

FROG CALL

No 170, December 2020



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MEETING FORMAT

Friday 4th December 2020

NB: Due to Covid requirements, the Education Centre can no longer hold more than 25 people. Please email Arthur White (1arthur@tpg.com.au) to obtain confirmation of your attendance, including the number of people with you.

6.30 pm: Lost frogs: 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 Grant Webster, giving us a special show of Aaron Payne's photos.

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

9 pm: Trivia Quiz, raffle, Christmas supper and a chance to relax and chat with frog experts.

Thanks to all speakers for an enjoyable year of meetings (both via Zoom and face to face), and all entrants in the Frog-O-Graphic Competition.

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

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Cover photo: Giant Burrowing Frog, *Heleioporus australiacus* (Sydney) Cassie Thompson

President's Page

Arthur White

Like everyone else, FATS has had a very strange year during 2019–2020. The COVID-19 pandemic has forced us to cancel many of our public events such as public meetings, displays and workshops. Even for this AGM we have had to limit the number of people who could physically attend.

Prior to the advent of COVID, the drought and bushfires forced us to cancel many of our field trips. Frog rescues have had to be stopped for a time. The only activity that has continued unaffected has been the production of FrogCall, and even this has taken place under unusual conditions.

Despite the chaos, FATS has retained a loyal following. COVID restrictions will be in place for some time yet and planning of future events remains uncertain. The only forthcoming events that have been assured are the auditory surveys at Sydney Olympic Park in November and December. FATS also completed the annual Bell frog auditory surveys at Sydney Olympic Park in November and December 2019. Our thanks to SOPA for supporting FATS. I can only urge members to be patient and to continue the rules regarding social distancing and public health. We will continue to inform members of any changes or any new activities that might arise.

FATS remains financially strong, thanks to our long-standing Treasurer Karen White. Because we are so sound, we again offered and awarded four student research grants this year.

Monica, our editor, is currently confined to Victoria and despite that has managed to get the 2020 editions of FrogCall out on time, and this remains our best contact with members at present. Monica and Marion Anstis have again combined to produce this special annual colour December issue of FrogCall. Robert Wall organised a great series of field trips but many of these had to be cancelled later because of drought, fires or COVID. He has planned a full programme for the upcoming spring and summer and social distancing will be observed at these events.

Kathy and David Potter organise our events programme and they have had to cancel many events at the last minute. Some events were able to run but changes to their normal procedures have had to be adopted. Marion Anstis and Punia Jeffery have shared the role of meeting spokesperson and both help out with various other activities of Council. Phillip Grimm has two roles, membership office and webmaster and does both with great efficiency. Jilli Streit has been our secretary this year and has done a good job in that role. Many thanks to our other executive members: Andre Rank, Natalia Sabatino and Vicki Deluca. Each has contributed whole-heartedly and helped keep FATS alive and well.

Finally, I would like to thank all of our members for being so loyal and patient during these trying times and for making FATS such a great group to be in. We hope that 2020–2021 will be an easier year!

IN MEMORY OF AARON PAYNE

and the frogging...

Grant Webster



Aaron excitedly holds up a Haswell's frog (*Paracrinia haswelli*) on a frogging trip

Kylie Caro

I first met Aaron Payne in 2006. At this time froggers were few and far between. It was on the old '**frogs.org**' forum that we first made contact, a "froggyboy86" messaged me and we started chatting. He was interested in my recent finding of the Heath Frog, a rarely encountered species, and wanted to know where he could see the frog for himself.

Not knowing much about this guy I decided to trust him (a trust that was partly owed to the

fact that he was also a fellow FATS member), and tell him where he could find the frog – in the wild back country of Darkes Forest, well outside the normal reaches of a FATS Darkes Forest field trip. The Heath Frog was one of the last frog species in the Sydney area that Aaron hadn't seen and he was very grateful for the intel. From that day on we became very close friends and spoke daily. Over the years Aaron and I frogged together many times, with countless field trips, kilometres, hours and photo-



The high plains country, Mt Kosciuszko, once inhabited by many thousands of Corroboree Frogs

Aaron Payne

graphs shared between us. Whenever one of us found out about a cool frog site or record we would tell the other. I could have discussions with Aaron that no other person in the world would appreciate on the same level.

We became best mates, we would talk about everything, not just frogs. To me, Aaron was something I never had, a brother, someone I could go to for advice or guidance, no matter what predicament I found myself in. Aaron and I shared a common passion for frogs, a passion that I have recognised in only a few other people. We both had a strong desire to see these animals in the wild – to experience them interacting with the environment they have evolved to exist in, which in my opinion at least is the true essence of frogging, a desire to learn and know about these animals that we love so dearly.

While we didn't necessarily always agree on all things, our love for frogs was a uniting force that continued from the beginning of our friendship until the moment he disappeared. I'll never forget our last frog conversation – discussing whether a record of Tyler's Toadlet from the Thirlmere Lakes region was legit, or a misidentified Smooth Toadlet. We concluded

that given the unique 'coastal lake' characteristics of the Thirlmere Lakes, it was quite possibly an authentic record. While I happily 'talk frogs' to many of my other frogging mates, I never really find the same depth in conversations that I had with Aaron.

Other than 'talking frogs,' our real passion was to get out in the field and see them. We both planned and executed many a well thought-out frogging trip, though as much as I don't like to admit it; Aaron had more of a knack for it than me. His tireless ability to leave for a frogging trip at 4am in the morning always put my "late morning" trip departures to shame. Regardless, much frogging was done and there are so many stories of frogging adventures of mine and Aaron's that I could share. I could, and probably will, write a book about it. But for now I'll share a few of the most memorable...

On the 1st of January 2008, Aaron, I, and other noteworthy froggers and FATS members – Brad McCaffery, George Madani and Henry Cook, embarked on one of the most epic and controversial frogging trips of all time. We hiked across Kosciuszko in search of the highly endangered Corroboree Frog, a species now virtually extinct in the wild. We



Pseudophryne corroboree, the wonderful Corroboree Frog in its habitat, Kosciusko NP

Aaron Payne



Litoria spenceri, in its habitat, Kosciusko NP

Aaron Payne

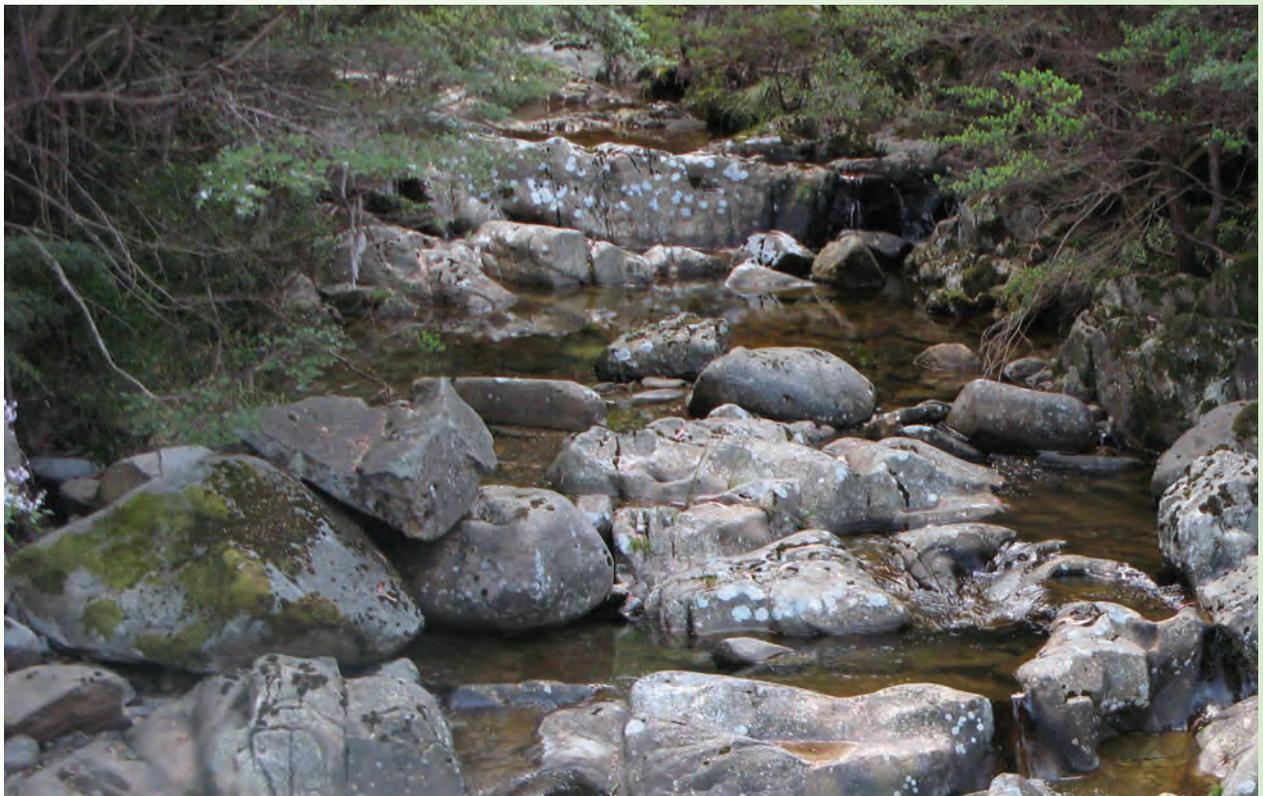
arrived at the site – an extensive bog system in the Jagungal Wilderness – at night, and to our dismay only Common Froglets were to be heard. Aaron however, who had an eye for tadpoles, reckoned he had seen Corroboree tads at the back of the swamp. The next morning I decided it was worth investigating and on approaching the area he described, I heard a soft “erk” from the moss. I froze. Again the “erk” sound, and then another. It was the Corroboree Frog. I screamed back to the others at camp: “CORROBOREE FROG CALLING”!

The others immediately arrived at the bog where I stood. Soon after, the yellow and black stripes of the frog were visible. It was one of the greatest moments of my life and one that I will never forget. Of course, Aaron’s photos turned out better than mine. One of his greatest contributions to our knowledge has been through his photographs, faithfully recording all of our wonderful frog encounters.

However, much controversy spanned from this frogging trip, due in part to the threatened nature of the frogs we had set out to see. We were young and naïve at this stage, and didn’t

really appreciate the full implications of our actions. Naïve as we were, we had the sense to follow chytrid fungus protocol, including cleaning our boots and using gloves when handling frogs. Ironically, it was the gloves that brought us ‘unstuck’ when we visited our next site on the trip, near Khancoban, to see the Spotted Tree Frog. Aaron accidentally left one of his gloves behind at this site, which was later found by Spotted Tree Frog researchers and quickly followed up with many messages being left on my phone. In hindsight we could appreciate the humour of such a simple slip-up, although I never really let Aaron live that down.

It took many years for me to mend the wounds created by this frogging trip, one that I carried the blame for, and in some circles still draws dark clouds over my head. Irrespective of the negativity surrounding it, that trip carries positive memories for all involved, and we were deeply appreciative of being able to see the Corroboree Frog in the wild before it disappeared. Also I don’t think Aaron, Brad and I (or tag along mate Charith – possibly the only person ever who turned down a chance to see



Typical habitat for *Litoria spenceri*, Kosciuszko NP

Aaron Payne



Philoria pughi, Washpool NP

Aaron Payne

a wild Corroboree Frog) would ever forget Henry, George and their mate Semi finding us a “*dendyi*” in the Goodradigbee River at Wee Jasper...

In the rainforest mountains of **northern New South Wales** there is a rare genus of colourful frogs known as *Philoria* – we would describe them as ‘jewels’ of the rainforest. Over several years Aaron and I encountered these frogs in our travels, one after the other, *sphagnicola* at Point Lookout, *kundagungan* at Main Range, *loveridgei* at Border Ranges, and *richmondensis* at Cambridge Plateau. But what these encounters don’t show is the heartache and disappointment behind all the “epic fails” – frogging trips that did not produce the desired results.

If Aaron were here today I’m sure he would still remember our first trip to the Border Ranges searching for *Philoria loveridgei*. I’d never imagined a ‘rainforest’ could be so hot, desolate and devoid of water as the Falcorostrum Loop at Bar Mountain. Sure, we visited during an abnormally dry period (and subsequent visits

would really show us the otherworldly beautiful cool temperate rainforests of the region), but not seeing or hearing a single *P. loveridgei* then was upsetting to say the least.

Then there was the time we climbed Mt Mitchell twice within 24 hours to look for *P. kundagungan*. No frogs were seen on either attempt, and we returned to our tent being destroyed by strong winds on the first climb, and my camera getting broken at some point on the second. Despite such setbacks, none of these “fails” were able to waiver our passion, and somehow they even made us more determined.

However for one species – *Philoria pughi*, the “epic fail” was truly manifested, and this species seemed to elude us every time. We searched every known location – the remote sections of Washpool National Park, the back of the old Timbarra Goldmine, and the rarely visited roads and rainforest gullies of Mount Spirabo. If you have never heard of these places I’m not surprised, as they are well away from ‘civilisation’. We have spent countless hours



Washpool NP

Aaron Payne

(and dollars!) looking for this species. It was our 8th field trip in search of them when our sanity was beginning to erode, and with our

close friend and fellow frogger, Riona Twomey Tindal, we tried a new trail at Washpool. Another one of our close frogging friends,



Philoria sphagnicola, Werrikimbe NP, NSW

Aaron Payne

and something of a mentor, Adam Parsons, had always vouched for Washpool being a great place for the species, and this time we were determined. Having an eye for appropriate habitat by this stage, we followed a small gully upstream into dense rainforest. We found ourselves in a muddy bog. “Ork” sounds resonated. It was *Philoria pughii*. Almost immediately we turned up a yellow and red frog under a log. The long search was over and we breathed a well-deserved sigh of relief! We had long been told that the beauty of frogging was more in “the chase” rather than the catch itself, and I think by this stage we were beginning to understand that.

This next story is one Peter (Aaron’s Dad) and Georgia (Aaron’s sister) will remember. Peter and Georgia often joined Aaron on his frogging trips and he regularly talked about how having supportive family members was important to him. An interest in “frogging” isn’t always shared by parents or family and I think all froggers are appreciative of efforts family make to embrace or embellish the passion. Anyway, Aaron was in **Tasmania** looking for the endemic frogs there. Of the three, one species, the Moss Froglet, is ‘difficult’ to get

onto. He had already encountered the other two – the Tasmanian Tree Frog and Tasmanian Froglet – as had I on a previous trip when I much younger. Aaron had been told about a site for Moss Froglets at Hartz Mountain by a fellow frogger and Aaron’s close friend Murray Lord. It was a cold and windy ‘world’ in the clouds. Aaron sent me a message saying he and his dad had spent a day in pouring rain searching for this frog, and they had heard it but couldn’t find it. He asked if I could help out. So I booked the next flight to Hobart. The flight was delayed four hours which was cutting into our valuable frogging time.

Once I arrived we wasted no time, we drove straight to the site and the frogs were still calling, “tok.. tok.. tok..” from the thick moss beds, though fortunately the rain had stopped.... But it was not easy. Whenever we approached, they would stop calling. We walked around in circles for hours and even found a nest with eggs and developing tadpoles, but no frog (the species has a unique breeding mode). It was getting late and we were running out of time. But we decided to be patient and stake one out. Our patience paid off after nearly half an hour. There sat a small brown frog in the moss. Few



The Moss Froglet, *Bryobatrachus nimbus*, Hartz Mountain, Tasmania

Aaron Payne



Hartz Mountain in the mist, Tasmania

Aaron Payne

people would care for this ‘small brown frog’ but for us this was a defining moment in our lives. That night we relaxed with a bit more casual frogging around Hobart, photographing the common (but infrequently encountered, at least for Sydneysiders) Brown Tree Frog, followed by some much-needed sleep.....

I’d like to now reflect on Aaron’s last great frogging trip – to the south-west of **Western Australia**, in spring 2018, only a few weeks before he disappeared. This was a trip I was unfortunately not able to join him on but was filled in on all the details day by day. He was however accompanied by Queensland frogger, Jono Hooper, someone, who at least from my viewpoint, Aaron had taken ‘under his wing’ and shared the frogging spirit with. In only a relatively short matter of time the two had become good friends.

It was on this trip that Aaron had ‘cleaned up’ some of the last aspects of Australian frogging that had previously eluded him. It was on this trip that he broke the “200” mark, that is photographing his 200th described species or subspecies of Australian frog (ultimately

reaching 204 species), a feat I know reached by probably only two or three froggers before him. Australia currently has 247 described species and subspecies and more in the pipeline. It was also on this trip where he photographed fabled species including the Turtle Frog (*Myobatrachus gouldii*), Sunset Frog (*Spicospina flammo-caerulea*) and the Sandhill Frog (*Arenophryne rotunda*), which were the last three extant genera of Australian frogs that he had not photographed.

Photographing over 200 Australian frog species representing all Australian genera is no easy mark, and if anything were to immortalise the frogger in him, it should be that. He told me once that while he viewed it impossible to photograph all the frog species in the world (no doubt impossible within one lifetime except possibly for a billionaire), he thought being able to photograph all the families of frogs worldwide would be the ultimate goal of a frogger. While he won’t be able to achieve this, I feel I’m happy to take upon the challenge myself on his behalf – I’m up to 10 out of 55, but I’ll get there...



Spicospina flammocaerulea, Walpole, WA

Aaron Payne

There are so many other memories about Aaron I could reflect on, whether it be the time he drove me, Scott and Tie Eipper out as far as Tinda Creek in the Wollemi to look for *Litoria*

littlejohni only to hear a few *verreauxii*, or the days searching for *Pseudophryne* with Ian Bool across the New England as part of our effort to confer our frog knowledge into the world of



Myobatrachus gouldii, Perth, WA

Aaron Payne



Arenophryne rotunda, Shark Bay, WA

Aaron Payne

taxonomy. Or the time he drove out alone to the Musgrave Ranges of northern South Australia to see the newly described *Pseudophryne robinsoni*. So many things. However one aspect

of herpetology that Aaron was really keen on and deserves some reflection was tadpoles. Aaron has probably photographed more tadpoles of Australian frog species than anyone



Pseudophryne robinsoni, Musgrave Ranges, SA

Aaron Payne



Tadpole of a new tree frog species *Litoria watsoni*, Goongerah, Vic

Aaron Payne

other than Marion Anstis, whom his scientific style lateral and dorsal shots were very much influenced, and encouraged by. He would go on to have his photos of the tadpole of *Pseu-*

dophryne robinsoni featured in the second edition of Marion's 'Tadpoles and Frogs of Australia' (2017), and he still remains the only person to have photographed and documented



Litoria watsoni, now a new species very closely related to *Litoria littlejohni*. Morton NP, NSW

Aaron Payne

tadpoles of this species. His passion and ability to photograph tadpoles easily translated into photographing crayfish, one of his many 'branches out' from frogs into other realms of natural history. Aaron also had a particular interest in the historical side of frogging in Australia and would often tell me stories about some of the earliest froggers accounts and experiences. A history that has now become well and truly enshrined into himself.

The times Aaron and I spent frogging and chatting will never be forgotten. Nor will the memory of an emboldened frogger walking determinedly through the rainforest creeks or flooded swamplands. Together we shared moments most people will never experience, or could even imagine. I can say with absolute honesty, I am truly honoured to have been able to spend the time I had with him.

I miss you greatly...



Aaron in his element, delighting in the thrill of frogging at night

Kylie Caro

MOSQUITOES AND FROG PONDS

Assoc. Prof. Cameron Webb

NSW Health Pathology, University of Sydney



Aedes vigilax (Common Mosquito) attacking a finger

Cameron Webb

Mosquitoes and frogs share one important thing in common. They both love water. While this means that any backyard with a frog pond will probably also have at least some mosquitoes buzzing about, there are still important things you can do to keep the mosquitoes to tolerable levels while providing safe conditions for frogs and tadpoles.

Mosquitoes are an incredibly diverse range of insects. Not all of them are pests. They have short but relatively complex life cycles. Mosquito eggs are laid on or around water bodies. When the mosquito larvae (commonly known as “wrigglers”) hatch from eggs, during the warmer months they could complete their development to adults in about a week. Adult mosquitoes don’t live much longer than three weeks. During that time, mosquitoes will feed on plant sugars (perhaps they help pollinate out backyard plants) but the females also need blood. The blood provides the extra nutrients they need to develop their eggs. It’s just a shame they like to bite people and pets.

It is probably not possible to build and maintain a completely mosquito-free frog pond but that doesn’t mean they’ll be a problem. Even though some features of a pond that are great for frogs are also favourable for mosquitoes, there are things you can do to keep numbers in check.

If you’re building a new pond, mosquitoes are often the first creatures to move in. Mosquitoes love shallow and still water with plenty of vegetation, whether it is floating plants or emergent reeds and rushes. If you can design a pond with some deeper water sections, it is less favourable for mosquitoes while also helping fish and other mosquito predators to survive. Some mosquitoes also love surfaces to lay eggs. The more rocks and logs that are in a pond, the more opportunities there are for mosquitoes to lay eggs.

As the ecology of the pond develops, fewer mosquitoes will lay eggs and there is a greater chance there will be other aquatic insects in the pond that eat or compete with mosquito wrigglers. Tadpoles of common Australian frogs don’t actively

hunt down to eat mosquito larvae (although they do occasionally munch them by accident) but there are aquatic insects that will eat mosquito wrigglers. If you provide a pond with lots of opportunities for a diverse range of aquatic insects, mosquitoes may be less of a problem.

Fish will eat mosquito larvae but they may also eat or attack tadpoles. Never release the plague minnow (*Gambusia holbrooki*, aka the 'mosquitofish') into a pond; that will be disastrous for tadpoles. Other species of small native fish can be useful. Although they may eat young tadpoles, they're more likely to leave the older tadpoles alone and concentrate on mosquito larvae. Try to avoid any non-native fish, just in case they escape into nearby waterways. Pacific-blue eye, empire gudgeon, and various rainbow fish have been shown to assist in controlling mosquito larvae but sometimes they may struggle to survive in a backyard pond. If possible, it may be best to try to add all male fish to avoid overcrowding.

It is important to remember that the mosquitoes biting you in the backyard may not be coming from your frog pond. Mosquitoes can find a home in various places around the backyard, from bird baths and rainwater tanks to drains and gutters,

and from pot plant saucers to water holding plants (such as bromeliads). Reduce the amount of water sitting about the backyard and that will help keep mosquito numbers down too. Make sure your rainwater tank is correctly installed and screened.

There is a range of mosquito control agents that can be used in the backyard. Most of the insecticides won't be specific to mosquitoes so you should expect some impact on other backyard insects. There are some products (e.g. biological larvicides and insect growth regulators) that can be applied to water-holding containers and other sources of mosquitoes. They're far less likely to have an impact on frogs and tadpoles. While there isn't evidence that biological control works effectively against mosquitoes, encouraging birds, microbats, lizards and spiders around the backyard will assist in keep mosquito numbers down too.

When you're outside at dawn or dusk, you can wear a topical insect repellent. Most registered products available in Australia will provide sufficient protection if you apply it as an even layer over all exposed skin. Cover up with long-sleeved shirts and long pants if you're planning to spend a night out frogging in the local wetlands.



Typical garden frog pond

Cameron Webb





Crucifix Frog
Notaden bennetti
© George Madani

FATS Frog-O-Graphic



BEST IMAGE: Above: Littlejohn's Tree Frog, *Litoria littlejohni*

Josie Styles

BEST IMAGE: Below (see centrefold): Crucifix Frog, *Notaden bennetti*

George Madani



Competition WINNERS



MOST INTERESTING IMAGE: Above: Peron's Tree Frog, *Litoria peronii*

John Pumpurs

MOST INTERESTING IMAGE: Below: Giant Barred Frog, *Mixophyes iteratus*

Michelle Toms



Frog-O-Graphic Winners



PEOPLES' CHOICE: *Litoria aurea*

Josie Styles

BEST PET IMAGE: Green Tree Frog model!

Ollie Streit



...and some other entries



(Above): This metamorph *Litoria peronii* leaves the water well before the tail has fully resorbed

Michelle Toms

(Below): Oops! Dwarf Sedge Frog male, *Litoria fallax*, amplexing a recently metamorphosed Peron's Tree Frog

Josie Styles



WIRRA-LO WETLAND REVIVAL

Nomination for SERA award, 2018

Damien Cook



Monitoring plot in Black Box, dominated Lignum Swampy Woodland at Wirra-lo after receiving shallow environmental watering

The Wirra-lo Wetland Complex is a 60-hectare series of swamps, creeks, depressions and associated alluvial terraces located on a 280 hectare covenanted private property owned by Ken and Jill Hooper, about one kilometre north-east of the junction of Barr Creek and the Loddon River in Victoria.

Wirra-lo Background

Wirra-lo was once regularly flooded from Barr Creek, the Loddon River and/or the Murray River. The hydrology of this area was fundamentally altered due to construction of artificial levees. Currently only extremely large flood events, such as the one that occurred



Rare Spotted Emu bush, *Eremophila maculata*



Grey-crowned Babbler, listed as endangered in Victoria



Barapa Barapa elder Uncle Duck Charles planting in Brolga Swamp at Wirra-lo Wetland Complex as the wetland was being filled by a delivery of environmental water.

in 2011, inundate these wetlands. However, the region where Wirra-lo occurs has been declared “flood prone” and the artificial levees are no longer being repaired. The next major natural flood event is likely to destroy what remains of the artificial levees and hopefully the regions hydrology will return to a more natural state. In the meantime, environmental water can be delivered to Wirra-lo’s wetland via a series of irrigation channels.

Ken and Jill Hooper used to irrigate pasture at Wirra-lo as part of their dairy-farming operations. They are keen observers of the natural world and purchased Wirra-lo in 1992 mainly for its natural values including its wetlands and areas of River Red Gum and Black Box woodlands. When they retired the property from farming in about 2004 they decided to protect the property with a perpetual Trust for Nature covenant. They have removed all the irrigation infrastructure except that which is necessary to deliver water to the wetlands. They also set about to actively restore areas of natural wetlands using their extensive knowl-



Wirra-lo planting and guarding October 2016

edge of irrigation and earthworks to re-instate appropriate flooding and to restore the natural grassy understorey of drier areas, using selective application of herbicides.

Some of their main objectives were to have Brolgas breeding in their wetlands, protect their healthy population of Grey-crowned Babblers and to re-establish a population of the nationally vulnerable Growling Grass Frog, which was last recorded at Wirra-lo in 2003.

Monitoring and mapping of the wetlands at Wirra-lo in November 2014 showed there are nine Ecological Vegetation Classes (EVC’s) all of which are listed as rare or threatened. A total of 120 species of plants were recorded at Wirra-lo in November 2014; 78 (65 %) of which were indigenous and 7 are listed as rare or threatened (4 of these are wetland dependent). Permanent quadrats and photo points were established to monitor the wetlands response to environmental water and other restoration activities.

A vegetation survey conducted in May 2020 revealed a total of 167 plants species, 125 of which were indigenous and 16 are listed as rare or threatened (12 of these are wetland dependent). Of the 47 new species that were recorded in 2020, 30 had been re-introduced via a revegetation program since 2014, including 9 rare and threatened wetland dependant species.

Wirra-lo Wetland Condition

In 2012 the overall condition of wetland and floodplain vegetation at Wirra-lo was assessed as poor, despite some localised areas of higher



Aquatic plant re-introduction inside netting (at left)

Development of Brolga Swamp, 2018–2020



1. Brolga Swamp 27 Oct 2018

2. Brolga Swamp 7 Oct 2017

3. Brolga Swamp 12 Dec 2017

4. Brolga Swamp 2 Jan 2020



Re-established aquatic vegetation at Brolga Swamp, including the nationally vulnerable Ridged Water-milfoil (*Myriophyllum porcatum*), December 2017.



Revegetation after netting removal, including the rare Swamp Buttercup (*Ranunculus undosus*), December 2017. Five years ago this area was an irrigated paddock.



The nationally endangered Stiff Groundsell (*Senecio behrianus*) planted at the Wirra-lo Wetlands. This species was thought to be extinct for over 100 years.



Weed control beside **Brolga Swamp**: areas treated (left) and untreated (right). This area was treated with herbicide to kill weedy annual grasses including Wimmera Rye-grass and Wild Oats.



Increase in regeneration of Paper Sunray (*Rhodanthe corymbiflora*) after weed treatment with herbicide.



Increase in regeneration of Leek Lily (*Bulbine semibarbata*) after weed treatment with herbicide.

quality vegetation. However, flooding in 2011 combined with removal of stock and weed control has allowed for excellent natural regeneration. This combined with earthworks to re-instate natural hydrology and species-enrichment planting has set the wetlands at Wirra-lo on a trajectory of rapid recovery.

Wirra-lo Revival

With the aim of restoring Brolga habitat on Wirra-lo Ken and Jill Hooper designed and got funding for “Brolga Swamp”, an 8 hectare “sub-project” of their Wirra-lo restoration efforts. In November 2015 an earth bank was created to allow an area of former wetland to be inundated. A Landcare grant was used to fund revegetation which was carried out by local Barapa Barapa traditional owners and ecologist Damien Cook. The North Central Catchment Management Authority organised an environmental water delivery and Ken took care of the weed control.

Using a local reference EVC’s as a benchmark, plants were selected for re-introduction and planted in the habitats that would have the appropriate hydrological regime.

Achievements and Successes

1. **5000 plants of 50 species** were planted throughout Brolga Swamp. This combined with direct seeding and some natural regeneration has resulted in the re-establishment of 8 hectares of diverse wetland vegetation.

And the frogs returned!



Endangered Growling Grass Frog, *Litoria raniformis*

2. **Populations of 9 threatened species** were established, 3 of which are nationally threatened including Stiff Groundsel (*Senecio behrianus*), Ridged Water-milfoil (*Myriophyllum porcatum*) and Floating Swamp Wallaby-grass (*Amphibromus fluitans*).

3. **76 ha of weed control** was undertaken, with demonstrated increase in natural recruitment.

4. **Three Barapa Barapa traditional owners were trained and employed** to deliver all planting works on the Wirra-lo ecological restoration project.

5. **The nationally vulnerable Growling Grass Frogs (*Litoria raniformis*)** was heard calling in Brolga Swamp in Spring 2017, only 2 years after the project began

6. **Brolga have been observed** visiting Brolga Swamp.

Total cost including in-kind contributions: \$15,900.

A short video on the restoration of Brolga Swamp can be found here:

https://b-m.facebook.com/pg/rakaliecological/videos/?ref=page_internal&mt_nav=0

PROJECT PARTNERS/SUPPORTERS



Peron's Tree Frog, *Litoria peronii*

A new species of frog in the *Litoria ewingii* species group (Anura: Pelodryadidae) from south-eastern Australia

Michael Mahony, Bede Moses, Stephen V. Mahony,
Frank Lemckert & Stephen Donnellan

Abstract

“Population declines and range contractions among Australian frogs that commenced in the early 1980s continue in some species that were once widespread. The generality of this pattern has been difficult to discern, especially for those species that are encountered rarely because they have restricted periods of calling activity with poorly defined habitat preferences, and are not common. Several lines of evidence indicate that *Litoria littlejohni* is such a species. This frog was once known from mid-eastern New South Wales to eastern Victoria, and evidence from wildlife atlas databases and targeted searches indicate that it has declined in large portions of its former range, leaving several populations that are isolated, in some cases restricted in distribution, and of small size. We investigated the relationships among populations using mitochondrial ND4 nucleotide sequences and single nucleotide polymorphisms (SNPs) from the nuclear genome. We found that northern and southern populations form two highly divergent genetic groups whose distributions abut at the southern margin of the Sydney Basin Bioregion and these genetic groups also show divergence in morphology and male advertisement calls. Here we describe the populations to the south of the Sydney Basin Bioregion as a new species and provide information on its distribution and ecology. In light of the apparent isolation and small size of known populations of the new species and the consequent restriction of the range of *L. littlejohni*, we assessed the conservation status of both species.”

The new species has been named *Litoria watsoni* after the Victorian frog taxonomist Dr Graeme Watson. It replaces *Litoria littlejohni* from about the Avon River catchment system south to NE Victoria. The main differences are in the call, DNA and distribution.

You can read the paper describing this species at: <https://doi.org/10.11646/zootaxa.4858.2.3>

Below are the two species for comparison. As colour varies in individual frogs depending on environmental and hormonal factors, the differences seen here are not species-specific.

Littlejon's Tree Frog



Litoria littlejohni, Darkes Forest, NSW

Aaron Payne

Watson's Tree Frog (likely to become its common name)



Litoria watsoni, Jervis Bay, NSW

Marion Anstis

Metamorphosing Endemic Tasmanian (Green) Tree Frogs

Craig Broadfield

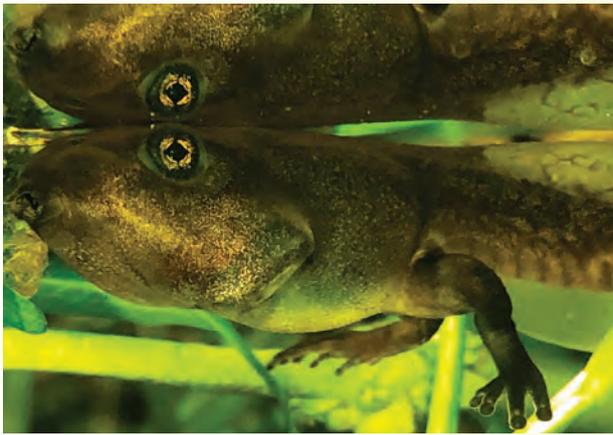
All the literature I can locate does not contain photographs of the metamorphs of the Tasmanian endemic tree frog, *Litoria burrowsae*. I will endeavour to bridge this gap as my latest batch of tadpoles grow. The metamorphs of *Litoria burrowsae* are approximately twice the size of any *Litoria ewingii* metamorph that I have raised in the past. Here I present a photo set which clearly shows the X of the eye which is noticeable in the tadpole and the early metamorph of *L. burrowsae*, but disappears as the frog matures. Also visible is the yellowish

inside of the legs, which again, does not appear to be mentioned in published data. Until now I was led to believe that this yellow colouration was a feature of *Litoria ewingii*, Tasmania's only other small-medium *Litoria* species, rather than in *L. burrowsae*. This is a definite learning curve for me!

Note: Metamorphs take a number of months before any adult green pigment appears. I will keep track of their progress and hope to write up more observations in future.



Tadpole of *Litoria burrowsae* at stage 41 (two fully formed back legs) just prior to the front legs emerging.



Stage 41 showing the distinctive X shape in the eye



Stage 42 (four legs)



Above (left side): recent metamorph *L. burrowsae*, showing last part of tail yet to be resorbed and yellow tinge under legs



Above (right side): recent metamorphs of *L. ewingii*, both are noticeably smaller than the metamorph *L. burrowsae*



Right: *L. burrowsae* stage 45, tail bud now resorbed, X in eye still visible.



NB: finger and toe discs are larger than those of *L. ewingii*

We've created a Wetland - the full story

Alan Lane

You may remember the story in **FrogCall** 159 February 2019 (see FATS website www.fats.org.au for a copy) about our rehabilitation project in which we created a wetland at the headwaters of Popes Glen Creek...

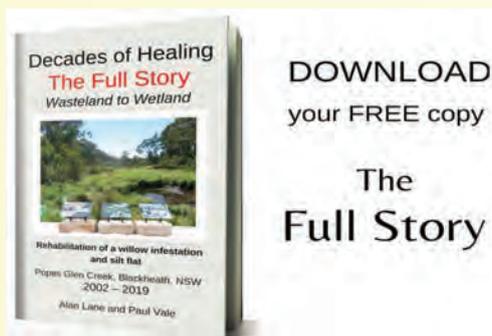
We've now made a general-audience 8-minute YouTube video "**We Created a Wetland**" summarising the transformation of the weed-infested and highly degraded site into a thriving wetland. We use drone aerial footage with voiceover to describe the wetland as it is now, with embedded historical images showing the work in progress over the 16 years of the project. You can see it at:

<https://www.youtube.com/watch?v=610sas330EQ>

At the completion of the project in 2018, the Environmental Trust reviewer commented: "The group and its partners (primarily Blue Mountains City Council) not only restored a highly degraded, non-functioning silt slug into a thriving upland swamp ecosystem, replete with diverse communities of frogs and birdlife, but they demonstrated careful planning, adaptive management and a clear focus on monitoring and interpretation of results, to achieve it"... "Hats-off to this group on an outstanding achievement. Popes Glen Bushcare Group and BMCC working together have delivered

a highly effective project management, translating into outstanding results for the local environment and community, which can now be used as a demonstration site. Congratulations on the past six years of hard work and the evident results."

We've also written up a complete 170-page report telling the whole story - called, appropriately enough, **The Full Story** - documenting all aspects of the project and showing that a group of dedicated volunteers can complete a project that many thought impossible. It describes the failures and lessons learned as well as the successes and illustrates the application of "adaptive management" in conducting a complex, long-term project. It includes 18 appendices with full scientific data about the many monitoring programs we conducted (frogs, birds, macroinvertebrates, stygofauna, native and exotic vegetation, soil accumulation, water quality, ground water properties and quality). This is a comprehensive report intended both as a historical record and a motivational and "how-to" guide for those interested in wetland restoration or contemplating any project that seems daunting and too large for a volunteer group to tackle. It is available for download free from Bookfunnel, <https://dl.bookfunnel.com/ebgais2pxn> in formats for PC, i-pad, i-phone, tablet and Kindle.



The Full Story - download the video (see link above).



Example of part of the wetland construction

Homeschooling - Froggy Style!

Adriana Rios

As a homeschooling family, we often enjoy group themed lessons where we can pursue a passion and dive right in, whilst still tailoring to suit each child's level and interest. One of their favourite studies are Frogs! Particularly for Kahliel, my 10-year-old son who has been an avid frogger since he was a toddler! Kahliel enjoys learning about frogs because they are "really cool!" with their distinct patterns and calls. He likes to learn about their habitats, the different species and their behaviours. And that the best part is looking for them, "it's like a treasure hunt". He likes to research, identify and conduct his own observations at home or when out in the wild and says "I wish we could all learn about them so we can help protect their

habitats and future". Our family's most exciting frogging adventures were seeing first-hand the Strawberry Poison Dart Frog and the Granular Poison Frog in the jungles of Costa Rica.

The kids enjoy reading and learning all about frogs from:

Frogs of Australia (Marion Anstis)

Frog Call magazine (FATS)

Wild Life Magazine (Taronga Zoo)

Amazing Facts about Australian Frogs and Toads (Steven Parish Publishing)

Amphibians (Adele Richardson)

Biological Science - the web of life (The Australia Academy of Science).



Kahliel (10) and Leonel (3) using Marion's Frogs of Australia to learn about frogs!



Kahliel avidly reading the December FrogCall while Leonel takes a nap!



Homeschooling froggy style - Santana (17), Leonel (3) and Kahliel (10) learning a very important lesson: how to draw frogs!

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 schedule and advertise all monthly field-trips as planned. It is YOUR responsibility to re-confirm in the last few days as to whether the field trip is proceeding or has been cancelled. Phone Robert Wall on 9681 5308.

5th December: 8.15pm Darkes Forest Leaders: Josie Styles and Cassie Thompson

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

A frog's call is one way of easily identifying a frog. Most male frogs have an inflatable vocal sac around the throat area. As this vocal sac expands, it amplifies the sound. This sound can sometimes be carried considerable distances. Curiously though, some frogs, like *Litoria lesueurii*, (Lesueur's Frog, or sometimes simply called the "Rocky River Frog"), lack any significant vocal sac, and have a surprisingly soft, muted call. It is thought by some that the noisy stream-sides and loud, bubbling rapids where they live, may negate any advantage of a loud call. Tonight, looking at *L. lesueurii*, we will spend some time looking at the vocal sacs of frogs. We will also discuss the rather complex behaviour around the calls of a frog, and how important calls can be in finding and identifying frogs. Josie and Cassie are both professional field biologists and have developed an acute understanding of call behaviour. With this understanding, they have also developed a remarkable sense of listening for, and identifying frog calls. It has become an essential part of their work in finding frogs and reporting on the health or vulnerability of frog populations, particularly those threatened by infrastructure projects. We are fortunate tonight to have their expertise in showing us the importance of call behaviour, both to frogs and to froggers.

Sunday 6th 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 and at www.reptilepark.com.au

30th January: 8 pm Homebush Bay Leader: Josie Styles

Meet at Wentworth Common carpark. The carpark is in Marjorie Jackson Parkway, about 150m from the intersection with Bennelong Parkway.

This site is perhaps the best-known frog site in Sydney. The Sydney Olympics thrust the Green and Golden Bell Frog onto the front pages of every newspaper in the country. The Bell Frog became instantly familiar to all Sydney-siders, and also became instantly our most controversial frog. Since the Bell Frog conservation program was announced amid a blaze of Olympic euphoria in 2000, perhaps no Sydney frog population has been better monitored over the last twenty years. Josie has been at the heart of much of this research. She is intimately familiar with the intricate matrix of wetlands in this area, and tonight will give us an update on how well they are doing at this site. She will also provide some insights into the behaviour of this rather interesting frog. Josie has had a long and distinguished career studying native fauna in the wild. She has an in-depth understanding of the ecology and behaviour of a number of species in particular, a result of many years of intensive study and research. Bell Frogs, as it turns out, are one of her favourite subjects, so tonight should be special!

20th February: 8.15 pm West Head, Kuring-gai NP Leader: Cassie Thompson

Meet at the Duckholes Picnic Area, corner of McCarrs Creek Rd and West Head Rd, Terrey Hills.

In the early days of Sydney, several green spaces were set aside for the crowded, urban slum-dwellers of the city. It was thought that this would provide an affordable day of rest and recreation for the city's less privileged residents. These urban fringe reserves, with close proximity to the city, often with lovely views, and importantly, on land considered superfluous to the city's needs, were administered by the "Scenic Views Board". This perhaps underlined the primary focus of these reserves. They were for the quiet enjoyment and passive recreation of man, their purpose was not wildlife conservation. These parks, nonetheless, became the precursor to our present-day National Parks system, and almost accidentally, have become important refugia for Sydney's wildlife. Tonight, Cassie will lead us around West Head.

Cassie is an Environmental Officer with the Roads and Maritime Service. She specializes in biodiversity issues and has an acute understanding of the "flow-on" effects of the encroachment of the once-distant, outer-limits of the city. Tonight, she will introduce us to some of the very unique species that have survived at West Head. These frogs will provide us with an insight into those frog populations that once ranged across much of Sydney before the onslaught of suburbia.

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 one 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.sydneyolympicpark.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 a great 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, practical and free meetings each year. Visitors are welcome. We are actively involved in monitoring frog populations, field studies and trips, have displays at local events, produce the newsletter **FrogCall** and **FrogFacts** information sheets. FATS 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. Check our website for meeting or event changes due to COVID 19.

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FATS ON FACEBOOK: FATS now has over 3,230 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. Contact us 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 annually by a vet with herpetological experience.

NB: FATS now has **Student Memberships** available for \$20 annually, including electronic Pdf Frog Call issues, but no hard copy mail-outs. <https://www.fats.org.au/membership-form>

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