN FROGS

New research published in Environmental Toxicology & Chemistry reveals that low doses of a commonly used pesticide potentially harm the Northern Leopard frog by inhibiting their brain development.

The pesticide chlorpyrifos, which has been used since 1965 in both agricultural and non-agricultural areas, had clear effects on Northern Leopard tadpoles' neurodevelopment, even in situations where the pesticide did not cause a decline in the amphibians' food source.

"Organophosphorous pesticides contaminate surface waters throughout the U.S. exposing both animals and humans to these chemicals, often at very low, presumably innocuous levels. However, this study demonstrates that exposure to these contaminants, even at these low concentrations, impacts vertebrate neurodevelopment," said lead author Sara McClelland, of Duquesne University, in Pittsburgh.

Northern Leopard frog. Credit: Dr. McClelland



6 September 2018, phys.org

More information: Sara J. McClelland et al, Insecticide-induced changes in amphibian brains: How sublethal concentrations of chlorpyrifos directly affect neurodevelopment, Environmental Toxicology and Chemistry (2018). DOI: 10.1002/etc.4240

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CANE TOAD DNA PUZZLE FINALLY CRACKED

In just 80 years cane toads have morphed into invading machines. It's hard to love a cane toad, but this iconic pest is the face of evolutionary success in Australia.

Scientists have sequenced and assembled a draft cane toad genome for the first time. The genome will help scientists find out how the toad has evolved to be such a successful invader. The genome also contains viruses, which could be potential biocontrols. Now an international team of scientists is one step closer in working out how the rainforest toad morphed into an invasive machine in just 80 years.

They've decoded the cane toad's genome, they report in the journal **GigaScience**. The genome project, led by virologist Peter White of the University of NSW, started out as a conversation with colleagues about developing a virus to stop the toad in its tracks.

"We have few genomes of amphibians and we know very little about the viruses in them," Professor White said.

"When the DNA wasn't out there I decided to do it."

Cane toads (*Rhinella marina*), which are native to French Guiana, spread around the world as the sugar cane industry expanded.

They were introduced into Queensland in 1935 from Hawaii to control a sugar cane beetle.

Today, they are pushing through the Kimberley in the west, and slowly moving south to northern New South Wales, with the odd hitchhiker making it to Sydney and beyond.

The toads on the western front are nothing like their sedate Queensland cousins, said study co-author Rick Shine, an evolutionary biologist from the University of Sydney. Cane toads on the western line are very different to their eastern cousins. The westies have changed the way they move and are much bolder. They have longer legs and bigger heads.

"The toads in Queensland sit on their bums and don't really go anywhere from one day to the next," Professor Shine said.

"The toads on the invasion front are these long-distance athletes that go further than any amphibian has ever been recorded to in the world.

"We know that 80 years ago this was a single gene pool."

A hard case to crack While a handful of amphibian genomes have been sequenced in the past, this is the first genome from the toad (*Bufo*) family. It is not the first attempt to decode the cane toad's genome. A team of West Australian scientists had a crack at it a decade ago, Professor White said. While the WA team were able to sequence the genome — identify base pairs of nucleotides that make up DNA — they were not able to put the notoriously complex jigsaw back together, he said.

Ten years later and armed with more sophisticated technology, Professor White's team sequenced and assembled the draft genome from tissue samples taken from four female toads from the western front. These toads are the furthest from their genetic roots in French Guiana. Professor White said the draft genome is one of the best amphibian genomes to date. "We've found over 90 per cent of the genes," he said. The next step will be to work out what those genes do.



Professor Rick Shine has studied the march of cane toads across Australia. ABC News: James Purtill

"The excitement for me is not so much working out how a frog is constructed, but it's being able to look at the differences in these populations," Professor Shine said. "We have an extraordinarily powerful opportunity to look at the process of evolution." Professor Shine said analysing the genome will provide clues about how the cane toad went from being a "pretty average" rainforest toad to romp across the driest continent on Earth, and why their toxin is so deadly.

"We don't know how much of that is going to be changes in gene frequencies, or changes in regulation, or it could be epigenetics." Professor White and his team are now sequencing the genomes of toads from all stops along the sugar cane trail between Australia and French Guiana to see how much they've evolved.

Viruses may point to biocontrol Along with the genes, the team also identified two viruses embedded in the genome. Additional sequencing research on a further 16 cane toads has also identified a third virus lurking in the animal's RNA, the material that carries DNA information to the building blocks of cells.

Professor White said the discovery of toad specific viruses could lead to the development of a biocontrol.



Cane toads can have devastating impacts on native wildlife when they move into new areas. ABC: Jonathan Webb

Around 15 years ago, the CSIRO looked at whether a genetic virus could kill cane toads. "When they started using it to see if it was going to work, they found it killed the native frogs and newts as well." "If you want a biocontrol agent, you want a virus that only kills the animal you're targeting and not everything else," Professor White said. But, he said, much more work would be needed to see if the new viruses were toad specific. "Future studies would have to grow that virus and check that it can't infect related native animals," he said. Professor Shine, however, is not as comfortable with the idea of a biocontrol. "I think it would take a lot of work to convince the public, and to convince me that this was really going to be a safe route to travel.

Although the toads are extremely destructive when they move into an area, native wildlife has adapted to them much better than expected, he said, adding that programs teaching predators to avoid toads were promising. "I've actually transitioned to a much more positive view of toads," Professor Shine said. "It's not their fault. We brought them here. They kill a lot of native animals, but they do it in self-defence. "We're going to have to learn to live with the toads." **David Gray: Reuters ABC Science**

By Genelle Weule

<http://www.abc.net.au/news/science/2018-09-20/cane-toad-dna-puzzle-finally-cracked/10246864>



Cane toads on the western line are very different to their eastern cousins. Angus Emmott

<https://www.facebook.com/groups/801229443280759/>

Thanks for posting on National Frog Week Australia Facebook page David Flack

7,500 TURKISH FROGS RESCUED FROM SMUGGLERS

A delicacy often exported to European countries, frogs are a tightly regulated commodity in the country. Turkish authorities have cracked down on a massive wildlife poaching ring that was smuggling some unlikely creatures—frogs. "We just released the frogs back to nature because they were caught without permission and outside permitted hunting areas," says Hasan Huseyin Dogancay, head of the livestock agency in Gulsehir, Turkey, according to the country's state-run news Anadolu Agency. Roughly 7,500 of the common water frogs were found by agents in a routine search of a minibus passing through the region—the largest haul Dogancay says he has ever seen.

As Kareem Shaheen reports for the Guardian, the five men arrested with the frogs admitted that they had caught them in the basin of the Kizilirmak River, Turkey's longest. The men were arrested while attempting to transport the creatures to the country's southern coast where they could be sold to be shipped overseas, reports the Daily Sabah.



Frogs are not commonly found in Turkish cuisine, but in recent years the country has begun shipping large quantities of the animals to places in western Europe, such as France, where they are considered a delicacy, Worldbulletin News reported last year. However, Turkey has taken pains to control the trade, issuing licenses to certain hunters who are only allowed to collect certain species during certain times of the year, Shaheen. Yet many people attempt to circumvent the expense and restrictions by illegally poaching the creatures.

Frogs worldwide have faced dire straits in recent years from habitat loss and the specter of a deadly fungal disease that's hit species globally. Frogs in Turkey have not yet been reported to suffer from the fungus, but many amphibian species there are considered endangered due to habitat loss and hunting, herpetologists noted in a report in 2015. Frogs fill a vital ecological niche as the consumers of many insects and as a food source for larger animals.

The 7,500 poached frogs in this situation get to return to that niche. Authorities have already returned them to the wild to live out their froggy lives. **HERPDIGEST V 19 #60 10/17 asalzberg@herpdigest.org By Ben Panko, Smithsonian.com**



10 STEPS TO BUILD YOUR OWN WETLAND SAVE THE FROGS!

Amphibians are the fastest declining taxa on the planet! Nearly 1/3 of our amphibian species are listed as endangered or threatened. Habitat loss is the leading cause of amphibian decline around the world and wetlands are especially under threat. Constructing wetlands is a fantastic way to ensure that amphibians have a home in which to live and breed. Creating wetlands also helps a wide array of other wildlife species. Here are 10 steps you can take to build your own wetland for frogs and other aquatic wildlife!

1. Find Flat Ground: Survey your property for flat ground or an area with less than 6% slope. Any steeper slope will lead to an unnatural looking wetland.
2. Make sure your flat ground is also dry ground without reeds or rushes, as building on pre-existing wetlands may require special permits.
3. Choose your construction technique:

There are three ways to build a wetland: (1) utilize pre-existing ground water; (2) make use of high-clay soil to retain surface water coming from rain and runoff; or (3) use a plastic liner to hold water. Here's how to determine which technique you'll use. Dig a hole at least 3 feet deep and cover it with a board. If the next day your hole is filled with water, you'll be able to build your wetland simply by expanding the hole into a wetland -- the pre-existing groundwater will fill the hole within a few hours. If no water fills your test hole, grab a handful of soil that is underneath the topsoil and add water. Mix the soil and water until it is a moist ball, then use your thumb and index finger to squeeze out a 2" thin ribbon of soil. If it breaks before 2", there is not enough clay to use the surface water technique. You'll need to use a plastic liner. If you succeeded in making a 2" thin ribbon then you can compact the clay down, which will make the soil

impervious and enable it to fill when the next rains come.

4. Only use a plastic liner that is aquatic safe. Most plastic liners on the market are treated with pesticides, which could kill wildlife in your wetland. Only purchase a guaranteed aquatic safe liner that comes from a reputable source. Dig out a satellite shape hole in the ground and place your liner inside. Cover your liner with 15 cm of topsoil.
5. If the wetland is too large to dig by hand, hire a machine operator and contract them by the hour, not by the job. It usually costs about 3 times more to pay by the job.
6. To encourage the most plant and animal diversity using your wetland, aim for water depths around 45 to 60 cm. Any deeper may attract fish and predators of frogs.
7. To create a naturally appearing wetlands that require little to no maintenance create slow gradual slopes that are less than 10% leading into the wetland.
8. After creating the wetland, spread native seeds and weed free straw to prevent erosion and exclude invasive plants.
9. To get the best wildlife response, make a "messy" wetland. Create mounds of soil varying in depths, some that emerge out of the wetland. Place branches, logs and twigs in your wetland. Plants and wildlife will thrive in these natural conditions.
10. Get trained experts involved. Having the involvement of experience local biologists or organizations like Save The Frogs can save you time, money, and frustration, and ensure your design will be wildlife-friendly.

Learn all about wetlands and get tips for building them at www.savethefrogs.com/wetlands By **Kathlyn Franco Wetland Coordinator, Los Angeles, California**
<https://www.youtube.com/watch?v=CdRPCYtlZ9s&feature=youtu.be>



CUTE FROG TRINKET BOX



MACQUARIE MARSHES GUIDED TOURS START ON SATURDAY 15/9



Yes, they're on again this year. Weather permitting the Langley's bus will leave the Visitor Information Centre in Dubbo each Saturday, bringing you via the WOW Centre and then on to the Marshes. The tours blend a bit of cultural heritage, with environmental science and of course you'll get to see and hear why wetlands are such special places. I'll be your tour guide from Warren onwards and this year we have self-cater plus family ticket options. All the details will be on www.riversmart.org.au later today and you can book through www.123tix.com.au Dr Bill Phillips CEO RiverSmart Australia Ltd Also trading as Macquarie River Trails 0438 817 470



THESE NEWFOUND FROGS HAVE BEEN TRAPPED IN AMBER FOR 99 MILLION YEARS

Bits of bugs and plants in the ancient goo provide a glimpse of the amphibians' lives. About 99 million years ago, tiny frogs hopped through a wet, tropical forest — and an unlucky few ran afoul of some tree sap. Four newly described frog fossils, preserved in amber, offer the earliest direct evidence of ancient frogs living in a humid tropical clime — just as many modern amphibians do.

None of the frog fossils is complete, making it difficult to place the frogs within their family tree: One has a partial skull and another a froggy outline, although CT scanning revealed no remaining skeletal material inside the impression. So researchers dubbed all four fossils *Electrorana limoae* (electrum for “amber” and rana for “frog”) in a study published June 14 in *Scientific Reports*.

Anatomy-wise, the ancient frogs most resemble a modern group that includes fire-bellied toads.

The fossil record contains relatively few frogs, despite the amphibians' more than 200-million-year history. The frog fossils that do exist suggest that frogs have looked distinctly — well, froggy — for hundreds of millions of years, says study coauthor David Blackburn, an amphibian biologist at the Florida Museum of Natural History in Gainesville. “The aspects that make them diverse are not their skeletons, it's their ecologies, natural histories, reproductive modes. Things that are really hard to find in the fossil record.”



ARRESTED IN AMBER Chunks of amber contain fossils of 99-million-year-old frogs that were roughly the size of a postage stamp. One chunk (left) holds a recognizably froggy leg and body. Another specimen (right) contains a juvenile with a partial skull. LIDA XING

That's what makes the amber specimens so interesting: The chunks also contain preserved spiders, velvet worms and bamboo — all pointing to a tropical environment. Such paleoecological evidence offers scientists a rare glimpse into the life and times of tropical frogs of old. Citation L. Xing et al. The earliest direct evidence of frogs in wet tropical forests from Cretaceous Burmese amber. *Scientific Reports*. Published online June 14, 2018. doi: 10.1038/s41598-018-26848-w. BY CAROLYN GRAMLING 14 JUNE 2018 *Science News HerpDigest* Volume # 21 Issue #26 - 18/6/18

FOSTER TADPOLES TRIGGER PARENTAL INSTINCT IN POISON FROGS (extracts)

Poison frogs, especially male poison frogs, are very caring parents. After the tadpoles hatch, the males piggyback their offspring to distant pools spread around the rainforest where they can feed and develop. In a recent study, a team of researchers from Vetmeduni Vienna, the University of Vienna and Harvard University show that this parental behaviour can be triggered experimentally. When unrelated tadpoles are placed on the backs of adult frogs, male – and even female – "foster parents" make their way to pools in the forest in the same way as if they had picked up the tadpoles themselves. The experiment showed for the first time that an external stimulus can trigger complex behaviours such as parental care in amphibians. The study was published in the Journal of Experimental Biology.....

"We suspect that tactile stimuli, certain touching or movement patterns by the tadpoles, play a role. These findings are interesting, as they show how one stimulus can trigger such complex behaviour. The adult poison frogs don't just march off; the touching also stimulates memories of distant pool locations in the forest," says Pašukonis.

Also interesting was that the female frogs voluntarily carried the foster tadpoles to the pools. "In this species, females naturally transport tadpoles only in rare cases," explains Ringler. The instinctively triggered behaviour therefore does not appear to be sex-specific. Among both males and females, the physical presence to the tadpoles placed on their backs was sufficient to make the frogs transport the tadpoles to the pools and so to ensure the survival of unrelated young. The study was the first to show in the wild and among amphibians that such complex behaviour can be triggered by one external stimulus.

More info: Andrius Pašukonis et al. Induced parental care in a poison frog: a tadpole cross-fostering experiment, DOI: 10.1242/jeb.165126 Journal of Experimental Biology Provided by: University of Veterinary Medicine—Vienna Read more at: <https://phys.org/news/2017-09-foster-tadpoles-trigger-parental-instinct.html#jCp> HerpDigest Volume 19 Issue #56 – 21/9/17

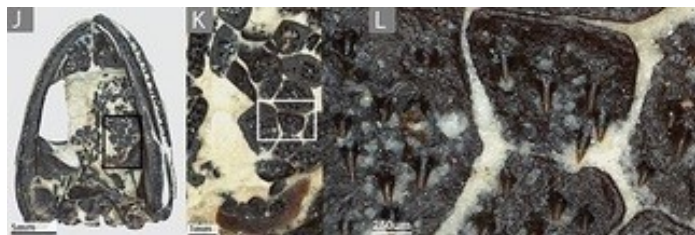
ANCIENT AMPHIBIAN HAD MOUTHFUL OF TEETH READY TO GRAB YOU (extracts)



The Early Permian dissorophid Cacops displays its fearsome dentition as it preys on the hapless reptile Captorhinus - Brian Engh

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to new research by paleontologists at the University of Toronto. In research published online in a recent issue of PeerJ, an open access journal, Robert Reisz, distinguished professor of paleontology at University of Toronto Mississauga, explains that the presence of such an extensive field of teeth provides clues to how the intriguing feeding mechanism seen in modern amphibians was also likely used by their ancient ancestors.

The researchers believe that the tooth-bearing plates “were ideally suited for holding on to prey, such as insects or smaller tetrapods, may have facilitated a method of swallowing prey items via retraction of the eyeballs into the mouth, as some amphibians do today.”.....However, in one group of tetrapods, temnospondyls (ancestors of modern amphibians), these denticles were also found on small, bony plates that filled the large soft part of the palate. The entire roof of the mouth was covered with literally thousands of these tiny teeth that they used to grab prey. Since these toothy plates were suspended in soft tissue, they are often lost or scattered during fossilization. Denticles are significantly smaller than the teeth around the margin of the mouth – on the order of dozens to a couple hundred microns in length.....



A look at the skull of a small amphibamid dissorophid called Passawioops, with the tiny palatal plates in place in the roof of the mouth, with two close-ups to the right.

...Researchers analysed specimens unearthed from the fossil-rich Dolese Brothers Limestone Quarry near Richards Spur, Okla. They were extraordinarily well preserved.....Reisz and his graduate students suggest that the next big question relates to evolutionary changes to the overall abundance of teeth: If these ancient amphibians had an astonishing number of teeth, why have most modern amphibians reduced or entirely lost their teeth? **Natural Sciences and Engineering Research Council of Canada. HERPDIGEST - V. 19 ISSUE #55 16/9/17 : University of Toronto research 20/9/2017, Phys. org**

FATS MEETINGS commence at 7 pm, (arrive from 6.30 pm) and end about 10 pm, at the Education Centre, Bicentennial Park, Sydney Olympic Park, Homebush Bay. They are usually held on the **first Friday of every EVEN month** February, April, June, August, October and December. 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.

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FATS ON FACEBOOK: FATS has about 2,500 Facebook members from almost every continent. Posts vary from husbandry, disease and frog identification enquiries, to photos and posts about pets, gardens, wild frogs, research, new discoveries, jokes and habitats from all over the world. The page includes dozens of information files.

<https://www.facebook.com/groups/FATSNSW/>

RESCUED FROGS seeking forever homes are at our meetings. Contact us in advance if you wish to adopt a frog. Cash donation (\$30 - \$50) required to cover care and feeding costs. Sorry we have no EFTPOS. FATS must sight your current amphibian licence. Licences can be obtained from NSW National Parks and Wildlife Service, Office of Environment and Heritage (below). Please join FATS before adopting a frog. This can be done on the meeting night. Most rescued frogs have not had a vet visit unless obviously ill. Please take you new, formerly wild pet to an experienced herp vet for a check-up, possible worming and/or antibiotics. Consider having annual checks for your frog. Some vets offer discounts. <http://www.environment.nsw.gov.au/wildlifelicences/GettingAnAmphibianKeepersLicence.htm>



Thank you to the committee members, FrogCall supporters, talented meeting speakers, Frog-O-Graphic competition entrants, events 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, George Madani, Jilli Streit, Karen & Arthur White, Andrew Nelson, Steve Weir, Michelle Toms, Josie Styles, Jodi Rowley, Wendy & Phillip Grimm and Marion Anstis. Have I forgotten someone?



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Smiths Lake FATS weekend field trip March 2017
Third night's frogging
Red-backed toadlet
Photo by Arthur White

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 02 9681 5308.

The October Smiths Lake field trip is booked out. Your next opportunity to go will be about Feb / March 2019.

17 November 7:45 pm

Warriewood Wetlands

Leader: Jayden Walsh

Meet in Katoa Close (off Garden Street), North Narrabeen / Warriewood

Warriewood, like many of Sydney's beach-side areas, was once covered by a broad expanse of sand-dunes and low-lying wetland areas. The dunes and wetlands long-ago succumbed to suburbia, roads and playing fields. Perhaps even more disappointingly, relatively recent developments such as shopping malls have been approved on some of the last remnants of these wetlands. Tonight we will look at Warriewood Wetlands. The local Council, realizing the importance of this last remaining wetland remnant, has undertaken extensive public works here to provide a somewhat fine educational facility. Tonight, Jayden will take us along the well-constructed boardwalks, and give us an insight into these wetland habitats. We will discuss the successes and shortcomings of this project. Jayden is an accomplished naturalist, and has a wide-ranging interest in wildlife. He has studied the ecology of the northern beaches for many years. Tonight, he will provide us with some insights into the health of the frog population here. This "boardwalk" fieldtrip is ideally suited for young families and newcomers!

1 December

8:15 pm

Castlereagh Nature Reserve

Leader: Peter Spradbrow

Meet at the Shell Service Station, Richmond Rd, Berkshire Park (opposite Windsor Downs Estate). It is between St Marys Rd and Llandilo Rd.

In the 1880's, the single largest commodity assigned to metropolitan railway freight was firewood. Around six thousand tonnes of firewood was freighted into Sydney each week to fuel factories, hospitals and homes. By 1920, firewood needed to be sourced from "as far afield as St. Marys". Sadly, firewood was only one aspect of the local timber trade, as demand for poles, sleepers and construction timber was also burgeoning. The rail freight movements of the era offer some insight into the great depletion of our local woodlands. Tonight we will look at some of the last remaining forests that are located "as far afield as St. Marys". Tonight, we will look at some of the froglife that cling on here, and we will discuss how many populations may have succumbed to the firewood trade of early Sydney. Peter has been studying this area for most of his life, and on previous fieldtrips, has turned up some remarkable species. This site is very much dependent on recent rainfall, and is often prone to cancellation due to dry weather. We persevere with this site because it is truly an astonishing site when conditions are a little favourable.

2 December 10-3 pm Australian Reptile Park Herps group BBQ ph: (02) 4340 1022 admin@reptilepark.com.au

12 January 8:15 pm

The Watagans

Leader: Grant Webster

PLEASE NOTE OUR NEW MEETING PLACE FOR THIS FIELDTRIP!

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

In S-E Australia, most streams have their source in the higher elevations of the coastal ranges. Historically, this was the preferred location for the forestry industry (forestry operations developed here because the pastoral and agricultural industry had already cleared much of the forests on the flatter, more productive coastal strip). A combination of steep slopes and high rainfall, coupled with potentially careless logging practices and logging road construction can lead to erosion and turbidity ("*ter-bid-it-tee*" –the amount of suspended sediment in water, or "*muddiness*"). This can affect vast tracts of downstream habitat, and can affect frogs many kilometres away. Tonight, we will look at The Watagans and we will consider the disparate influences of logging, terrain, rainfall, waterflows and their combined impact on our froglife.

Grant spends much of his time investigating various frog habitats. He has enlightened us at club meetings about his work into the *Pseudophryne* species and their current taxonomical complexity. Tonight, with a little luck, he might be able to show us one of his favourite species, while he updates us on his latest fieldwork results.

In the event of uncertain frogging conditions (e.g. prolonged/severe drought, hazardous and/or torrential rain, bushfires etc.), please phone 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.