

FROG CALL

No 158, December 2018



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MEETING FORMAT

Friday 7th December 2018

6.30 pm: Lost frogs: 2 Green Tree Frogs *Litoria caerulea*, seeking forever homes. 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.

7.45 pm: The main speaker is John Cann, talking about turtles.

8.30 pm: Frog-O-Graphic Competition Prizes Awarded.

8.45 pm: Show us your frog images, tell us about your frogging trips or experiences. Guessing competition, continue with frog adoptions, Christmas supper and a chance to relax and chat with frog experts.

Thanks to all speakers for an enjoyable year of meetings, and all entrants in the Frog-O-Graphic Competition.

Email monicawangmann@gmail.com to send an article for FrogCall.

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President's Page

Arthur White

2017–2018 was another strong year for FATS. FATS is one of the few conservation groups that is managing to maintain its membership numbers and still be active in the community. Other societies have seen numbers fall mainly because the general public seems to prefer to look up information on the web and not to attend meetings or seek information firsthand. It is getting harder for FATS to get people to be active in frog conservation but we will continue to do so for as long as we can.

Last year we made the decision to start sending out four issues of FrogCall per year electronically. This saves FATS a lot of postage fees. Our members have informed us that when FrogCall arrives as an email attachment it is often not read, or simply ignored. So from January 2019 onwards we will go back to all hard copy mail outs (unless specifically directed otherwise), four issues will be smaller while the December issue will remain a collector's edition.

FATS was the major advisor to OEHL in discussions about the revision of the licensing and keeping standards for frogs in NSW. These revisions have been mainly accepted but the changes to the ACT will not happen until the end of the year. I particularly thank Marion Anstis and Marie Callens for also giving up their time and assisting with this project. FATS has also had to make some further changes to its activities because of legislative changes. We now have to have Animal Care and Ethics approvals for all of our activities with live animals including field trips. I thank Robert Wall for his help in dealing with the government departments to help us get our ACEC approvals. On a similar matter, FATS is also required to be licenced for displaying animals at community days, fairs, schools or other public events. I thank David and Kathy Potter enormously for their willingness to plough through the endless paperwork and requirements in order for us to put in our application for licensing.

FATS remains financially strong, thanks to our long-standing Treasurer Karen White. Because we are so sound, we offered and awarded four student research grants this year. Our Minutes Secretary Wendy Grimm is unable to stand for this position. Wendy has done the job for FATS for a number of years and this has helped us greatly. We wish her well with her studies.

FATS again held a number of community activities this year including various garden clubs and frog activities at regular venues such as the Willoughby Fauna Fair, Ku-ring-gai Wildflower Centre, Centennial Park, Mt Tomah and Mt Anan Botanical Gardens and Narrabeen Wetlands, as well as being at the Easter Show. We also participated in Science in the City at the Museum during Science Week. Great thanks are given to Kathy and David Potter for organising most of these events and extra thanks to the rest of the family for helping out at these events. FATS also undertook the annual Bell frog auditory surveys at Sydney Olympic Park in November and December. Thanks to SOPA for supporting FATS.

Monica Wangmann, our editor, has been busy as always, putting out FrogCall, our flagship publication. It is a great credit to her and a wonderful means of getting frog news around. Our ten special December colour editions produced by Marion Anstis are keenly sought by non-members and will continue to be published in colour for as long as we can afford it. We are also seeking to get all of the editions of FrogCall digitised so that there is a lasting record of these publications. Robert Wall organised a great series of field trips that are always well attended. They are a great way to become familiar with frogs. But make sure that you get your name down on the attendance sheet as quick as you can after the trips are announced or else you could miss out.

Many thanks to our other executive members: Wendy and Phillip Grimm, Marion Anstis, Andre Rank, Lothar Voigt, Punia Jeffery, Vicki Deluca, Robert Wall, Jilli Streit (who has now taken over the job of Minutes secretary) and Natalia Sabatino. Each has contributed whole-heartedly and helped keep FATS alive and well. Very special thanks to Phillip Grimm: website, membership and Facebook.

Of course, I would like to thank all of our members for making FATS such a great group to be in. People who are friendly and helpful really make it a pleasure to run an organisation like FATS.

Who Frogged First?

An overview of the discovery of frogs in Australia

Arthur White

In the Dreamtime

It is now well accepted that Aboriginal people were in Australia 63,000 years ago and probably first entered the continent only a few thousand years before this. They would have been the first people to encounter Australian frogs and other animals. Although frogs are small and often secretive, aboriginal people recognised, revered and made use of frogs. They were the first to discover and identify many Australian Frogs.

How were frogs used?

Frogs became important aids in identifying useful water areas and as heralders of changes in the weather. Frogs are singers and can be heard welcoming the rain in advance of its arrival. Some frogs can be eaten, although they only provide a small meal. George Grey led an expedition to north-western Australia and in 1841 described how Aboriginal women collected frogs in all seasons (especially when the swamps were nearly dry), by using long sticks or 'their arms which they plunge up to the shoulder in the slime'. He had often seen them with 'ten or twelve pounds weight of frogs in their bags'. Moore (1884) recorded that the eggs of frogs most prized by natives were dug from the ground; these may have been the eggs of *Heleioporus eyrei*.

Frogs were known to be able to store water – a useful talent in time of severe drought. Desert tribes often had to resort to digging up burrowing frogs and squeezing the precious water from the frogs to drink. Many aboriginal tribes believe that frogs can purify water. When the frog is not present or doesn't purify the water, it becomes muddy and silty and often unfit to drink.

Several dreamtime stories of frogs are retold by tribes throughout Australia. The best-known stories include "Tiddilick" (gurukmun), a large desert frog who stole all of the water from central Australia and created the dry inland lakes. The legend of "The Lyrebird and the Frog" tells of the frogs' ability to transform and become a different creature. Frogs are also depicted in aboriginal art, as shown here:



Fig. 1: Emu and Frog rock art. Image: A. White

EUROPEAN HISTORY OF DISCOVERY

The earliest descriptions of Australian frogs were based on material collected opportunistically or on illustrations, by early travellers. The first species to be described was *Rana caerulea* (White, 1790 (Figure 2), now *Litoria caerulea*). The type specimen was included in the collec-



Fig. 2: 1790 painting by John White of a Green Tree Frog, *Rana caerulea*. Image: A. White.

tions of Joseph Banks, and was destroyed when the Hunterian Museum at the Royal College of Surgeons in London was hit by a bomb during World War II. Understandably, early collections were all sent to Europe and emanated principally from the early settlements at Botany Bay and Port Essington. Early type localities commonly are imprecise, for example, 'New Holland' and 'Van Diemen's Land'.

Early settlers and naturalists had little interest in frogs. They were considered to be lowly animals not worthy of time or effort. In addition they preserved specimens poorly and their biology was unknown. The calls of many Australian frogs were mistaken for demons in the night.

In 1795, Shaw depicted an Australian frog and described it as "the animal certainly cannot be numbered amongst the most beautiful of its genus; it is a species, however, that has never before been described and is more peculiar from the circumstance of its being a native of the distal region of New Holland, which has added so many zoological treasures to the cabinets of natural history. Its rarity must therefore apologise for its deformity."

The French Arrive

Spain, France, Holland, Britain, Germany and Portugal were all in search of new colonies. The French sought out Australia, mainly because the British had shown some interest in the Great Southern Continent, and the French did not want them to establish a southern military base there.

Louis-Antoine comte de Bougainville sailed around the world between 1766–1769. The sea-farers passed the north of Australia, finding New Guinea and the Indonesian archipelago but missed Australia.

Jean François de Galaup, comte de Lapérouse sailed for the Pacific between 1785–1788 and entered Botany Bay while the First Fleet was still anchored there. The French stayed only a short while but noted the native people and various plants and animals, with no specific



Fig. 3: Francois Péron. Image: Museum histoire naturelle, Paris.

mention of frogs. Nicolas Thomas Baudin's voyage to Australia and the South Sea in 1800–1803 was a different matter. Aboard was naturalist Francois Péron who collected extensively in eastern Australia. He was accompanied by Charles Alexandre Lesueur. Together they began the first collection of Australian frogs.

Shortly afterwards in 1819, Louis-Claude Desaulces de Freycinet visited Australia and again frogs were collected. In 1824, Louis-Isadore Duperry also reached Australian shores and again collected the fauna. The frogs collected were destined for the Museum Histoire Naturelle in Paris.

Péron was aboard Baudin's expedition for the South Seas. As the result of many deaths and even desertions by the crew, by the time Baudin reached the Western Australian coast, Péron was the only remaining zoologist alive. Working in co-operation with the artist Le Sueur, his devoted friend, he and his helpers collected 100,000 specimens of animal life. However, his early death prevented him from classifying all of his great collection. After he died, several Australian frogs and reptiles have

been named in their honour: *Litoria peronii*, *Limnodynastes peronii*, *Carlia peronii*, *Hemiergis peronii*, *Acalyptophis peronii*, *Lissodeplphis peronii*, *Litoria lesueuri*.

Duméril and Bibron (Figures 4 and 5)

Gabriel Bibron (1805–1848) was a zoologist and herpetologist. Curator Museum Histoire Naturelle in Paris for many years. He worked together with André Marie Constant Duméril (1774–1860), whom he first met in 1832. Together they described thousands of specimens collected by the French naturalists from around the world. Several frog, reptiles and fish species have been named after them:



Fig. 4: André Marie Constant Duméril. Image: Museum histoire naturelle, Paris.



Fig. 5: Gabriel Bibron. Museum histoire naturelle, Paris.

Pseudophryne bibroni, *Calliophis bibroni*, *Candoia bibroni*, *Limnodynastes dumerilii*, *Platynereis dumerilii*, *Cantherhines dumerilii*, *Trigonorrhina dumerilii*, *Micrurus dumerilii*.

The Mystery of the Blue Frog

Frog species collected in New Holland were preserved in alcohol and shipped back to Europe for description and identification. Often the preserving process created problems as deformation and colour shifts occurred when the animals were pickled for a long time. Perhaps the most famous example of this change is the case of the mysterious 'Blue frog' from New Holland. Josephine

In the 1820s and 1830s many bottles containing frog specimens from New Holland arrived in Paris. The curators dutifully unpacked the bottles, rewrote the fading labels on the jars and changed the preserving fluid. They then set about describing the specimens. One specimen that caught the Empress Josephine's attention was a Blue frog from New Holland. Josephine



Fig. 6: An example of Bibron's artwork. Museum histoire naturelle, Paris.

was besotted with the animals of Australia and constantly nagged Napoleon for them. Their country mansion at Malmaison had Black swans in the ponds, and kangaroos and wallabies on the lawns. Eventually Napoleon gave in and told the next scientific expedition to collect live Blue Frogs for the empress. The collecting notes from previous voyages had reported that the frogs collected were abundant.

Successive scientific voyages to Australia collected many more frogs but no one sighted a Blue frog. Josephine was disappointed, Napoleon was annoyed. It was not until many years later that it was realised that the body pigments of some Australian frogs are alcohol-soluble. The Common Green Tree frog, if immersed in alcohol for a few months turns a lovely shade of blue, because the yellow skin pigment (that makes it appear green when combined with the blue skin pigment) is alcohol-soluble and leaches from the skin. Josephine had a Blue Frog all along, but it was green in life. The naturalists should have been awake to this before. Turn back to Figure 2 and observe the colour of the 'Green' frog illustrated.

Competition between the English, French, German and Dutch Naturalists

English naturalists in Australia concentrated on the mammalian and bird fauna and tended to leave the frogs and reptiles to the French and German teams. The English naturalist John Edward Gray (1800–1875) began to study for the medical profession but abandoned it and took up zoology, joining the staff of the British Museum in 1824. Gray's term at the British Museum coincided with the most active period of Australian exploration and settlement. Most of the specimens of animals collected on survey voyages and exploration expeditions before 1850, and collections made by immigrant naturalists such as Ronald Gunn in Tasmania and by John Gould and his field workers, John Gilbert and Frederick Strange, were acquired by the British Museum. Gray did many of the initial descriptions of frogs from eastern Australia, e.g. *Limnodynastes dumerilii grayi*, *Delma grayi*.



Fig. 7: Gerard Krefft. Image: Australian Museum

The early catalogues of the collections of the British Museum by Günther (1858) and Boulenger (1882; the latter including 25 species), provided the first syntheses of hylids, and have formed the basis for all future contributions.

Gerard Krefft

Krefft arrived in Sydney in 1860 and was appointed Assistant Curator of the Australian Museum. In 1864 he was appointed Director. He described many mammal and reptiles species and curated the frog collection. Krefft was a difficult person and was later fired in 1874. He was carried in his chair to the door of the Museum and thrown into the street. *Hyla kreffti* (now *Litoria jervisiensis*), *Cacophis kreffti*, *Emydura macquarie kreffti*.

Joseph James Fletcher reawakens the Study of Australian Frogs

A period of 30 years elapsed when little work or interest was shown in Australian frogs. Joseph James Fletcher (1850–1926) was an Australian-born naturalist. He prepared a Catalogue of Papers and Works relating to the Mammalian orders, Marsupialia and Monotremata which was published in Sydney soon after his return to Sydney. There were no openings for young scientists in Sydney at this time, so Fletcher joined the staff of Newington Col-

lege. During this period he joined the Linnean Society of New South and in 1885 was given the position of director and librarian of the society. He had done some very good research work in connection with the embryology of the marsupials, and on Australian earthworms. Later he took up the amphibia, on which he eventually became an authority.

Lechriodus fletcheri, *Limnodynastes fletcheri*.

Arthur Loveridge

Arthur Loveridge (1891–1980) was a British biologist and herpetologist. He described many species of lizards and frogs from Africa and Australia in the 1930s and 1940s.

Kyrranus loveridgei (now *Philoria loveridgei*)

Stephen J. Copland

The first Australian to specialise in the study of hylids was S. J. Copland, who travelled extensively in New South Wales and assembled a large collection. Although encouraged by overseas herpetologists, such as H.W. Parker of the British Museum, Copland worked largely in isolation. His descriptions of species were extremely elaborate, even by modern standards (see Copland 1957). His major opus was the “Tree frogs of New South Wales” (1957).

Litoria coplandi

John A. Moore

John Moore was an American researcher. His first major study was to come to Australia in 1952 and to visit as many locations in eastern Australia as possible, documenting the frog fauna and correcting taxonomic discrepancies. He lodged all of his specimens in the Australian Museum. He published a detailed monograph entitled “Frogs of Eastern New South Wales” (1961), extending Copland’s work and rationalising the taxonomy of Australian frogs for the first time. Numerous subspecies described by Copland were suppressed by Moore, several of which have proved to be distinct species subsequently. *Litoria moorei*

Albert Russell Main

Albert ‘Bert’ Main (1919–2009) was a pioneer of Western Australian frog studies based at UWA. He began the study of speciation in Aus-



Fig. 8: Michael Tyler. Image: University of Adelaide

tralian frogs and in particular, why the Western Australian frogs were different from those elsewhere in the country. His major opus was the “Frogs of South-western Australia” published in 1965. *Cyclorana maini*

MODERN TIMES

Michael Tyler

Modern Australian frog research largely began with Michael Tyler. Coming to Australia from Great Britain as an amateur frog worker in 1959, he quickly realised that there were still many undescribed species in Australia. Apart from descriptive, habitat, behaviour, identification and taxonomic work he pioneered, including identification of many new species and the erection of the genus *Litoria*, his research (based at the South Australian Museum) has investigated novel chemicals which have found, or may find, pharmaceutical, industrial and surgical applications. He initiated the use of frogs as an indicator of environmental health of aquatic systems and frog mutations as an indicator of pollution. He is one of many who have worked on the Cane Toad, *Bufo marinus* (now *Rhinella marina*).

He has been prominent in research into the world-wide phenomenon of the disappearance of many species of frogs – notably in Australia the two species of Gastric-brooding frogs (*Rheobatrachus vitellinus* and *R. silus*), which were declared extinct shortly after their discov-

ery. He has been in the forefront of research into Australia’s fossil frog record. The first records of *Nyctimystes* in Australia were based on a specimen in the Naturhistorisches Museum in Vienna, and a conspicuously-coloured frog from north-eastern Queensland collected by Bill Hosmer. Both were referred to new species (Tyler 1964). Mike has written over 500 papers and several books describing or examining frogs in Australia, New Guinea and in the south Pacific. *Litoria tyleri*, *Uperoleia tyleri*

Margaret Davies

Margaret M. Davies is an Australian frog expert born on 8 November 1944. She worked at the University of Adelaide studying Australian frogs and tadpoles, retiring in 2002. Initially appointed to a teaching post at the university, she was inspired to research frog taxonomy and their ecology from the 1970s. She identified over 30 new species of frogs during her career. She has contributed to over 120 publications. *Litoria daviesae*

The Melbourne Connection

Murray Littlejohn

In the 1960s, Murray Littlejohn was at the cutting edge of Bioacoustics. He pioneered the use of sound recordings to validate and confirm species identity. He also demonstrated the use of sound in frogs to create species barriers and to promote speciation and the value of his work persists to this day. At Melbourne University, Murray worked with other scientists, notably Angus Martin, Graeme Watson and



Fig. 9: Murray Littlejohn. Image: University of Melbourne

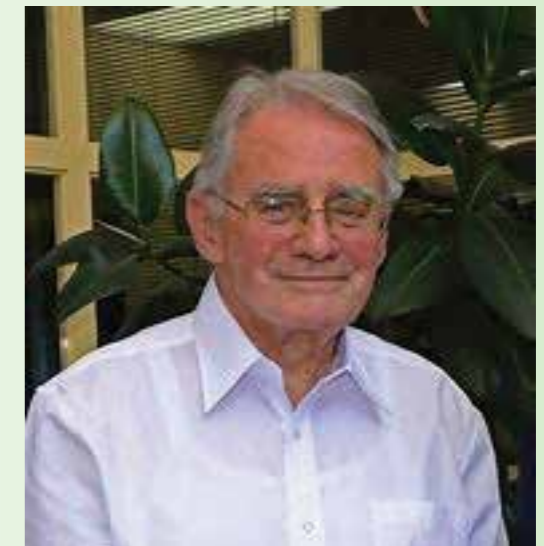


Fig. 10: Hal Cogger. Image: Australian Museum

Margaret Stewart to research work on frog speciation. *Litoria littlejohni*, *Uperoleia littlejohni*, *Uperoleia martini*.

Sydney’s Hal Cogger

Harold George (“Hal”) Cogger, born 4 May 1935, is a revered icon in Australian herpetology. He was curator of reptiles and amphibians at the Australian Museum from 1960 to 1975, and Deputy Director of the museum from 1976 to 1995. He has written extensively on Australian herpetology, and was the first author to create a field guide for all Australian frogs and reptiles in 1975. This book has been revised eight times, all of which are collector’s items.

The Queenslanders Arrive

From the late 1960s onwards a series of frog biologists have emerged from Queensland, starting with Ian Straughan who unravelled the mysteries of small ground frogs now known as *Kyrranus*. David Liem, Chris Corben, Glenn Ingram, Bill Hosmer and Keith McDonald discovered and described numerous new species, especially during the 1970s and 1980s. More recently, Ross Alford (James Cook University), John-Marc Hero, Conrad Hoskin, Ed Meyer and many others have added further to frog research and the new species list.

In the West

Dale Roberts

In Western Australia, Dale has formed a strong



Fig. 11: Dale Roberts. University of Western Australia.

frog research team over the years at the University of Western Australia, and following on from the historic work of Bert Main, has detailed the biology, distribution and status of all of the state's frogs. He has specialised in the recording and analysis of frog calls in relation to taxonomy and new species descriptions, and his recent work has been heavily devoted to the conservation of Western Australia's remarkable frogs. Margaret Davies, Angus Martin and Michael Tyler found many more in the Kimberley Division of Western Australia and in Arnhem Land.

New South Wales Michael Mahony



Fig. 12: Michael Mahony. Image: University of Newcastle.

Much of the frog research in this state has been carried out by Michael Mahony and his students. Michael began by genetically defining many of the inland species of frogs but has extended to many ecological and taxonomic studies of frogs. He heads a team of frog researchers at Newcastle University looking mainly into the conservation of the Green and Golden Bell Frog, *Litoria aurea*, and is also associated with the Lazarus project aiming to try to 'bring back' *Rheobatrachus* from extinction.

Marion Anstis

Marion Anstis is a frog biologist who specialises in tadpole morphology, embryology and ecology. She first began her amateur work on identifying tadpoles and frog eggs in the 1970s, encouraged by Michael Tyler, Angus Martin and others, and published a number of papers



Fig. 13: Marion Anstis with book. Image: Phillip Grimm.

in scientific journals, including descriptions of new species of frogs and their tadpoles. From 2002–17 she published four books on tadpoles and frogs culminating in 'Tadpoles and Frogs of Australia'. Initially submitted for her PhD at Newcastle University in 2012, it was then published by New Holland (2013, 2017), supported by FATS and Taronga Zoo.

Arthur White

Arthur White has been a lifetime frogger with a passion for frog conservation. He has published numerous articles. Arthur's research has concentrated on the plight of Green and Golden Bell frogs in NSW, which has involved



Fig. 14: Arthur White (left) with Mike Archer and Lothar Voigt at a FATS frog education display day. Image: Marion Anstis.

visits to all known sites as well as the discovery of new sites. Ongoing ecological studies have been focussed on developing replacement habitat and managing a species in serious decline. Arthur has also dedicated his efforts, along with his hard-working wife Karen, to running the Frog and Tadpole Study Group over the past 20 years. This group plays an important role in frog conservation and education as well as helping misplaced frogs find a home.

Jodi Rowley

Jodi Rowley initially received her PhD at James Cook University, Qld in March, 2007 under the supervision of Ross Alford for her work investigating why chytrid drives some frog populations to extinction and not others. Her welcome appointment as Curator, Amphibian & Reptile Conservation Biology, Australian Museum & UNSW in 2016 has meant a surge of interest in Australian frog research at the Museum. The subsequent creation of the Frog



Fig. 15: Jodi Rowley Image: Stuart Humphreys

ID app has been highly successful in increasing awareness about frogs and their conservation across the wider public.

The Future

Frog conservation issues and the response of frogs to climate change are the biggest research challenges now and in the future. Fortunately we have a number of researchers and institutions that are working on these areas right now, including those listed below, plus many ongoing studies by new and previously well-known academics, e.g. Michael Mahony's team at Newcastle University:

Dave Hunter (Office of Environment and Heritage): Threatened frog recovery and conservation.

Skye Wassens: Inland frog ecology and conservation.

Bill Buttemer and students (University of Wollongong): Corroboree frog biology and conservation.

David Newell (Southern Cross): Rainforest frogs.

Graham Pyke (UWS) and Arthur White: Green and Golden Bell frogs

Gerry Marantelli (ARC): Threatened frog conservation.

Lee Berger and Lee Skerratt (James Cook University): Chytrid studies

Michael McFadden (Taronga Zoo): conservation of threatened frog species.

Harry B. Hines (Qld Govt): natural history and distribution of Queensland frogs.

Rick Speare and Scott Cashins (James Cook University): Chytrid studies and frog ecology.

Rick Shine: Sydney University Cane Toad research team.

Healesville Sanctuary: Endangered frog recovery programs for the Corroboree Frogs (*Pseudophryne corroboree*).

Melbourne Zoo: Endangered frog recovery programs for the Corroboree Frogs (*Pseudophryne corroboree*) and the Baw Baw Frog (*Philoria frosti*).

Frog Ponds

Build them and the frogs will come...

Alan Lane

We had the idea that our bare paddock needed a “water feature”, so we used some left-over concrete, a spa and bathtub found on the side of the road to make a pair of little ponds. They looked very forlorn and barren to begin with.....



Step 1: Spa bath put to good use!



Step 2: Liner, water, rocks, mulch and plants

but we lined them with pond liner, put rocks and a thick layer of mulch around them, put in a solar pond pump and planted water lilies and other pond plants. Then we found we needed some water snails to control the green slime, so we bought some from a pet shop..... and we created more shelter by planting flowering plants nearby.

We put strips of shade cloth on the edges so things that fell in could climb out – thinking of small birds and little animals like lizards and antechinus that might fall in when drinking. Not dreaming that eventually metamorphosing tadpoles would be using them!

These little ponds are in the middle of a bare paddock, a good 200m from the nearest dam so we weren't even thinking of frogs, but one evening we were amazed to hear a frog call from one of the ponds, then the following night, two frogs competing with one another – *Limnodynastes tasmaniensis* had found us!

Since then, we've been delighted at the passing parade of frogs we've heard. So far, we've heard *Limnodynastes tasmaniensis*, *Litoria peronii*, *Uperolea rugosa*, and *Uperoleia laevigata*.

Encouraged by this success, we've put more rocks, logs and mulch around the ponds to create more shelter opportunities.



Step 3: We added more rock and water snails



Step 4: Strips of shade cloth placed over the edges to help animals escape if they fell in – also used by metamorphosing frogs!



Fig. 5: Extra rocks, logs and mulch built up around the sides to provide shelter for frogs in this otherwise exposed paddock



Fig. 6: 10W solar lamp in place at night to attract insects



Fig 7: And here are the finished ponds, both attracting frogs

We're hoping others will find their way from the nearby dam: *Crinia signifera*, *Limnodynastes peronii*, *Litoria verreauxii*, *Litoria nasuta* and *Litoria latopalmata*.

We've learned that frogs are very good at finding water and will take advantage of a suitable habitat, even when it seems a long way across inhospitable country to get there!

And in the hope of attracting insect prey for the frogs, we put a small compost pile and a 10W solar lamp beside each pond.

To show we were on the right track, a few days later, we heard a *Limnodynastes tasmaniensis* calling from the debris beside one of the ponds.

Then in February, the ultimate proof of success – spawn in one of the ponds! It seems that the patience of the calling *Limnodynastes tasmaniensis* male had finally paid off!



Fig. 8: Success! Spawn of *Limnodynastes tasmaniensis*



Dainty Tree Frog
Litoria gracilentia
© Narelle Power

FATS Frog-O-Graphic



BEST IMAGE and PEOPLE'S CHOICE: Above: Crucifix Frog, *Notaden bennetti*
BEST IMAGE: Below and centrefold: Dainty Tree Frog, *Litoria gracilentia*

Josie Styles
Narelle Power



Competition WINNERS



MOST INTERESTING IMAGE: Above: Great Barred Frog, *Mixophyes fasciolatus* eating a funnel-web spider
MOST INTERESTING IMAGE: Below: Orange-thighed Tree Frog, *Litoria xanthomera*

Narelle Power
John Pumpurs



FATS Frog-O-Graphic



BEST PET IMAGE: Above: Green and Golden Bell Frog, *Litoria aurea* Peter Johnson

Some other



Competition WINNERS



BEST PET IMAGE: Baby Giant Burrowing Frogs, *Heleioporus australiacus* Michelle Toms

competition entries...

At left: Dainty Tree Frog, *Litoria gracilentata* (unusual yellow colour form) by Narelle Power

At right: Whirring Tree Frog, *Litoria revelata* by Jill Streit



Patch, Julio and Me

Punia Jeffery



Patch, the Axolotl in his tank

Punia Jeffery

Australia has no tailed amphibians belonging to the order Caudata – the newts, salamanders and their relatives. Any tailed amphibian in this country is introduced, and in an aquarium or laboratory.

With more than two hundred species of Australian frogs, why am I so fascinated with the axolotl, *Ambystoma mexicanum*, a tailed amphibian neonate? [1]

When it did it start? I'm back in New Zealand; six years old again. We live in Laingholm, a small valley settlement on the Manukau Harbour on the west coast of the North Island.

It's twelve miles from central Auckland, but remote in the post-war years. The roads are unsealed. Joy of joy! A swampy creek flows slowly down the valley to the sea. It teams with frogs. Day and night their chorus is a magic serenade. I have no idea that these wonderful creatures are foreigners from Australia, or even that they are Green and Golden Bell Frogs. They are frogs to catch. Daytime, thigh-deep in the creek, the frogs are elusive. Instead, I cup my hands and collect tiny tadpoles. I slide them into our big tank with the goldfish. I feed them goldfish flakes. They survive and grow. The shelves where the tank stands divide the



Patch, the Axolotl in his tank

Punia Jeffery

room. There's light on all sides; perfect for close observation. The small tadpoles have feathery branches on the sides of their heads. Then they disappear. Oh wonder... Later I learn that newly-hatched tadpoles have external gills which then become internal (precisely at developmental stage 22 [2]).

Again, fascination at first meeting an axolotl. Its feathery gills recall a court jester's cap 'n' bells or the joker in a pack of cards.

Several years later I have my own axolotl. I'm studying Spanish. I read the Argentinian Julio Cortázar's short story "Axolotl" [3]. His writing sings in Spanish and equally in English translation. I'm intrigued by his fantasies and speculations. Yes, "Axolotl" is a surreal masterpiece, but it is his description of axolotl form and movement that truly delights me:

"It was their quietness that made me lean towards them..." "... but what obsessed me was the feet, of slenderest nicety, ending in tiny fingers with minutely human nails..." "On both sides of the head where the ears should have been, there grew three tiny sprigs, red as coral,

a vegetal out-growth, the gills, I suppose. And they were the only thing quick about it; every 10 or 15 seconds the sprigs pricked up stiffly and then subsided. Once in a while a foot would barely move, I saw the diminutive toes pose mildly on the moss."

The axolotls in Cortázar's story are albino or leucistic animals. These colour variants are favour-

ites in the pet trade. My present pet 'Patch' is a wild, pigmented type. I prefer his black gills and dark mottling.

At the conclusion of "Axolotl" the writer has become an axolotl. The surreal ending is not strange to me. I know that this animal is a lie-in-wait predator and stays immobile until something edible floats or swims by, but axolotl grace is beautiful to observe.

And oh yes; when I'm snorkelling, I'm an axolotl too; still, in weightlessness and peace.

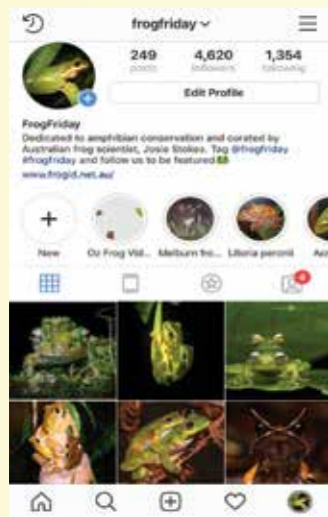
References

1. Axolotl: a first-rate website run by John P. Clare. explains neoteny, the ability of the axolotl to reproduce in larval form. It is excellent on the basics of axolotl biology and care. <http://www.axolotl.org/index.htm>
2. 'Tadpoles and Frogs of Australia' (2nd Edition 2017) Marion Anstis.
3. 'Axolotl' by Julio Cortázar <https://southernreview.org/73/axolotl.html>

'Frog Friday' Instameet BIOBLITZ!

Josie Styles

Way, way back on the internet before Instagram started up, I was using Twitter and Facebook to post frog photos on a Friday with the hashtag #FrogFriday to raise awareness of amphibian conservation, and because Frog Friday is the best day of the week! In April 2016, I decided to take it one step further and started up the @frogfriday account on Instagram because of the 'searchability' by hashtag function of this social media platform. With the new @frogfriday account, I was



able to re-post (or pinch) other people's amazing photos (with full credit of course), including FATS members Jodi Rowley and Henry Cook, plus a handful of amazing wildlife photographers from QLD, until my photography improved enough so that I felt confident to post my own frog pictures.

A little over two years later and we now have over 4,600 followers from across the world and there are more than 10,000 people using the #FrogFriday hashtag weekly on Instagram. Late last year I organised an 'InstaMeet' of 15 of Australia's best frog and reptile wildlife conservation photographers (and @frogfriday contributors) in QLD for an action packed 7 night adventure.

We started on the Gold Coast and Brisbane with fairly dry conditions, then went inland to the Brigalow Belt, up north to Kroombit National Park, then down to the Sunshine Coast and finished up back on the Gold Coast covering over 2100 kilometres.

With 15 people who had different frog, bird, mammal and reptile target species, it was quite an adventure to organise (much like a FATS Smiths Lakes Field Trip)! Here are some of the best memories.

Our hosts Jannico Kelk (@jannicokelk) and Jasmine Vink (@jasminevink) were targeting *Notaden bennetti*, *Neobatrachus sudelli*, all other burrowing frog species and the Golden-tailed Gecko, all occurring in the Brigalow. After a couple of 'slow' nights on the Gold Coast, the Frog Friday Gang decided to head north-west into the Brigalow Belt. As we left the D'Aguillar Range and headed north and inland, a band of really dark, ominous clouds started to close in on us in every direction at Dalby. The clouds grew closer and were looming right above us in every direction and we knew that it was going to bucket down somewhere.

Now as we all know, rain is great for frogs, but not so great when you are camping with a non-waterproof tent, or have expensive camera gear that you don't want to get soaked and ruined while photographing frogs. We pulled into the truck rest stop at Glenmorgan and



Fig. 2: *Cyclorana verrucosa*

Josie Styles



Fig. 4: *Notaden bennetti* in amplexus

Josie Styles

set up camp with our non-waterproof tents underneath the BBQ area shelter. After making a hasty dinner, we ventured out to spotlight and that's when the rain started. It absolutely poured down and we got about 70mm in about an hour. The table drains (ditches) beside the road filled with water, the paddocks flooded and ponds filled and then, the burrowing frogs started to emerge. The most interesting thing for me was watching the pattern in which the frogs emerged. First came the *Limnodynastes*, then the *Cycloranas* (e.g. *Cyclorana verrucosa*, Fig. 2) and then the species we had been waiting for, the *Notaden* and *Neobatrachus*! In a

very opportune moment, the rain stopped and we were able to observe a Holy Cross Frog (*Notaden bennetti*) emerge from his burrow. We madly snapped some pics of this awesome little guy and then spent a few hours wandering along the road photographing the many other frog species calling from the newly filled table drains.

A couple of us ventured into the flooded paddocks, following the owl-like "whoop-whoop" call of the Holy Cross Frog, hoping to find a pair in amplexus. They would call from the cattle hoof imprints that had filled with water, and as soon as you got close, they would stop calling. Like any typical frog, you would walk away and they would start calling again. We played this game for about an hour and then re-joined the rest of the crew on a side road.

It was now 3am and people were starting to fade (some were already asleep in their cars) and just as we were about to call it quits, Jasmine calls out "Notaden!! In amplexus!!" Now this was an absolute lifer moment for her (and all of us, let's be honest) and she was determined to get a good photograph. We should know by now that you can 'never trust a frog' and this 'glued' pair were not having it. We



Fig. 3: *Notaden bennetti* emerging from burrow

Josie Styles



Fig. 5: A young *Varanus panoptes*

Jasmine Vink

didn't want to interrupt them with a barrage of flash photography, so instead we watched their mating behaviour. The male stayed glued to the female and he would 'paddle' with his back legs and she would 'steer' the direction with her arms like a boat! It really was an amazing moment and although our photographs of this loved-up couple are rather crappy, the experience of watching their behaviour can never be erased from our memories.

After a long night of frogging, the Frog Friday Gang spent the next day birding, herping and relaxing. The road to the Botanic Gardens was flooded but Cassie and I were determined to get some decent birding done (there'd been some recent good sightings). I made her walk through and check the depth, and once she yelled out it was only knee-deep, I drove the hire car through it. The most exciting find for us was the Endangered Australian Painted



Fig. 6: Frog Friday gang chilling out...

Jannico Kelk



Fig. 7: *Cyclorana novaehollandiae*

Cassie Thompson

Snipe (*Rostratula australis*). He was foraging in the shallows of the lake and behaving like the migratory wader that he is. Unfortunately, we were about 60 metres away and neither of us have telescopic lenses with that range, so we won't embarrass ourselves by showing you those pics (which of course looked amazing at the time on the back of the camera!). Just as we were returning from birding for an early lunch, Rhys Sharry's (@rhyssharry) eagle eyes peeped a juvenile Yellow Spotted Monitor (*Varanus panoptes*) as he was emerging from his burrow, an underground electricity pit. We snapped a few pics and returned him to his burrow.

With the temperature outside creeping into the 40's the Frog Friday Gang decided it was time to cool off in the river with some cold beverages. We weren't quite in the 'river' but laying on the edge of a flooded causeway. It made for interesting times when we had to jump out of the way for local traffic to pass through, but it was definitely the best way to spend a hot, humid afternoon.

After photographing a beautiful full moon rise, we headed out the second night hoping for as good a night as the previous. Well of course,

conditions had changed with the flooded paddocks and table drains drying up during the heat of the day. Frogs had either retreated back into their burrows or were looking for a mate near the more permanent waterbodies, three of which we surveyed. We found a really large, olive-green female Holy Cross Frog just sitting in the middle of the road, so we moved her off the road and closer towards a permanent waterbody. Hopefully she got lucky that night! The Peron's Tree Frog (*Litoria peronii*) had begun calling along with a few more of the usual suspects (Desert Tree Frog (*Litoria rubella*), Barking Marsh Frog (*Limnodynastes fletcheri*), and the Rough toadlet (*Uperoleia rugosa*), but the highlight of the evening, and another new tick for me was the Eastern Snapping Frog (*Cyclorana novaehollandiae*). The size of their head is ridiculous and I don't think photos do it justice compared to when you see it in real life.

Another great find that night was the Golden-tailed Gecko (*Strophurus taenicaudata*), a gorgeous species that is found in open woodland mainly in the Brigalow Belt Bioregion. They shelter under loose bark during the day and are active at night when the temperatures are



Fig. 8: Golden-tailed Gecko, *Strophurus taenicaudata*

Jasmine Vink

a little cooler. The black and white markings and pattern of their ochre-coloured eyes always remind me of an Aboriginal dot painting.

Night 5 – Kroombit National Park (host Harry Hines, QLD Parks and Wildlife Services) Target species – Kroombit Tops Tree Frog (*Litoria kroombitensis*) and the Greater Glider (*Petauroides volans volans*). Firstly, Harry was not supposed to be our host, but accidentally became it. Secondly, all of the roads in to Kroombit NP were closed due to floods so we had to go north via Rockhampton and come back down south to Kroombit. Cassie Thompson was doing all the driving that day because I had stayed up all night in order to catch the magnificent sunrise at Glenmorgan (sorry Cass!! J).

We arrived at Kroombit Tops on dusk, and just in time to start looking for our target species. After photographing endless (17) Greater Gliders, Cassie and I then went in search of the Kroombit Tops Tree Frog but were unsuccessful. We photographed many

Mixophes fasciolatus, including one pair in amplexus. Tired and plagued by the hungries, Cassie and I were starting to pitch our non-waterproof tent when the rain started. We packed everything back into the hire car and headed towards the ranger station, hoping to take shelter on their balcony. After making dinner in a can, we were just getting ready to head back out to try and look for the Kroombit Tops Tree Frog, when we saw car headlights coming in our direction....

Now this was a very ‘Wolf Creek’ kind of moment and Cassie and I quickly began to prepare our exit strategy. Unfortunately, I was wearing my reflective high-vis work jacket and could be seen for miles! The vehicle turned into the driveway and two people in QLD Parks and Wildlife Service uniforms hesitantly approached us and our tent, which was perched on their balcony. The gentleman was the first to speak. “G’day. I’m Harry”. I nearly fell off the stairs because instantly I knew it was THE Harry Hines. Harry is a remarkable zoologist and has been monitoring the



Fig. 9: Kroombit Tops Tree Frogs (*Litoria kroombitensis*) in amplexus

Ben Revell

Kroombit Tinker Frog and Kroombit Tops Tree Frog since the 1990s. The Kroombit Tops Tree Frog was only described in 2013 (Hoskin *et al.* 2013) and the species is only known from the headwaters of five streams within the National Park. I was trying so hard not to fan-girl over Harry and then he asked us if we had seen “the

frog”? We replied no, and Harry got back into his uniform and boots, turned to his colleague and said “I’m gonna take the girls to see the frog”!

Late that night, we were fortunate enough to see and photograph three individuals of the



Fig. 10: Kroombit Tops Tree Frog (*Litoria kroombitensis*)

Ben Revell

Kroombit Tops Tree Frog and they really are gorgeous. The similarities between this species and other stream frogs in this complex (ie. *Litoria pearsoniana*, *Litoria barringtonensis*, *Litoria phyllocroa* and *Litoria nudidigita*) are remarkable, and no doubt, further work is needed to help field workers more easily differentiate between some of these species – hello taxonomists!...

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.

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 1880s, 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”. 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.

3rd December Australian Reptile Park Annual Herpetological Groups BBQ; ph (02) 4340 1022 Email: admin@reptilepark.com.au Please contact the ARP to clarify if you need to bring proof of membership of any herp group (including FATS) – Find ARP on Facebook! www.reptilepark.com.au

12th 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 car-park.

In SE 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 (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.

Feb / Mar 2019 dates to be announced in February’s FrogCall No 159

Smiths Lake Camp-Out Leaders: Karen & Arthur White

Smith’s Lake has become such a popular field trip destination that changes are needed to ensure that everyone gets a chance to go. Up until now, it has been first in goes to the head of the list, but this has meant that the same people, especially newcomers, miss out. In addition, we have people cancel late so their place goes unfilled. To overcome these problems we have changed the booking arrangements, which will now include a non-refundable pre-payment for the booking. This arrangement is in case we have too many people wanting to go on the field trip.

1. For the next field trip, you must email Karen White: white.kazzie@gmail.com by 16 February 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, but 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 immediately to confirm your booking by 16 February. If you do not pay as soon as possible, 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 \$17.50 per person, per night.
3. Karen will send you confirmation of your booking when your payment has been received.
4. If you are on the Reserve list B, Karen will email you in advance before the field trip and let you know if there are spaces available for you or not. If you are able to go, you will then need to forward your payment to guarantee your place. All payment must be received 2 weeks prior to the field trip (16 February). 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.

NB: 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.

FATS meets at 7pm, on the first Friday of every EVEN month at the **Education Centre, Bicentennial Park, Sydney Olympic Park**. An 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’s a on-way road. Just follow it and turn right at the P10f parking sign. Or you can enter from Bennelong Road / 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. Take a good torch in winter. It is a short walk from the car park to the Education Centre, Bicentennial Park. It is a short walk to the single story education centre and its tall tower. Both can be seen from the car park. Directions from your home: <http://www.sydneyolympic-park.com.au/maps/getting-to-the-park?type=venue&id=384059>

THANK YOU to the committee members, FROGCALL supporters, meeting speakers, Frogographic competition entrants, events participants & organisers, David, Kathy and the Potter family and Ryan Kershaw for an enjoyable year. The FROGCALL articles, photos, media and webpage links, membership administration and envelope preparation are all greatly appreciated. Special thanks to the many newsletter contributors, Robert Wall, George Madani, Jilli Streit, Karen & Arthur White, Andrew Nelson, Michelle Toms, Josie Styles, Jodi Rowley, Steve Weir, Wendy & Phillip Grimm and Marion Anstis. Special thanks also to Marion Anstis who has produced our glossy colour collector’s edition each December.

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. Meetings are usually held on the **first Friday of every EVEN month** February, April (but not Good Friday), June, August, October and December. Call, check our web site or email us for further directions. We hold six informative, informal, topical and practical 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 attend many community fairs and shows. Please contact Kathy Potter if you can assist as a frog explainer. We always need help, even for just 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, conservation 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 2,500 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 are seeking forever homes are at our meetings. Please contact us in advance, if you wish to adopt a frog. Cash donation (\$30–\$50) required to cover care costs. Sorry we have no EFTPOS. FATS must sight your current amphibian licence. Licences can be obtained online from NSW NPWS, Office of Environment and Heritage: <http://www.environment.nsw.gov.au/wildlifelicences/GettingAnAmphibianKeepersLicence.htm>. You must join FATS before adopting a frog. This can be done on the meeting night. We recommend you get your frog checked by a vet.

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