

FROG CALL

THE FROG AND TADPOLE STUDY GROUP NSW Inc.

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ABN: 34 282 154 794

NEWSLETTER No. 151 OCTOBER 2017

Photo by Jodi Rowley *Litoria_barringtonensis*



Smiths Lake March 2015

*You are invited to our
FATS meeting.
Everyone is welcome.*

Arrive from 6.30 pm for a 7pm start.

Friday 6 October 2017

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

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

By car: Enter from Australia Ave at the
Bicentennial Park main entrance,
turn off to the right and drive
through the park. It is 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 6 October 2017

6.30 pm Lost frogs desperately seeking forever homes: 5 cheery Green Tree Frogs *Litoria caerulea*, 5 cheerless White-lips *Lt. infrafrenata*, 1 quiet *Lt gracilentata* and 2 chirpy *Litoria fallax* 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 frogs can never be released.

7.00 pm Welcome and announcements

7.30 pm Main speaker: Jenny O'Meara from Sydney Olympic Parklands Authority. "Managing a National Icon- Green and Golden Bell frogs at Sydney Olympic Park".

8.30 pm Frog-O-Graphic competition winners announced.

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

• Last meeting main speakers Shannon Kelleher and Emma McInerney	2
• Herpetofauna journals	3
• Emerging diseases - Perkinsea	4
• FATS on Facebook	
• Murray Littlejohn	5
• Macquarie Marshes guided tours	8
• FATS events calendar	9
• Fagan Park Galston, Hornsby Council plant give away, FATS display	
• Committee contacts and info	10
• FATS accounts	11
• Frog diversification	
• Field trips	12

FATS AGM & ORDINARY MEETING 4 AUGUST 2017

Arthur White and Marion Anstis opened the meeting and welcomed everyone. The President’s Report from the AGM will be in our December newsletter. After the Annual General Meeting everyone attending was treated to Corroboree Frog research insights from two enthusiastic and talented PhD students Emma McInerney and Shannon Keller.



Main speakers Emma McInerney, Shannon Kelleher & FATS PRESIDENT Arthur White at the August FATS meeting.

Who are we?

Emma McInerney

- PhD student at UOW
- Works with the Southern Corroboree frog
- Interested in how we can improved fitness in captivity
- Main focus is diet and nutrition



Shannon Kelleher

- PhD Candidate at the University of Wollongong
- Research Interests – Animal behaviour with a focus on reproductive behaviour to assist with endangered species conservation.
- Southern and Northern Corroboree frog



At the end of the day, we all want better neighbours and a happy neighbourhood.



Arthur White spoke about neighbourhood disputes and frogs. Sometimes backyard ponds built for frog conservation or just for the pleasure of having nature on hand, doesn’t work out as expected. Always include your neighbours in the decision to have a backyard pond. The frog pond will affect your neighbours – so be smart about this. If it is about a feuding neighbour, mediation is a better alternative than going to court. Always consider your neighbours.

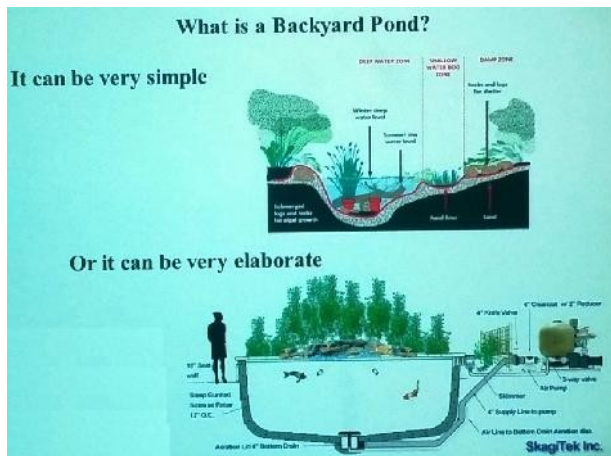


Australia’s most critically endangered vertebrate, the Southern Corroboree Frogs is in crisis, with an adult wild population of less than 250. Amphibian declines are now recognised as a major threat to global diversity. Emma McInerney spoke about the recovery program and that dietary carotenoid supplementation improved the escape response of Southern Corroboree Frogs. Shannon Kelleher talked about understanding animal breeding behaviour, reintroduction success and factors that drive female mating choices, in order to inform current breeding programs.



What makes a good Corroboree frog?: Conservation solutions for a critically endangered amphibian

SHANNON KELLEHER
EMMA MCINERNEY



Kathy Potter our gifted FATS events coordinator, spoke about help needed at our events. We have several displays in August Please contact her, see page 9 and 10.

The meeting ended with tasty supper and relaxed conversation. MW



FIELD TRIP With Josie Styles. Photos above and below by Michelle Toms. Linda Martin and children (below).



PURCHASING FUTURE HERPETOFAUNA JOURNALS

As you may be aware, *Herpetofauna* journals are usually produced twice yearly, are managed by volunteers and have had distribution delays since 2014. As a result, FATS members can no longer subscribe to *Herpetofauna* via FATS membership. The most recent journal, volume 44 Nos 1 & 2, June and December 2014 will be mailed with the FATS December 2017 FrogCall No 152, to current and former FATS members who paid for *Herpetofauna* in previous years. For members who wish to buy past or future *Herpetofaunas* from the Australasian Affiliation of Herpetological Societies (AAHS), it's best to contact Gerry Swan directly via email gerryswan@axtsystems.com rather than write to the PO Box R307 Royal Exchange Sydney NSW 2,000.

The 17 member societies of the AAHS are listed below MW

Herpetofauna is published twice yearly by the Australasian Affiliation of Herpetological Societies. The Affiliation started on an informal basis in 1974 and was formally established in 1977. It is the result of a formal agreement between member societies to participate in cooperative activities.

The Affiliation's objectives are to promote the scientific study of amphibians and reptiles and their conservation, to publish the journal *Herpetofauna*, to encourage liaison between societies at the regional level. It is not intended to be a separate society, nor is it to deplete member societies of their vital expertise and resources.

The seventeen member societies are:

ACT HERPETOLOGICAL ASSOCIATION INC.

Correspondence to:
PO Box 160, Jamison, ACT 2614

AUSTRALIAN HERPETOLOGICAL SOCIETY (INC)

Correspondence to:
PO Box R79, Royal Exchange,
Sydney, NSW 2000

CAPE YORK HERPETOLOGICAL SOCIETY

Correspondence to:
PO Box 2200
Cairns, QLD 4870

CENTRAL COAST HERPETOLOGICAL SOCIETY

Correspondence to:
PO Box 9040, Wyoming, NSW 2250

FROG AND TADPOLE STUDY GROUP OF NSW INC.

Correspondence to:
PO Box 296, Rockdale, NSW 2216

HAWKESBURY HERPETOLOGICAL SOCIETY INC.

Correspondence to:
Penrith BC, PO Box 680,
Penrith, NSW 2751

ILLAWARRA REPTILE SOCIETY INC.

Correspondence to:
PO Box 183, Albion Park, NSW 2527

MacARTHUR HERPETOLOGICAL SOCIETY INC.

Correspondence to:
PO Box 64N,
Campbelltown North, NSW 2560

NEW ZEALAND HERPETOLOGICAL SOCIETY INC.

Correspondence to:
PO Box 303140, North Harbour,
Auckland 0751, New Zealand

NORTH COAST HERPETOLOGY GROUP

Correspondence to:
PO Box 438,
Port Macquarie NSW 2444

REPTILE KEEPERS ASSOCIATION

Correspondence to:
PO Box 98, Gosford, NSW 2250

SHOALHAVEN REPTILE CLUB INC.

Correspondence to:
PO Box 6010, Kangaroo Valley, NSW 2577

SOUTH AUSTRALIAN HERPETOLOGY GROUP (INC)

Correspondence to:
c/- South Australian Museum,
North Terrace, Adelaide, SA 5000

TASMANIAN HERPETOLOGICAL SOCIETY

Correspondence to:
8 Clarke Street, Weymouth, TAS 7252

VICTORIAN ASSOCIATION OF AMATEUR HERPETOLOGISTS

Correspondence to:
8 Fellmongers Road, Breakwater, VIC 3219

VICTORIAN HERPETOLOGICAL SOCIETY INC.

Correspondence to:
PO Box 4208, Ringwood, VIC 3134

WEST AUSTRALIAN HERPETOLOGICAL SOCIETY INC.

Correspondence to:
PO Box 176, Woodvale, WA 6026

OFFICE BEARERS

Convenor Harald Ehmann
Editor Glenn Shea
Address for Correspondence PO Box R307, Royal Exchange, Sydney, NSW 2000

EMERGING DISEASE FURTHER JEOPARDIZES NORTH AMERICAN FROGS:

A deadly amphibian disease called severe *Perkinsea* infections, or SPI, is the cause of many large-scale frog die-offs in the United States, according to a new study by the U.S. Geological Survey.



**This tadpole shows signs of a severe *Perkinsea* infection.
Credit: William Barichivich, USGS**

Frogs and salamanders are currently among the most threatened groups of animals on the planet. The two most common frog diseases, chytridiomycosis and ranavirus infection, are linked to frog population declines worldwide. The new study suggests that that SPI is the third most common infectious disease of frogs. Scientists with the USGS studied 247 frog die-offs in 43 states from 1999 through 2015. The researchers found that SPI caused 21 of the mass mortalities in 10 states spanning from Alaska to Florida, all involving tadpoles. Up to 95 percent of the tadpole populations died during the SPI mortality events.

"Amphibians such as frogs are valuable because they serve as pest control by eating insects like mosquitoes, and they are food for larger predators," said Marcos Isidoro Ayza, a USGS scientist, University of Wisconsin-Madison post-doctoral fellow and the lead author of the study. "They're also exceptional indicators of ecosystem health. Like the proverbial canary in a coal mine, amphibians let us know when something in our environment is going awry."

The SPI die-offs occurred in tadpoles of 11 frog species, including the critically endangered dusky gopher frog in its only remaining breeding locations in Mississippi. Most of the SPI events occurred in states bordering the Atlantic Ocean and Gulf of Mexico. However, SPI was also detected in Alaska, Oregon and Minnesota.

"Habitat loss, habitat fragmentation and disease are among the factors that contribute to amphibian declines," said Jonathan Sleeman, director of the USGS National Wildlife Health Center. "This study indicates that SPI is an additional disease that can further threaten vulnerable frog populations."

SPI is caused by a tiny one-celled parasitic organism called a protist. The SPI-causing protist, called *Perkinsea*, is highly resistant to disinfection agents such as common bleach. As a result, it is difficult to prevent the spread of *Perkinsea*, and SPI is able to reoccur at known locations. "SPI in frogs may be under-diagnosed because it is not a disease for which they are typically screened," Isidoro Ayza said. "Incorporating routine screening of critical habitats for infected frogs is crucial to help understand the distribution of this destructive disease."

The disease kills tadpoles by causing multi-organ failure, and there is no cure or treatment for SPI at this time. SPI is not known to affect humans or pets.

Story provided by US Geological Survey. Journal Reference: Marcos Isidoro-Ayza, Jeffrey M. Lorch, Daniel A. Grear, Megan Winzeler, Daniel L. Calhoun, William J.

Barichivich. Pathogenic lineage of *Perkinsea* associated with mass mortality of frogs across the United States. *Scientific Reports*, 2017; 7 (1) DOI: 10.1038/s41598-017-10456-1 19 September 2017 Forwarded to FATS by Fred Parker and Marion Anstis <https://www.sciencedaily.com/releases/2017/09/170919160206.htm>

FATS ON FACEBOOK

FATS has 2,160 members on Facebook. With almost equal proportions of women and men. Numbers are spread fairly evenly from the late teens to people 65+. The highest proportion being the 25 to 34 age bracket with 15% of the group. 1.5 K are active members on the page with around 1,000 posts or comments in the last month. 1,651 reside in Australia. The next 4 highest numbers coming from USA, Bangladesh, India and Colombia. 347 live in Sydney with Brisbane being the next highest group in size. Requests to join are vetted carefully for spammers, trolls and those who appear to have absolutely no interest in nature. Most of the time they are easy to spot. We almost never have any bad behaviour on the page, as far as I am aware.

FATS receive quite a few frog identification enquiries, requests for advice and many lovely photos, research articles and stories.

Here is a recent FATS Facebook photo from Cathy Sedgwick (below).



Several of our experienced members regularly chip in to help with enquiries. **MW**

MEET FROG RECORDING PIONEER MURRAY LITTLEJOHN: A MAN WHO HEARD MUSIC IN AMPHIBIOUS MURMURS



Murray Littlejohn is known in some circles as the grandfather of frog recordings. (ABC RN: Ann Jones)

One evening in 1953, in a room at the University of Western Australia, Murray Littlejohn heard the words that would inform the path of his career. "These noises that the frogs are making — we think they're quite important," Bert Main, a legendary naturalist and academic from the university, said to him. It was just a kernel of an idea: perhaps frog calls had meaning. But that was all it took to set Associate Professor Littlejohn on a path to becoming the "doyen of Australian evolutionary biology", and the "grandfather of frog recordings". Finding a method



Murray Littlejohn's career in recording frog calls began in the 1950s. (Supplied: Murray Littlejohn)

Sitting in his retirement home in 2017, Professor Littlejohn explains the first hurdle he and his mentor needed to overcome was finding a way to properly document the frog calls. Professor Main was able to arrange with the ABC outside broadcasting unit — which in 1953 was a huge van — to travel out under his direction to a place where the frogs were calling and make a recording there. But the human ear wasn't enough. The scientists needed a way to measure the sounds — so they called in another favour.

"Another contact at the CSIR [now CSIRO] — a man called [Roy] Muncey, who was in building acoustics, took some of this recording and processed it through a cathode-ray oscilloscope," Professor Littlejohn says. Their contact then described how they could take measurements from what scientists now call the waveform of a frog call.

The oscilloscope had a small screen, however there was no way to record the squiggly line it produced. So a continuous recording camera was lined up to the oscilloscope to film it, and then the 35 millimetre strip of film was processed.



The ABC outside broadcasting unit took Murray Littlejohn and Bert Main out to make their first recordings in 1954. (ABC Archives)

Only after all of that could the sounds be measured in a scientific way, with the oscilloscope showing the volume and frequency of vibrations sent out by an individual frog.



Hear Off Track's two-part story on Murray Littlejohn and his frog research.

"We knew then, when my work started in 1954, that we had a method that could be used," Professor Littlejohn says. However, they needed their own more portable recorder. Luckily, one of Professor Littlejohn's friends was interested in movie photography, and had read a magazine article on building your own sound recording device. So Professor Littlejohn employed a local dentist with a precision machining hobby to build the recorder from the schematics in the article. It was based off a gramophone mechanism, and recorded onto tape. The mechanism was weighed down by lead weights so that it spun at the correct speed — and in the end, the whole thing weighed about 17 kilograms.



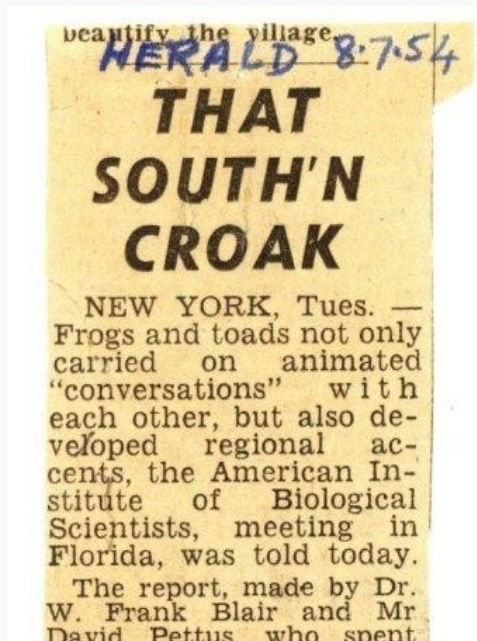
Early recording efforts required a lot of preparation and equipment. (several photos: Murray Littlejohn)

"It was only portable in the sense that it wasn't powered by mains power," Professor Littlejohn says. The recorder was loaded into a car, and the young Professor Littlejohn travelled out into the cold evenings of south-west Western Australia with Professor Main as his supervisor. The starting point of Australian bio-acoustic studies



A cathode-ray oscilloscope was used to take measurements from the waveform of their recordings.

On these trips, the operator of the heavy recorder stayed in the car and Professor Littlejohn went out with a microphone attached to a 50-metre cord in search of calling frogs. His very first recording was of a Western Australia moaning frog. The results were breathtaking.



Murray Littlejohn found a kindred spirit in the US after reading about Texan frogs singing with an accent.

Professor Littlejohn and his colleagues were able to use these recordings, and the oscilloscope, to show each species of frog had a call that was absolutely measurable and was of scientific use. Some of Professor Littlejohn and Professor Main's early recordings of the Heleioporus complex of frogs, from the southern part of Western Australia, were used to classify new species, including the whooping frog and the hooting frog. This was one of the starting points of Australian bio-acoustic studies.

"Some people were working [on this] in other countries in different ways — perhaps studying bird calls for example," he says. "We didn't know much about that, because the publications were very scarce, and the tyranny of distance operated." But after reading a press clipping about Texan frogs singing with an accent, Professor Littlejohn became acquainted with a "kindred spirit" in the United States — Professor Frank Blair.

He then spent time studying the frogs of the US, hoping to bring more cryptic species into the taxonomic light with the aid of recording technology.

Returning to Australia Professor Littlejohn returned to Australia in the 1960s to take up a post at the University of Melbourne, where he would remain for the rest of his career, recording the frogs of Victoria.

His late wife Patsy, an accomplished scientist in her own right, often acted as an operator for the largely after-hours pursuit of frog recording. You can hear her voice in the distance in some recordings.



Patsy Littlejohn was an accomplished scientist and dedicated much of her time to recording the frogs.

In others, you can hear colleagues and students — often having the time of their lives — as they capture the sound of evolution in process. As his career progressed, Professor Littlejohn updated his recording apparatus, moving from various reel-to-reel recorders on to tapes, mini discs and then eventually to digital.

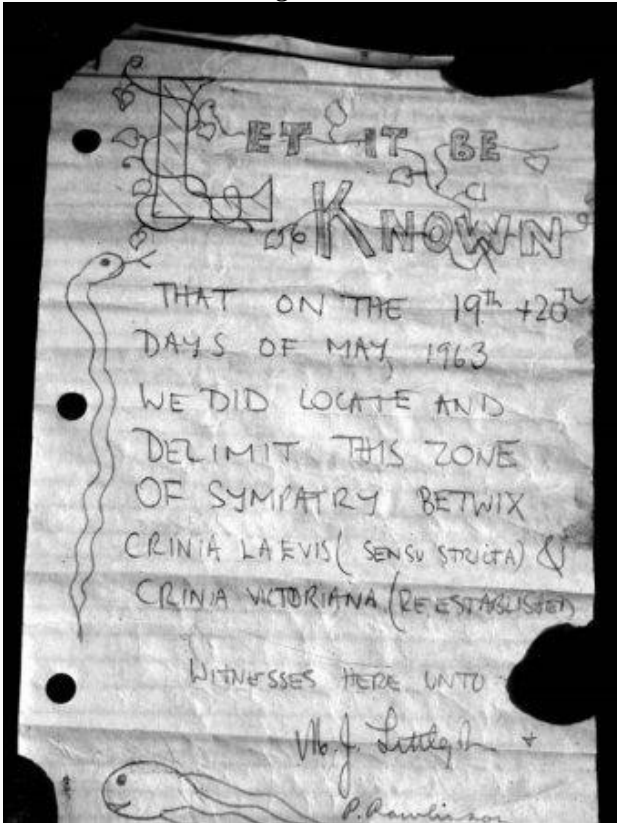
At the same time, his studies became more and more complex, looking into the zones of contact between species that are very similar and the hybridisation that occurs between them.

Go to <http://www.abc.net.au/news/2017-08-29/meet-frog-recording-pioneer-murray-littlejohn/8827066> to hear sound recordings.



Recordings of the Victorian smooth froglet's bi-phasic call were used to find out which part females were attracted to.

Focusing on a smaller number of species, including the Victorian smooth froglet (*Geocrinia victoriana*), this modern-day Dr Doolittle even sought to understand, in part at least, what frogs were trying to say. Sometimes called the eastern smooth froglet, the male Victorian smooth froglet likes to position himself in a tuft of grass and call out for love.



Scientists left messages in a buried bottle to update others on their progress at one field site in western Victoria.

"The call has two distinct parts to it," Professor Littlejohn says. "We thought that's interesting ... it's got a bi-phasic calls and it's quite well marked in its two parts. Why would it be doing that? "So in the pre-digital days, we took a recording and snipped it up and we put the 'wark' and made a loop of that. And the 'pip pip pip pips' and made a loop of that." The team then set up two loud speakers in the field and played the 'wark' from one speaker, and the 'pip pip pips' from the other. "We released a female of the same species to see which way she would go, and she was attracted to the 'pip pip pip' part of it, not the 'wark' part of it," Professor Littlejohn says.

The scientists then tested this on a male frog.

They found the 'pips' in the call excited the male, which increased its own "pipping rate" in response.

And in response to the "warks", the frog would stop calling and "answer back" with more "warks".



Murray Littlegood spent part of his career studying the call of the Victorian smooth froglet.

"So we determined in that way that this first part of the signal had a territorial function directed at other males," Professor Littlejohn says.

Weird frog mating calls



Learn more about six Australian cold weather frogs and their unusual mating calls.

You could say that one part of the call says, "I'm a male, come and get me" to females, and the other says "I'm a male, come at me bro" to other males.



Professor Littlejohn worked in the field recording and analysing frog choruses right up until the year 2003, has been honoured in Australia and internationally for his work — he even has two species of Australian amphibians named after him. But perhaps the most charming part of his legacy is the glorious recordings of Australian frogs from those cold nights in south-west WA at Sheepwash Creek in 1954. Now, retired and aged 85, listening back to them on his computer from his retirement home, he smiles. "It's frog music, isn't it?" he says. **By Ann Jones for Off Track 30 Aug 2017 forwarded to FATS by Steve Weir <http://www.abc.net.au/news/2017-08-29/meet-frog-recording-pioneer-murray-littlejohn/8827066>**

MACQUARIE MARSHES Guided Tours

See this world-famous wetland ecosystem - the Kakadu of the South - and learn about its wildlife, ecology and heritage

To find out more:
Call: 1800 748 379
Email: macmarshstours@gmail.com
www.riversmart.org.au

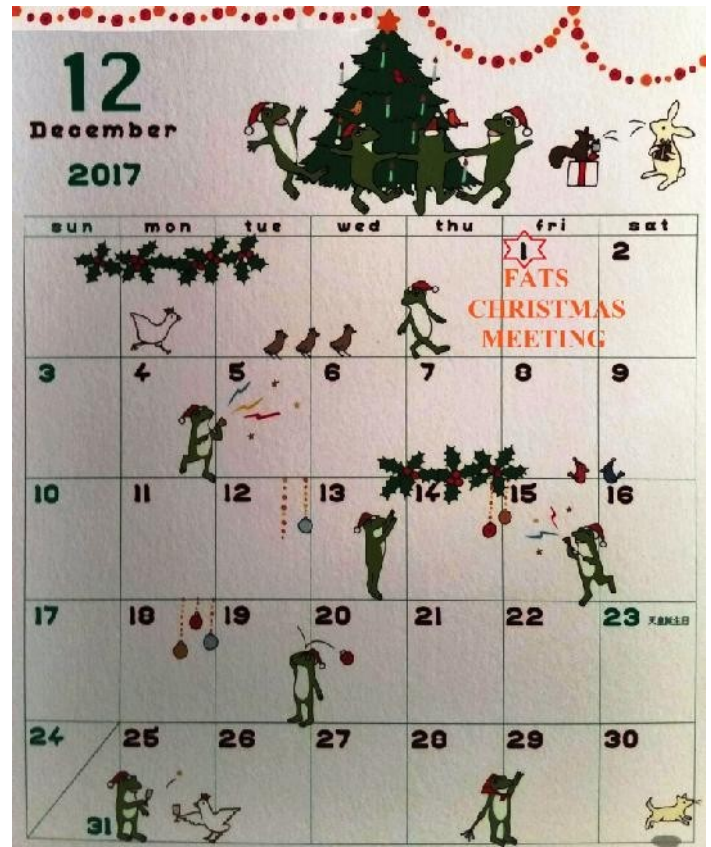
Fully catered day trips from Dubbo or Warren's Window on the Wetlands Centre


MACQUARIE MARSH TOURS

Your chance to see the iconic, World-renowned Macquarie Marshes on a one-day guided tour. Tours leaving from Dubbo or Warren's Window on the Wetlands Centre starting in late September 2017. This is an initiative of Macquarie Valley Trails (www.rivertrails.com.au) run by the not-for-profit organisation Macquarie RiverSmart, in partnership with Langley's Coaches and the Warren Macquarie Local Aboriginal Land Council. At the WOW Centre you'll enjoy a break and a tea or coffee at the Kookaburra Kiosk, where you'll meet your tour guide (Dr Bill Phillips – see below) and have the chance to browse the education signage about the region, its history, wildlife, climate, agriculture, and most importantly the Macquarie Marshes.

The first tour last Thursday (below) was well received.



The tour will then depart for the Marshes (at approx 8.45 am), travelling just over 100 kms to Gibson's Way. Along the way we'll tell you about the early explorers, the Indigenous people of the Marshes, the Macquarie River valley and spot some wildlife. Then, depending on road and weather conditions, we'll take you to two or three sites (we have several options to choose from) and show you the Macquarie Marshes as few people have seen them before! Lunch, provided by us, will be taken at a shady spot near the wetland. We will aim to start the journey home at 2.30pm to be back in Warren by 4pm and Dubbo by 5.30pm.

About your tour guide Dr Bill Phillips, the CEO of RiverSmart, has had a long association with rivers and wetlands starting back in his youth living along the Murray River. Professionally Bill has worked in the Federal Environment Department, as second-in-charge of the international Wetlands Convention (Ramsar), as a freelance consultant and more recently was instrumental in establishing the not-for-profit organisation RiverSmart, which now operates the Window on the Wetlands Centre in Warren - one of the gateways to the Macquarie Marshes. **Costs** If departing from Dubbo, Narromine or Trangie - \$115 (GST incl). If departing from Warren - \$95 (GST incl).

When are tours available? From Warren - tours will operate from the WOW Centre in Warren every Thursday departing at 8.00 am (starting on 21st September) through until late November. Tours will be offered more frequently if there is sufficient demand. Private groups should contact us to make special arrangements. From Dubbo - tours will operate (weather permitting) each Saturday starting on 23rd September through until late November. <http://www.riversmart.org.au/>

2017 FROG EVENTS

10 October 2017

7 pm **30 September** Castlereagh Nature Reserve FATS field trip Leader: Peter Spradbrow

sun	mon	tue	wed	thu	fri	sat
1	2	3	4	5	6	7
					FATS meeting 7pm Friday 6/10 Education Centre Bicentennial Park Sydney Olympic Park	
8	9 休みの日	10	11	12	13	14
15	16	17	18	19	20	21
					FATS field trip 7 pm 21 October Darkes Forest Leader: Josie Styles	
22	23	24	25	26	27	28
						NOVEMBER: Check http://macarthurreptiles.com.au/ for date Arthur White is talking again at Macarthur Herpetological Society meeting.
29	30	31				
						NOVEMBER: Check https://www.northernbeaches.nsw.gov.au/things-to-do/whats-on/night-walk-manly-dam-0 (bookings required)
						3 - 5 NOVEMBER Smiths Lake FATS field trip

David, Kathy and Harriet Potter FATS ambassadors at the Hornsby Council plant give away Fagan Park Galston 23 September 2017 (photo below left) The Perons Frog call could be clearly heard, thanks to the professional amplification equipment under the FATS table! Our display was very popular with Council and the steady stream of visitors.

The Perons sign below was a nice touch by Council! There is a short video of the display on FATS Facebook page. Also see Page 10.

FATS are at a variety of public events during the year. They are well attended and fun. We can always use help for even just an hour. Most people want to tell you about their frog experiences. There are experts about to help answer any tricky questions. MW



FATS EDUCATION CENTRE



THE PUBLIC, MUSEUMS & COUNCILS LOVE FATS. THANKS TO EVENTS COORDINATOR KATHY POTTER, DAVID, HARRIET SARAH AND RYAN



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. See page 8. 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 stalls at local events, produce the newsletter FROGCALL and FROGFACTS information sheets. FATS attend many community fairs and shows. Please contact 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 Frog and Tadpole Study Group Committee, unless expressly so stated.

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FATS ON FACEBOOK: FATS has over 2,160 Facebook members from almost every continent. Posts vary from husbandry 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 are seeking forever homes are at our meetings. Please contact us in advance if you wish to adopt a frog. Cash donation required to cover care 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. <http://www.environment.nsw.gov.au/wildlifelicences/GettingAnAmphibianKeepersLicence.htm> We request you 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 pets. Some vets offer discounts.



Thank you to the committee members, FrogCall supporters, 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 is greatly appreciated. Special thanks to newsletter contributors, Robert Wall, George Madani, Jilli Streit, Karen & Arthur White, Andrew Nelson, Michelle Toms, Josie Styles, Jodi Rowley, Wendy & Phillip Grimm and Marion Anstis.



FROGWATCH HELPLINE 0419 249 728

FATS COMMITTEE CONTACTS

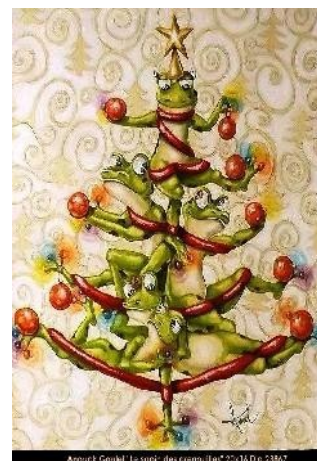
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DON'T MISS OUR FATS CHRISTMAS MEETING 1/12/2017 & the financial members only, (9th) collector's, limited edition, colour glossy FrogCall magazine No 152

Punia Jeffery & Karen White at Fagan Park, Galston. Hornsby Council plant give away event, FATS display 23 September 2017.



Frog & Tadpole Study Group

Statement of Assets & Liabilities as at 30/06/2017

Current Assets

Cash at Bank	\$12383.09
Term Deposits	\$37114.65
Total Non-Current Assets	NIL
Total Assets	\$49497.74

Total Liabilities

Total Liabilities	NIL
NET ASSETS	\$49497.74

Statement of Income & Expenditure as at 30/6/2017

Income

Donations	\$ 743.15
Surveys	\$ 2000.00
Membership fees	\$ 4860.00
Sales Income	\$ 1065.35
Interest	\$ 609.75
Fundraising	\$ 735.00
Workshop Income	\$ 4522.00
Field Trip Income	\$ 1745.00
Rescue Frog Donations	\$ 340.00
Total Income	\$ 16620.25

Expenditures

Bank Charges	\$ 1.00
Dept of Fair Trading	\$ 54.00
Insurance	\$ 345.00
Printing	\$ 2599.40
Postage	\$ 660.00
Post Box/Field Station Hire	\$ 1843.20
Photographic Competition Expenses	\$ 795.60
Subscriptions (NCC)	\$ 220.00
Sundry Expenses	\$ 2537.76
Sales Expenditure - T Shirts /Books	\$ 660.70
Live Food for Rescue Frogs	\$ 1545.00
Donations	\$ 300.00
Student Grant	\$ 850.00
Total Expenditure	\$12411.66
Operation Profit for Year	\$ 4208.59

FROG DIVERSIFICATION MORE RECENT THAN PREVIOUSLY THOUGHT

Specimens of *Liobatrachus zhaoi*, the earliest modern frog, from the Yixian formation in China. Photograph: Dong L, Roček Z, Wang Y, Jones MEH (2013) Anurans from the Lower Cretaceous Jehol Group of Western Liaoning, China. PLOS ONE



The limited variation in the body plan of frogs over time and space has made it difficult to reconstruct the evolutionary history and lineages of frogs. A study by Yan-Lie Feng and colleagues from Sun Yat-Sen University, Guangzhou, China has used an extensive molecular dataset including 95 different genes from 156 species of frogs, resulting in the best timescale of frog evolution now available.

This new analysis indicates that the major frog groups are younger than previously thought. The last common ancestor of all living frogs (crown-group Anura) is estimated to have lived during the Upper Triassic (210 Mya). This is in contrast to previous studies that placed the last common ancestor much further back in time at around 250 Mya.

Diversification events in frogs coincide with break-ups of major prehistoric landmasses. The first split within Anura is that between the Neobatrachia and other anurans. This split occurred at around 180 Mya (Middle Jurassic), at the time of the breakup of Pangaea into the two supercontinents Laurasia (northern hemisphere) and Gondwana (southern hemisphere). A second break up occurred at around 135 Mya, when two major lineages of Neobatrachia split into Proceola, containing the superfamily Hyloidea, and Diplasiocoela including the Ranoidea. This split coincides with the separation of South America and Africa and the spreading of the South Atlantic Ocean sea floor in the Early Cretaceous.

Interestingly, three major lineages of frogs, the Hyloidea, Microhylidae and Natatanura, have a near-synchronous origin at 66 Mya. That estimate overlaps with the Cretaceous -Tertiary (K/T) mass extinction, when two-thirds of life on earth, including the non-avian dinosaurs, marine reptiles and pterosaurs, went extinct.

Although there is little fossil evidence to show how the K/T mass extinction impacted frogs, it is not unlikely that a number of frog species went the way of the dinosaurs. However, when researchers looked at the rate at which species originated during that time period, the analysis indicated that 88% of current frog species originated in a relatively short time period after the K/T mass extinction. Mass extinctions leave behind a wasteland of empty ecological real estate, which explains why they are often followed by periods of rapid adaptive radiation and speciation.

The demise of non-avian dinosaurs and many other groups at the end of the Cretaceous triggered explosive radiations of mammals and birds. This new study on frogs suggests that the increase in forest habitats after the massive loss of vegetation at the K/T boundary may have played a major role in enabling adaptive radiations for arboreal taxa. Truly arboreal species of frogs are limited to groups that originated after the K/T boundary, demonstrating how mass extinctions in the past have shaped the current diversity of frogs.

Edited by Alan Lane from
https://www.theguardian.com/world/2017/aug/02/jump-for-joy-researchers-make-huge-leap-in-understanding-frog-evolution?CMP=tw_t_a-science_b-gdnscience

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.*

7 pm 30 September

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 scientific literature, there are often references to “*anthropogenic*” change. “*Anthropogenic*” simply means “man-made” or “man-induced”. The types of *anthropogenic* disturbance are very broad. It includes obvious things like land-clearing, urbanisation, agriculture and logging. It also includes more subtle things like altered water tables, altered fire regimes and the impact of feral animals. Importantly, students should remember that anthropogenic change may be difficult to identify. Climate change may be the result of natural events or be *anthropogenic* (or a combination of both). Landscapes may have been altered in deep history by early man, and these impacts are often difficult to identify. What appears to be a native grassland may, in essence, be an *anthropogenic* grassland. Tonight, we will visit the Castlereagh site and look for some of the signs of *anthropogenic* disturbance. Peter will discuss how these changes may have favoured some frog species while disadvantaging other species. Peter has been monitoring these sites for most of his life. Over that time, he has acquired a wealth of knowledge of the frog and reptile populations in this region. Tonight, he will talk about the changes that have occurred at these sites while “under his watch”.

7 pm 21 October

Darkes Forest

Leader: Josie Styles

Take the Princes Hwy south (not the free-way), then take the Darkes Forest Rd turn-off. Meet 200m from the corner.

Ecologists often speak of the importance of landscape *connectivity*. This really refers to the ability of animals to move among separated patches of habitat. The concept of *connectivity* may apply to continents, which may be connected and disconnected with changing sea levels. It may apply to valleys separated by insurmountable mountains. More locally, it refers to the movement of species across the immediate landscape. Often, valuable pieces of habitat become isolated by farmlands or urbanisation or major highways. Often, it is our creeks and rivers that provide a critical lifeline along which our native fauna can move and survive.

Josie works as a Biodiversity Specialist for the Roads and Maritime Service. She provides advice on the environmental impacts of major roads and develops mitigation measures to lessen the impact of those roads. Tonight, she will explain some of the crucial functions that a typical creek system provides. She will also discuss some of the measures that are taken when “*connectivity*” is threatened by major construction projects.

3 – 5 November

Smiths Lake Campout

Leaders: Karen and Arthur White

Historically, when an animal was first discovered and collected, it was sent off to the authorities, usually the museum, and the specimen was formally “*described*”. It was then preserved & stored with accompanying notes (usually the date, location and by whom it was collected). This became known as the “*Type specimen*” (the “*Holotype*”, or often simply referred to as the “*Type*”). It also became a very important reference for future researchers. Today, many scientific articles will refer to the “*Type*” or the “*Type locality*” (i.e. the place where it was found). This weekend, we will look at why museum specimens are not merely items of antiquated curiosity but are critical to modern day research. Arthur has formally described a new species of frog and is perfectly placed to discuss the often tortuous path of introducing a new species to science.

Karen and Arthur have together studied the Smiths Lake area for many years and have acquired an unsurpassed knowledge of the local area. Comfortable cabins and camping sites are available. There is a commercial kitchen with ample refrigerator facilities. All crockery, cutlery and kitchen utensils are supplied. Hot showers. There is a **non-refundable** fee of \$17.50 p.p. per night. Phone Arthur and Karen on ph. 9599-1161 for bookings and further details. A limit of thirty people applies.

3 December **The Australian Reptile Park** will generously hold a Herp groups BBQ. Please contact them to find out what FATS membership evidence (membership card?) you need to bring for free entry. <http://reptilepark.com.au/reception@reptilepark.com.au>

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.