

FROGGCALL

No 128, December 2013



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MEETING FORMAT

Friday 6th December 2013

6.30 pm: Lost frogs needing homes. Please bring your FATS membership card and \$\$ donation. **DECCW amphibian licence must be sighted on the night.** Rescued frogs can never be released.

7.00 pm: Welcome and announcements.

7.15 pm: Short talks by Arthur White and Marion Anstis. Some of Marion's books will be available for sale.

8.00 pm: Presentation of Frogographic Awards.

8.15 pm: Xmas party food.

Thanks to all speakers for an enjoyable year of meetings, and all entrants in the Frogographic Competition.

Email wangmann@tig.com.au to send an article for Frogcall, or if you would like to receive a Pdf copy of Frogcall in colour - every two months.

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Cover photo: Red-eyed Tree Frog, *Agalychnis callidryas*, George Madani

President's Page

Arthur White

The good thing about FATS is that people enjoy coming to meetings and being part of its various activities. It is a pleasure to belong to FATS. This sense of enjoyment, as well as useful activity, is achieved because of the people who make up FATS. The members of the executive do their jobs well and without fuss. The rest of the membership pitch in when needed. We all know that a successful group is a co-operative group, and so FATS is not besieged with cliques or self-interest sub-groups that have torn other societies apart. And so I applaud all of you for maintaining FATS as a fun place to be.

FATS is also financially strong, thanks to our long-standing Treasurer Karen White. Because we are so sound, we again offered student research grants this year. Grant Webster was successful in attaining a second grant for his frog work on male colouration in frogs.

FATS held a number of community activities this year including various talks at community groups such as the Wolli Creek Society, Dural Library, frog activities at the Kuring-gai Wildflower Gardens, the Royal Easter Show and children's education sessions at "Science in the City" at the Australian Museum and in some schools. Great thanks are given to Kathy and David Potter and family for organising most of these events.

FATS also undertook the Bell Frog auditory surveys at Sydney Olympic Park in November and December. Thanks to SOPA for supporting us. FATS is a member of the NSW Government's Advisory Committee on Native Animals, as well as the Task Force for Cane Toads in NSW.

Robert Wall organised a great series of field trips that are always well attended. These are for anyone who wants to come- you don't have to be frog know-all to attend. 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.

Monica Wangmann, our editor, has been busy as always, producing Frogcall, our flagship publication. It is a great credit to her and a wonderful means of getting frog news around. Our special December colour editions (produced by Marion Anstis) have become collectors' items.

Many thanks to our other executive members: Wendy and Phillip Grimm, Marion Anstis, Andre Rank, Andrew Nelson, Lothar Voigt, Punia Jeffery, Kathy Potter, Vicky Deluca and Sheila Briffa. Each has contributed whole-heartedly and helped keep FATS alive and well. This year Andrew Nelson will be stepping down after serving for quite a while as our Membership Officer. We are most appreciative of Andrew and Fiorella Nelson's long hours of work in this role. Sheila Briffa will also retire, and we thank her for her contributions.

Another special thanks to our web site Manager, Phillip Grimm. Phillip's efforts have turned our web site around to become one that is current and much more presentable. If you haven't seen the revised web site please do so. Any feedback that you want to give us is welcome. Phillip has also volunteered to take over the job of Membership Officer after Andrew Nelson retired. Thank you Phillip for all the time and effort that you have put into our website, and for accepting the job to look after our membership organisation.

Another big thanks is due to Judy Harrington who helps with the room set up each meeting and is a staunch FATS ally. Thank you Judy.

Finally, I would like to thank all of our members for making FATS such a great group to be in. People really make an organisation and FATS is the pick of the bunch. It is a joy to be President of FATS and to be involved with you all.

DON'T go into the jungle after dark!

George Madani

'Keep looking it straight in the eye, try and make yourself as big as possible and whatever you do don't run!' remarked the man in the faded khaki uniform with casual indifference.

'And failing that?' I asked.

'Fight!' he said earnestly as he wiped the sweat from his brow.

Pumas and jaguars...

'And avoid brushing up against any foliage. In fact don't touch any plants', he warned.

On account of Bullet Ants, aptly name for their overwhelming sting which hits you like a bullet, the pain so strong it is known to make grown men wail in agony for days.

That and the next to invisible highly camouflaged vipers coiled amongst the leaves, branches and palm fronds, conveniently positioned at perfect waist height where your hands dangle unexpectedly.

'And don't go swimming in the rivers', he said in a tone that didn't hint at jest.

Bull sharks, caimans and crocodiles...

'If you hear a crashing sound in the undergrowth coming towards you then climb as quickly and high as you can into the nearest tree'. Urgency in his voice this time.

White-lipped peccaries. Unassuming hog-like little New World Pigs. Unassuming, of course that is except for the fact that they are highly aggressive and can occur in large stampeding hordes numbering in the hundreds, with bristly hair erected in a threatening spiny crest and clacking their slicing tusks as they charge through the jungle undergrowth.

'But I thought you said not to touch any plants?' I queried.

'This will be worse' he replied, unamused.

That was our initial safety briefing and welcome to Corcovado NP, located on the Osa Peninsula in the remote south-west corner of Costa Rica.

Oh dear!

Earlier in the day, my delightful and kindred frogger girlfriend Susie and I had flown from San Jose. In slow winding circles we rose above the Cordillera Central, forming but one chain of the spine of mountain ranges that dissects the country between the Pacific and Caribbean versants. Our tiny plane was slightly buffeted by rising thermals, whilst circling black vultures made full and graceful use of them. After a very short flight, we descended into Drake Bay from where our waiting lift took us on a bumpy drive through secondary jungle to our awaiting boat. Brightly coloured birds flashed past the ute, giving us the briefest of tantalizing glimpses. Excitement was mounting. We arrived at a stark black sandy beach where we alighted a small boat. From there we crashed across the waves, impressed by diving brown pelicans, brown boobies and soaring pterodactyl-like frigatebirds. Eyes peeled in the hope of seeing sea turtles or whale sharks, we were instead delighted by the antics of Pantropical spotted dolphins as they frolicked alongside the boat.

After an hour of bone jarring wave-hopping, we were dropped off onto a shallow reef on the edge of the most remote national park of Costa Rica. Too shallow for the boat to land, we jumped in waist deep into the ocean and waded towards shore. Our skipper pointed in the general direction of where we should go and left us to our own devices. For all we knew we could have been abandoned on a deserted island.

Hermit crabs scuttled out of our way, ensconced in their elaborate-shaped backpacks, as exotic and mysterious bird calls emanated from behind the tangle of palms and vines concealing a neotropical paradise. On the sand were tracks yet unwashed by the incoming tide. Most of them were unfamiliar, small pads with large claws; perhaps a raccoon. But there was one set of tracks that was unmistakable. The sure-footed and confident stride of a large feline was evident. Puma! And based on the tide, fresh! Less than 6 hours old!

We trudged along an open grassy swath that served as an emergency landing strip. Backpacks weighed down on our shoulders as the bite of the midday sun began to make itself felt. We

hoped this was the correct path. Suddenly up in the canopy to our left, branches began shaking violently, coupled with the cracking of timber and vigorous rustling of leaves. Dark, agile little silhouettes were moving within the shadows, using their tails as a fifth limb. Spider Monkeys! ‘Scrrawwwk’!!! Away to our right, soaring above the green roof of the jungle, resplendent Scarlet Macaws!!! ‘Yo-yip, a-yip, a-yip’. Vibrant Chestnut-mandibled Toucans made themselves known from their perch as they watched us from eyes positioned behind ridiculous oversized beaks. We had arrived in a lost world paradise!

A modest timber building with an encircling verandah lay up ahead. Fortunately we had arrived in the right place and we were very glad to drop our packs, our shirts already sticking to our backs. Sirena Ranger Station, the remote headquarters of what National Geographic referred to as ‘the most biologically intense place on Earth in terms of biodiversity’!

And so it was that upon arrival we met the ranger who along with being very welcoming, was quick to point out all the dangers that could be faced whilst here.

He went on to mention the house-keeping rules and something about the fact that due to the remoteness and inaccessibility of the park, going

out at night was perceived as too great a risk, as should something happen, help wouldn’t be able to arrive until dawn. Here we were in the most biologically diverse place on the planet and we weren’t going to be allowed to go spotlighting?! Being afflicted with an acute sense of selective hearing, most of my attention was focused on a pair of juvenile iguanas basking on an Aroid palm while certain rules were being dictated.

We spent the rest of the afternoon exploring the extensive network of trails, and sure enough this neotropical jungle jewel was true to its reputation. We were very fortunate to come across many obscure and exciting jungle creatures. A snuffling, rummaging family of coatis, cute long-nosed members of the raccoon family that travel around in large groups, tails held high as they fossick amongst the leaf litter.

Tiny golden squirrel monkeys, gambolling among the lower branches in the dappled light of the canopy, accompanied by a double-toothed hawk as it followed them around, ever vigilant and ready to pluck the fleeing insects and reptiles startled by this rambunctious troop of primates.

Even an obscure and improbable Tamandua! An arboreal anteater with soft fur and a long probing tongue licking from the end of a pointed furry face. It was an absolute joy to watch him tear apart



Smilisca phaeota - Masked Tree Frog, well camouflaged on Ginger flowers

Susie Adamczyk

rotten branches with his strong claws in search of a tasty meal of termites.

As evening drew on, and following a surprisingly delicious meal, other visitors began to retire for the night. Susie and I only needed to look at each other, and with a silent nod, we made good on our pre-determined escape plan and stealthily disappeared into the dark. We didn't turn on our head torches until we were well into the jungle, fervently hoping that a puma or jaguar wouldn't ambush us in the meantime. We made our way to a small stream that we had reconnoitred earlier that afternoon.

'Dink!' 'Chock,' 'Whorup!'

'Dink!' 'Chock,' 'Whorup!' 'Waaaaaaaaaawk!'

There is nothing more frustrating and deliciously enticing as hearing a chorus of frog calls that you have no clue as to what they are.

The metallic 'dinks' belonged to the aptly named Dink frogs of the genus *Diasporus*. The resonant 'whorups' to the largest frogs you've ever seen. *Leptodactylus savagei*, sumo wrestlers of the frog world. They look like they could swallow our *Mixophyes* whole with barely a gulp. For their size, these 'chicken frogs' (as we affectionately referred

to them), were big sooks, and would often bolt down large burrows which were always nearby. The penetrating 'waaaaaaaawks' were Masked Tree-frogs *Smilisca phaeota* - handsome green-faced bandits that are members of the Hylid family. But what were the 'chocks'?!

Susie and I, well versed in the art of triangulation, soon narrowed down the culprit. 'Holy snapping ducks!' I exclaimed. *Agalychnis callidryas*, the Red-eyed Tree-frog!!! A stupendously photogenic frog, the body a crisp granny smith apple green, striking dynamic blue in the thighs that continued past the flanks to the armpits, where they were bordered and intersected with sun bright yellow lines. The toes were bright orange right up to the discs, and of course there were the mesmerizing oxygen-rich, red blood eyes that hid behind a filigreed lace veil when closed. Many a calendar, poster and frog book have been graced with an image of this species. I don't think I blinked for about 10 minutes, my eyes just absorbing its beauty.

Susie left me to my stupor and it was not long before I heard her excited squeals and snapped out of it. It took all my self discipline to extract myself from this incredible frog only to behold something equally overwhelming. Our first Glass Frog! Tiny, delicate and almost transparent. We would

Leptodactylus savagei, sumo wrestler of the frog world

Susie Adamczyk





Above: *Agalychnis callidryas* – Red-eyed Tree Frog
Below: *Espadarana prosoblepon* – Emerald Glass Frog

come to learn that these members of the Centrolenid family would prove difficult to find as they usually called from very high in the canopy, often over flowing streams. With many different forms and patterns they were simply stunning to behold. Males call from up on high either on the topside of leaves but occasionally whilst glued to the underside of the leaves where they guard their eggs. One species in particular, *Hyalinobatrachium valerioi*, has taken parental care to the next level and evolved its body pattern to mimic that of a delectable-looking globule of jelly festooned with pale green eggs. The males protect them from wasps and parasitic flies that would hope to otherwise lay their own eggs within them.

One thing we didn't expect to find was horse pooh! Or what looked very reminiscent of horse pooh. Brown, fibrous nuggets floating in a pool on the side of the track. We didn't have to wait long to discover the maker of such conspicuous by-products of digestion. As the night wore on and the frogs quietened down, distant thunder and lightning encouraged us to return to the ranger station. We raced an incoming tide on the beach

George Madani





Hyalinobatrachium valerioi George Madani
Calling Glass Frog beneath leaf with matching egg clutch

only to be interrupted by a pair of battling kinkajous - adorable looking little savages who spend most of their time feeding and foraging within the canopy. Two males were battling it out with a lot of vigorous branch shaking and yapping.

When the show was over and one of the males finally conceded defeat, we followed the beach along until we reached the same grassy strip that served as an emergency airstrip back to camp and decided to turn off our head torches to avoid detection. Walking at a brisk pace with little more than a sliver of moonlight to show the path, a sudden galloping crash in the long grass beside us saw the world record broken for high jump

from a standing start. I braced myself to punch an invisible oncoming puma in the head whilst Susie had the sense to put her head torch on. And there in the beam of the light, a great big oversized fat, sleek skinned pig with the most ridiculous trunk like appendage on the end of its face. No not a pig, a TAPIR! This gentle-eyed creature was actually quite beautiful in its own rotund wallowing kind of way, and also stupendously rare!! The largest mammal in Central America and owner of the mysterious horse poohs (which it incidentally is distantly related to), here it was, mere metres from us in one of its final refuges on the planet. I suspect that Susie must have carried me back to the station after I fainted in overstimulated awe.

It was only a few hours of rest before the thunderous eruption of howler monkeys woke us before the pre-dawn. Forget the intimidation of war drums, I can honestly tell you that if any medieval army had a troop of howlers at the front of their contingent and were able to make them



Dendrobates auratus George Madani
Green and Black Poison Dart Frog



Oophaga pumilio Susie Adamczyk
Strawberry Poison Dart Frog

howl on command, the enemy would forfeit their decision to contest and return home with soiled pants well before battle lines could be formed. Their calls can be heard from up to five kilometres away through dense jungle, and here they were, these roaring primate alarm clocks in the trees directly above our room.

The beauty about Central America is that the frogs don't just reign supreme at night. Calling valiantly from their perches in the middle of the day were bright little froggy soldiers. Poison Dart Frogs! These vibrantly coloured members of the Dendrobatid family are so named because the skin secretions of several

species from this group are used by indigenous tribes to poison the tips of their arrows and darts. Their skin is toxic because the frogs are able to sequester the necessary chemicals that they derive from their diet of ants, mites and beetles to synthesise their own toxins. Therefore these frogs are able to be active during the day, as their bright colours indicate that they are toxic and don't taste very nice, thus serving as a warning to would-be predators. This is known as aposematism.

Poison Dart Frogs also have really cool breeding strategies. The female Strawberry Dart Frog, *Oophaga pumilio* for example, is the most attentive of mothers. She piggy-backs her tadpoles to leaf axils of bromeliads where she deposits them safely into small accumulations of water. The mother then returns every day to feed them. How? With her own unfertilised eggs! *Oophaga*, Latin for egg-eater. Amazing!

We were sad to leave Corcovado NP but were not disappointed in the rest of our travels, where we traversed both the Caribbean and Pacific slopes and coasts, making friends and discoveries along the way. Sleepy sloths, mesmerizing golden eyelash vipers, splendiferous hummingbirds and caves full of bats including the dreaded Vampire!

Costa Rica is a beautiful country with friendly locals and a heavy emphasis on eco-tourism. In fact, whereas elsewhere in the world deforestation continues to take its toll, Costa



Phylllobates lugubris

Susie Adamczyk

Lovely Poison Frog - male transporting a tadpole

Rica is one of the few exemplary nations which is actually INCREASING their forest cover through tree-planting initiatives and active on-ground conservation work. Hope remains for frogs and all the other delightful creatures that make this land bridge between the Americas so unique.

After Costa Rica I went to Panama to join an international team in search of more frogs, in areas where native Indians still rule supreme and white man has only dared venture once before. Whilst there we discovered new species and re-assessed the population of presumed extinct frogs. Exciting adventures were had – (but that's a story for another time)...



Cruziohyla calcarifer
Splendid Leaf Frog

George Madani

Finding and Photographing Frogs

Ken Griffiths

If you are interested in frogs then Australia is one of the best places to be. Living in Sydney offers an enormous variety of habitats and with that comes a great variety of frog species. Finding frogs is often difficult and it takes some time to learn the necessary skills to track them down. Triangulation of the call is a common method but you need a few people to lock in on the direction. By far the easiest method is finding their eye shine with a torch. Telling FATS people this is of course preaching to the converted, but if you are not a FATS member then joining up will allow you to acquire the necessary skills and at the same time meet a great group of like-minded people to go frogging with.

Frogs are secretive creatures and are not normally active by day. Some species are diurnal to some degree but are still well concealed and a methodical approach to finding them is required. By day most species are concealed beneath rocks and logs or hiding in burrows and hollow tree branches. Some species also rest on leaves and reeds as well and by carefully searching vegetation that overhangs the water they can often be seen. Do not disturb resting frogs, as if they become active they may lose their camouflage and easily fall prey to predators.

By far the best way to observe frogs is at night. All species are most active at night and are easily observed with good lighting. When using the triangulation method, at least three people form a circle around where they think the call is coming from. When the frog commences calling (and this

may take anything from a minute to whenever), the three torch beams are pointed to where the frog appears to be calling and where the beams cross is where the frog “should” be.

Eye shine is the best method as most frogs have fairly good eye shine. There is an art in perfecting this method as you have to learn the difference between insect and spider eye shine. If there is a bit of rain around, water droplets also resemble eye shine, especially if the water is coloured with tannins from plant materials. Frog eye shine is a subtle orange-yellowish glow and the larger the species the brighter the shine.

The best places to look are along creeks and around the edges of swamps and lagoons. Warm damp nights during spring and summer are usually good for frogs. The best nights are those in which you wouldn't send your dog out, let alone wander around a muddy swamp during or after torrential rain, however it will all be worthwhile when you get some great pictures of frogs doing what they do in this type of weather.

Spotlighting for frogs is good fun because you see a whole host of other animals and insects that you would not normally encounter. Just a word of warning though, some venomous snakes and dangerous spiders are active by night. As frogs usually live in a wet or damp environments, the terrain is often slippery and potentially dangerous. You have to remember also that you most likely have a camera in hand or around your neck so this makes stability on uneven wet ground even more difficult. There is also a chance of becoming



Crucifix Frog, *Notaden bennetti*

Nyngan, NSW



Whirring Tree Frog, *Litoria revelata* Smith's Lake, NSW

disorientated in the dark and getting lost, so it is always a good idea to familiarise yourself with the area during daylight hours first.

Although it is tempting to pick frogs up and place them in a more “posing” posture, they should not be touched as there are various diseases that can be transferred to them. The dangling leg syndrome has worn a bit thin these days anyhow! Besides, more natural and accurate behavioural pictures are taken when frogs are photographed in situ without disturbance.

Taking the pictures

You don't have to have a single lens reflex (SLR) camera to take good wildlife pictures, however



Dwarf Tree Frog

they do make it a lot easier and more reliable. A macro lens is ideal for this type of shooting. If you only have the standard lens that came with your camera, you can buy close-up filters for the front of the lens, or a tube set that fits between the camera and the lens, and both will let you get in a lot closer with little quality loss.

I find that most people use their cameras on auto or P mode, and although this works fine for many situations, when shooting with close-up subjects the results are often disappointing. Why is this? Most SLR cameras tend to use a fairly wide aperture in auto mode. This is usually around f4 or f5.6 and these apertures give shallow depth of field in close-up photography. The result is often pictures which are not sharp on important parts of the subject. There is a simple solution and all you need to do is set the camera to manual



Crested Forest Toad, *Rhinella margaritifera*
Ecuador, South America

mode and select the flash sync. speed, which is usually around 1/200 of a second, depending on the camera model. Next select a smaller aperture that gives good depth of field, such as f11 or f16, which will give adequate depth of field for most shooting. Avoid the very smallest apertures of f32 as this may cause a type of distortion.

Don't worry about the flash as it will expose the subject automatically so long as you have a dedicated flash unit. Whether you are using external or built-in flash, the settings are all the same. Another tip is that when the flash is being used, most cameras automatically set the ISO to 400. Although this is generally acceptable, because you are shooting at close distances, you can change



Peron's Tree Frog, *Litoria peronii*

Heathcote, NSW

the ISO to 100 to give maximum quality with no noise. Even better results can be achieved by using two flashes, or even special flash units designed for macro photography. If the flash unit has a pull out diffuser which sits over the front of the flash, then use it, as this will soften the harshness of the flash. You can also buy diffusers and these are not very expensive. Ebay is a good place to buy flash accessories.

If you don't want to carry around a heavy SLR kit, top end point and shoot cameras from Canon, Nikon and Sony etc. also do an excellent job on macro setting with in-built flash.

Happy frog photography!

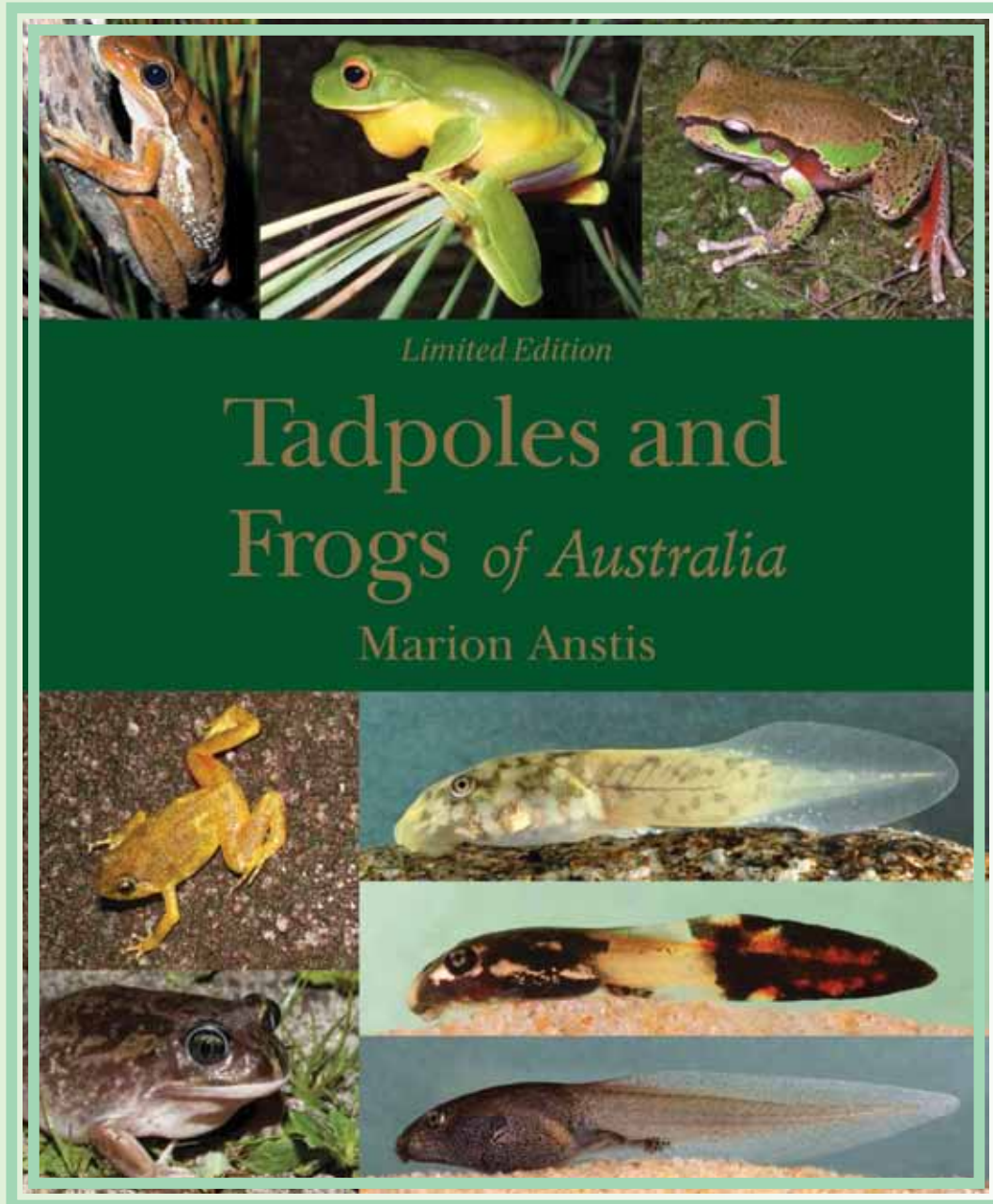
All photos by:

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The Birth of a Book!

Marion Anstis



My new book has come alive at last! It is 832 pages packed with photos and information about the life histories of our Australian frogs. Published by New Holland, it will be available later in November 2013, and has over 3,060 images, including colour photos of all adults, most tadpoles and meticulous drawings of each tadpole and the oral disc of each as well. There are special sections on the early embryonic development of many terrestrial-breeding frogs, most of which have been little understood, and plenty of information about the development of aquatic species. RRP is \$125 (\$145 incl. postage). The Limited Edition is almost sold out, but there are regular copies available from the publisher (<http://www.newholland.com.au/>) and other booksellers.

My very special thanks to FATS and Taronga Zoo for their generous sponsorship, without which this book may not have been published, and to all the FATS members who assisted in various ways.

Following the publication of my first book *Tadpoles of South-eastern Australia*, I had requests from a number of people to provide a similar guide to tadpoles and frogs of other States. So I eventually decided to tackle the whole country in one, rather than produce several field guides for different regions. Ten years later....it is finally here....

But it wasn't a simple task! Looking back, I have no idea how I finally got to the end of it all. First I needed to seek some funding to assist with travel costs, and between 2003–2006 I was greatly helped by grants from the Worldwide Fund for Nature and the Australian Biological Resources Study. To provide a goal to help me focus and finish such an enormous project, in 2008 I enrolled as a PhD student in Newcastle University under the supervision of Michael Mahony. In my second year I applied for a scholarship and was again very fortunate to be successful, so that all my travel costs were now covered.



My mobile laboratory and 4WD workhorse at Devil's Marbles in central Australia.

The research for *Tadpoles and Frogs of Australia* meant I had to seek out some of the most difficult species in very remote parts of Australia. I purchased a campervan and a 4WD in 2003, and the van became both my home and mobile laboratory where I set up my microscope and camera and examined tadpoles and frog eggs wherever I found them.

So where did I go? My early trips were to north Queensland, where I met friends and colleagues who provided me with much helpful advice on localities for various species. While most tourists visit the north during the dry winter season, I had to go in the wet, of course, when frogs are most active. This meant dodging or chasing cyclones (many frogs breed after such heavy rain) and keeping only to tarred surfaces. No vehicle can avoid being bogged on unsealed roads in the north during the wet – especially Cape York and outback Queensland. Being on my own meant I had to be

especially careful, and an EPERB and GPS were essential (back when GPS wasn't incorporated in mobile phones and cameras).

For some of the stream-dwellers such as *Litoria nannotis* and *Litoria dayi* in the Wet Tropics, I had to struggle among very slippery rocks in the middle of fast-flowing rapids where these tadpoles occur, so it is best to look for them before heavy rain periods! To finally meet tadpoles of the recently re-discovered *Litoria lorica* (previously thought to be extinct), my friend Tim Hawkes and I had to go snorkelling in the deep clear pools of a river where the strongly muscled, streamlined tadpoles with their sucker mouth race to the bottom and under massive rocks to escape. What an adventure that was, and thanks to Tim we collected 16 tadpoles so now they could be described and photographed for the first time.

I couldn't go to Cape York by road during the wet, so I did one trip with friends in October, and although too dry for breeding to have occurred for the remote Melville Range Tree Frog (*Litoria andiirrmalin*), I managed to see the adult frog with its magnificent huge eyes peering out at us from a massive pile of granite boulders – a delightful animal with a lovely placid nature! And great to get photos of the Long-snouted Tree Frog (*Litoria longirostris*) with its beautiful pale green egg clutch on a tree trunk above the shady pool in a rainforest stream.

I had to carry several large plastic dishes (wash basins) in which to raise tadpoles wherever I went, and while on the road, the tadpoles travelled successfully in half-filled strong plastic bags supported on all sides in divided compartments within two large foam fruit boxes



Melville Range Tree Frog, *Litoria andiirrmalin*

in the car boot. Then each night when I stopped, I fed them and photographed some and checked for any metamorphs, which had to be removed. The burrowers such as species of *Cyclorana* often raced through to metamorphosis in the warm northern temperatures, so I was kept very busy feeding metamorphs as well! I had to go out at night in an area to spotlight for the adult frogs I needed to photograph, and find any breeding pairs (if I got lucky), then I was usually up first thing in the morning to examine fresh eggs under the microscope. During the day, I would stop at various water bodies along the way and go tadpoling, often in hot sun. Each day was very full.

It was impossible to find all the tadpoles and embryos I needed in one trip, so I did four trips to north Qld, and one to SE Qld. Yet I still missed embryos of many microhylid species which are so hard to find! They hide their big white eggs in palm axils, under logs or leaves and in burrows. However I was happy to have some to photograph and document their early development (again thanks to my friend Tim and his great field knowledge) until they hatched from the egg as tiny froglets.



A tiny Ornate Nursery froglet, *Cophixalus ornatus* about to hatch

Then I was off to conquer some accessible parts of the Northern Territory, both in the centre and the north, where I was assisted by Ian Morris and Graeme Sawyer. We had many adventures over a period

of three years in Kakadu, Fogg Dam and other frog havens, and the billions of mosquitoes really loved our visits too! The country is superb because there are such vast areas where water lies in floodplains, lagoons and ditches throughout the wet, and it is literally frog heaven!

In autumn I was off to far south-western Australia, because the *Heleioporus* species begin to call and breed then and I was after some eggs (which are laid in burrows before the winter rains), to photograph and raise. I was only able to get some eggs of *Heleioporus barycragus* but it was great to see their early development, which you can see shown in my book. The south-west is also a mecca for some very unusual and endangered frogs and I had to go back again in spring to catch up with

the brilliantly coloured Sunset Frog (*Spicospina flammocaerulea*) when it breeds, along with very rare members of the genus *Geocrinia*, some of which are on the brink of potential extinction, largely due to logging and habitat loss.

In all, I did three major trips from Sydney across the Nullarbor to Perth (including SA) and further south, and a fourth trip north to the Pilbara and Kimberleys. In between I did two other trips to the north-east of WA around Kununurra and also a wonderful flight into Mitchell Plateau in the Kimberleys. I also did two trips to the centre around Alice Springs, to the Flinders Ranges in South Australia and the south-east of SA and south-east and west of Victoria. Unfortunately there was no time to do another trip to Tasmania to add to what I had seen when I went there for my first book.

I had no mechanical trouble in all these years doing around 200,000 km, except for one flat tyre in Queensland. That was when I was ably assisted by a young couple who stopped, and after we had lifted all the tadpoles out of the boot to get the spare tyre (!), the young girl changed the tyre while her boyfriend looked on (he did the heavy lifting at least!). Another time I ran out of petrol on the road to Charleville and a big old truckie gave me a lift to town. What a long way up the ladder into the cabin of the truck! I was hoping he was friendly, but fortunately all was well...

Then there was the time I had to rescue a poor aboriginal girl on the way to Ormiston Gorge west of Alice Springs. She had been raped and was hurt. It is hard to see the way they live in so many outback towns, and they have so little to look forward to. But I took her to Ormiston and later back to her 'home' in Alice. She was unable to muster the courage to report her case to the police...

After finding the tadpoles came the long months of drawing them, initially in pencil with the aid of the microscope and then using pen and ink to do all the dots. The species I was unable to find were either thought to be extinct, or found only in remote places inaccessible in the wet except by helicopter. I have only scratched the surface of my journeys in this article (did I mention running out of petrol at midnight in a remote part of Kakadu?!), but I now know what a fabulous BIG country we have, and I'd like to go back so I can just enjoy the land and its wildlife without having to be otherwise thoroughly occupied. Above all I hope you enjoy this book, which is the summation of a singular lifetime passion.



Tim Hawkes examines net contents while snorkelling for stream-dwelling tadpoles in flowing pool



L. lorica tadpole showing large suctional mouth and strong tail muscle for holding on and swimming in fast currents



Left: *Litoria lorica* tadpoles feeding on a special crushed food mix adhering to rock in aquarium



Right: Adult male *Litoria lorica* on wet rock face in stream at night



Ghost Glass Frog
Sachatamia ilex
© George Madani



FATS Frogographic



Best Senior Image: *Rana picturata*

David Nelson



Best Junior Frog Art image

Ryan Little



Senior Pet Image

Karen Russell

Competition WINNERS!



Best Senior Frog Art

Vicki Deluca



Most Interesting Senior Image: Green-eyed Tree
Frog *Litoria serrata*

George Madani



People's Choice: Giant Barred Frog, *Mixophyes iteratus*

George Madani

Frogging in Madagascar

Henry Cook

A trip to Madagascar is on just about every wildlife fancier's bucket-list. The appeal of the vibrant and colourful animals is almost universal. Just about everybody knows what a chameleon is and after the "Madagascar" movies most small children and their parents know all about lemurs.

Less well known is the Malagasy frog fauna. The frog fauna is amazing. One hundred percent of the native species are endemic to the island. At present there are around 300 frog species described from Madagascar. It has been suggested that the total would number over 400 species. This makes up some 4 percent of the world's amphibian fauna. Only Mexico, Columbia and Brazil have more endemic amphibian species.

In early 2012 I spent a month in Madagascar chasing wildlife and taking photos. The diversity was staggering. We visited two main biogeographic zones, with most time spent in the eastern rainforests. Needless to say we spent much of our time searching for wildlife.

The East coast of Madagascar is dominated by dense tropical rainforest. Much of the frog diversity resides here and in the north-east. Also, many of the interesting lemur species live here. There are several accessible national parks that we were able to visit. I had a few target species and frog-wise I was mainly after some of the wild-looking *Boophis* and any of the genus *Mantella* - the Malagasy radiation of the poison-arrow frogs.

I got my wish and within a few days a shower of rain at Andasibe had brought out many species from the forest onto the road near our bungalow. Highlights were the Blue-eyed Frog *Boophis viridis* and *Boophis rappoides*. Although not as colourful we also found one of the world's largest microhylids - *Plethodontohyla inguinalis* - easily as big as a giant barred frog.



Plethodontohyla inguinalis, Andasibe; the world's largest microhylid

In the area were several *Mantella* species; both of which required hiring cars and a special day trip. Neither were like anything I'd seen before. *Mantella baroni* was black with green limbs and orange legs while *Mantella aurantiaca* was a much simpler fluorescent orange. They were absolutely mind-blowing.

The Masoala Peninsula is a large area of forest to the North-East of the island. Accessible only



Boophis rappoides, Andasibe



Mantella aurantiaca, Torotorofotsy



Mantella baroni, Mantadia

by air, the road washes out every year with the wet season. It is seldom repaired. In this lowland forest we saw more amazing creatures including Helmet Vanga, Short-legged Ground Roller (both birds), Red-ruffed Lemur and Aye-Aye Lemur. Pygmy Chameleons, Leaf-tail Geckos and strange Hedgehog-like tenrecs too. We also saw some

spectacular frogs!

Other *Mantella* species lived in that area and we quickly found the tiny *Mantella ebenaui* with his bright blue dorsum calling from leaf litter during the day. On the island Nosy Mangabe we found the magnificent *Mantella laevis*, famous for laying eggs in dead giant bamboo and featured in the Attenborough series “Life in Cold Blood.”



Boophis viridis, Andasibe

Back in the town of Maroanetra, with two hours before our flight, our guide whisked us through town to see what may have been the amphibian highlight of the trip. I found it strange that the scientific name of this species, *Discophus antongili*, did not elude to the striking colouration of this frog. Fortunately the common name, Tomato Frog, does.



Discophus antongili, Tomato Frog, Maroanetra



Fat-tailed Lemur, *Cheirogaleus media*, Kirindy Forest

This magnificent species was found in a rubbish-filled drainage ditch in the outer suburbs of town. It wasn't "classic" habitat, but certainly worth the hurried trek through town and the mad rush to the airport.

We also spent a week in the drier Western side of the country at Kirindy Forest. The area has been made famous by spectacular baobab trees that punctuate the landscape. Where it hasn't been cleared the landscape is largely deciduous vine thicket.



Mantella ebenaui, Antongil, Masoala

The typical time to visit this area is the dry season when some Lemur and Fosa (the largest

carnivore on the island) can be seen easily. Once the rain starts Fosa disappear, but the rest of the forest comes alive. We arrived in the middle of a cyclone and spent four days ducking out to search for critters between torrential downpours. The rain caused the Labord's Chameleon to hatch. This species has the shortest known life-span for a four-legged vertebrate – four to five months. Several frogs emerged. *Discophus insularis*, the less spectacular cousin of the Tomato Frog was out and about, as were several burrowing frog species.

Similar in size to the Australian barred frogs, *Aglyptodactylus laticeps* were calling loudly from roadside puddles. A Fat-tailed Dwarf Lemur had emerged from aestivation and was feeding on the new growth tips of trees above our bungalow.

After considerable searching we found some tiny *Mantella betsileo* calling from a stream bank. After a few minutes we'd located the frog and admired his tiny form and blue spotted belly. I pulled out my camera and took a single photo. As if on cue the storm broke and I rushed to put my camera away before the rain really got going. The heavens opened and continued to dump for the rest of the day.

Bad luck for me... Great weather for frogs though!

All photos by Henry Cook.

Frog Enchantment

Jilli Streit

While my country cousins longed to swap their pet ponies for our suburban bikes, I dreamed of swapping our bike-friendly footpaths for their swampy creeks. Growing up, the closest I ever came to the savagery of nature was a jam jar full of tadpoles.

To collect the tadpoles I had to ride my bike to the Arboretum of an agricultural institute near where we lived, in Adelaide. Hidden among the trees was a small dam full of yabbies. Sometimes, after rain, there were *taddies* there too, swarming in the shallow water at the edge of the dam. Most days after school the Arboretum was patrolled by a gang of high school mischief-makers who went there to smoke. Once I was sure I had slipped past the bully patrol, I climbed carefully through the barbed-wire fence surrounding the dam and slid over the red-clay bank to get to the water. Scooping up as many tadpoles as was reasonable I did the whole thing in reverse, trying not to lose any of my precious cargo on the way.

The tadpoles lived in their jam jar next to my bed and grew quickly on their diet of boiled lettuce leaves. When they had legs I auctioned them off to the highest bidder among my friends and classmates. This earned me plenty of favours, as well as the reputation of “class naturalist”. Undoubtedly, my innocent efforts dispersed the population of Spotted Marsh Frogs (*Limnodynastes tasmaniensis*), Southern Brown Tree Frogs (*Litoria ewingii*) and Pobblebonks (*Limnodynastes dumerilii*) widely throughout the district. Of course, knowing what I know now, I wouldn't dream of moving tadpoles.

But then, I had a thriving *taddie* trade and, as a young entrepreneur, I was well aware of the special place that frogs, and their toady cousins, hold in the popular psyche. Frogs are omnipresent from our first moments in the nursery. They leap about the pages of our much-loved nursery books. They are characters, wise and witty, in fairy tales and fables. Every kid I knew loved frogs and, more to the point, everyone wanted one. Frogs simply sell themselves.

In fact, frogs don't JUST sell themselves. Frog appeal sells anything. If you look around you will see that, in Sydney, Red-eyed Tree Frogs sell new roofs. In Broome, peerless strings of pearls need the help of priceless Green Tree Frogs to sell them. Clearly, it is not just kids who 'get' the magic of 'frog' –adults 'get' it too. Frog enchantment is potent. And, it seems, a universally entrenched construct. In every culture I know of, there are stories of frog doings, from bewitched toads to sexually charged frog princes. But what is the secret of this charismatic force called 'frog' that pulls at our heartstrings and loosens the strings of our purse?

In essence, frog life cycles are slimy affairs from start to finish. What's there to love? Well, there is just something irresistible about it all. As a species we have a kind of elemental fascination with that white froth of spawn, those wiggling black tadpoles and that breathtaking transition from life in the water, to life in the air. How natural it seems for a tiny metamorph to climb out of the pond and onto the rock. So easy, so familiar, such a primordial act that echoes



I was well aware of the special place frogs and their toady cousins hold in popular psyche. They leap about pages of our much-loved nursery books, and are characters wise and witty in fairy tales and fables.....

back to the dawn of time, and we respond to it. Or perhaps I should say, we respond to them, because frogs come in so many guises.

What's the magic? Maybe it's their sticky 'fingers' that remind us of ourselves. Or perhaps it is the big bear hug of their pseudocopulatory embrace that resonates so strongly with us. Or is it just



What's the magic? Maybe it's their sticky fingers...

their winning smiles and their native comedy that charm us? Whatever it is, it trips our fantasy and we can't get enough of it. Walk into any library, school or shopping mall and I guarantee you will not have to go far before you meet a frog!

The night I brought Verdigris, the Green Tree Frog (*Litoria caerulea*) home, I ripped out the picture-perfect biosphere that I had been so caringly cultivating for a month in my big glass aquarium. There had been a little pond buried in the potting mix, filled with little polished stones. The ferns, baby tears and mossy creepers that I had planted were already growing over the rotting driftwood. It was very pretty, but highly impractical and down right lethal.

"Tree frogs live in trees", Monica Wangmann had gently reminded me when I collected my frog from her (as though anyone could ever forget



Verdi at home in his PVC pipe hang-out

such an obvious thing!). But in fact, Verdigris (Verdi for short) would certainly have been dead inside a month from the bacterial infection I was undoubtedly harbouring in all that beautiful, rotting organic matter of my perfectly appointed terrarium. I was shocked to think that I could have stumbled so recklessly into the pitfall of interior décor and forgotten that this was a TREE FROG RESCUE.

Verdi's new arrangement was sparse. A plastic bowl with clean water, a piece of PVC drain pipe for him to hide in, a heat pad stuck to the bottom of the glass at one end of the aquarium, a strong branch for him to do his nocturnal acrobatics



Verdi and Ollie

on, and a big rock to hold it all in place. He eats spiders, whole pinkies and crickets dusted with calcium powder. He used to eat woodies, until I found ten thousand escapees huddling under my sewing machine. And he once gorged himself on houseflies - but only once. It happened that one FATS meeting there were free sample containers of flies to take home. As Punia Jeffery handed me a container she looked me squarely in the eyes and said, "put them in the fridge for a while to slow them down, then cut a little slit in the lid and cover it with sticky tape. Here, take another box". "OK, thanks, that sounds easy".

What Punia must have inferred but didn't spell out, is that, HOUSEFLIES ARE HOUDINIS WITH WINGS. I followed Punia's instructions to the letter, but next day the aquarium was a-buzz with half a million houseflies. Every last fly had

escaped from the containers and a wave of horror swept over me as I watched them massing darkly around the homemade aquarium door, looking for a way out. Two things occurred to me; that Verdi could not possibly eat all these flies and that I did not want half a million flies in the house! It took a few weeks for all the flies to disappear. Every time I changed the frog water a cloud of flies escaped into the room. Clearly, I could not use Mortein so there was nothing to do but learn to love the insufferable flies. Now, I know what to do with a box of free flies!

Verdi, like so many frogs that come into care, hitched a ride south in a banana box. His trip left



Frogs sell ANYTHING! From roofing to toilet seats...



him with an injured nose that, although healed now, has resulted in a big grey scar. Not that our respect and, dare I admit it, our love, is in any way compromised by a scar. Verdi, who we can expect to be around for perhaps sixteen years or more, is part of the family now. We have given him a Professorship in the chair of education and a Frog of the Year award, every year, for tolerance - of our grandchildren and our ragdoll cat.

Captive frogs are one thing but there is absolutely nothing as thrilling for frog lovers as finding a frog in the wild. For most of us, that means FATS excursions. FATS conducts local excursions around Sydney that just last an evening but there are also excursions away from home that last several days. A FATS excursion to Smith's Lake, for example, is one of the favourite excursions away. It is like camping with friends (some you

didn't even realise you had), yet it isn't camping. You spend all day and most of the night outside in the sweetly fresh air, having brekky with the birds as the sun rises, and toasting the wonders of the world as it sets. You cook outside on a sheltered fire, while chatting with other FATS trippers who also love eating and, of course, frogging. You tramp about in the local ponds at night, looking for frogs with other FATS froggers, most of whom have an encyclopaedic knowledge of everything. Then, you sleep in a comfortable bed in a bunkhouse. Usually you share the bunkhouse, and some people get to share their bunk.

Tucked up in my top bunk one full moon night, I was dreaming that I was floating in the warm salty waters of the lake, my hair billowing out around me. Suddenly, my hair got snagged. I could feel it pulling so sharply that I opened my eyes. There, on my pillow, was a curious *Antechinus*, a native marsupial shrew, getting far too personal with a lock of my hair, its cheeky black eyes winking provocatively at me. I told it off and sent it packing to the floor. From a bunk across the room a sleepy Wendy Grimm said, "there's a hole in the wall over here". I drifted off hoping the *Antechinus* had found its way out through the hole and tried not to think what else might find its way in.

Ostensibly, FATS excursions are about exploring for frogs but in reality, they are about so much more. They are a chance to remember that you value nature in all its crazy and magnificent manifestations. They are an opportunity to recall that you love the sounds and the smells of the bush, the blue of the ocean and the diamonds that glitter at night and that you are really glad to be with other people who appreciate these things too. You remember why you started life as "the class naturalist" - you are pretty convinced that it wasn't just a commercial venture. On reflection, you are pretty sure it was because, like most of the rest of the planet, you just love frogs.

Photos of Verdi at home and with Ollie by Jasper Streit.



The Yellower the Better!

Grant Webster



Male Whirring Tree Frog, *Litoria revelata*, yellow signals ready to breed, Wallingat National Park, NSW

Males of many animal species are known and recognised for their colourful and extravagant displays during the breeding period for the purpose of attracting a mate. The tail feathers of a peacock, colourful dance routines by Birds-of-Paradise, and elegantly constructed bowers of Bower birds are all well-known examples of this. These over-the-top displays gradually evolve by a process known as sexual selection. As opposed to natural selection, sexually selected traits do not increase chances of survival but increase chances of reproduction for that animal. In most cases sexually selected traits are the result of female 'choosiness' – females select a male that has the most impressive display. Such traits may also be selected by other mechanisms which increase reproductive success – such as weapons that are used in male-male combat (e.g. antlers on deer) and signals which increase mate detectability or promote rapid sex recognition.

Sexual dichromatism refers to a difference in colour between males and females of a species and is usually the result of sexual selection. This is common in birds (males are almost always the 'prettier' one), but also in mammals, reptiles, insects and fish. Sexual dichromatism in frogs was, until recently, thought to be rare, occurring in only a handful of species globally – the famously now extinct Golden Toad (*Incilius periglenes*) is probably the most well-known example.

Any frog enthusiast from eastern Australia however, and FATS member who has been on a Smith's Lake field trip, would likely be familiar with the striking colour differences between males and females of the Stoney Creek Frog (*Litoria wilcoxii*) and Whirring Tree Frog (*Litoria revelata*), where males turn bright yellow during the breeding season, while females retain the usual brown colour. This is known as dynamic dichromatism – where the colour change is temporary, with males



Pair of *Litoria revelata* in amplexus: note bright yellow sides of male and brown female beneath

reverting back to brown during the non-breeding period. The colour change occurs rapidly (within minutes), and despite being such a conspicuous display, it has gone almost completely unstudied in science.

For my honours project I decided to look into this behaviour in the Whirring Tree Frog, a small hylid frog from eastern Australia, which is well known for its horrendously high-pitched 'whirring' call (anyone who attended the February 2003 Smith's Lake Field Trip won't have forgotten that sound yet!). My initial intention for the project was to attempt to understand why the males change colour and why this behaviour is restricted to certain species.

The initial hypothesis was that the yellow colour would function as a display to female frogs and yellow would be selected by female choice. To test for this I looked for a relationship between colour and reproductive fitness in a population at Wallingat National Park NSW. I recorded the colour of 38 males in amplexant pairs (using an optic photospectrometer) and raised the offspring to metamorphosis, comparing survival and development between cohorts. I also recorded the colour of 44 single calling males and looked



Non-breeding male *Litoria revelata* showing typical dull brown colouration

for a relationship with call (as call is known to be attractive to female frogs). The results of the experiment demonstrated that a greater intensity of male yellow display colour is associated with greater fitness in relation to fertilisation success, increased tadpole survival and larger size at metamorphosis (due to a longer larval period). I also found there appeared to be no relationship between colour and call characteristics, suggesting colour is not used to attract females.

A likely explanation for all this is that the colour is not directed at females, but rather at other males, indicating a level of fitness, 'maleness', to potential rivals, and to make the brown females easier to spot in large breeding choruses. When a female arrives at the breeding site (attracted by male calls), the male with the brightest yellow in the immediate area would likely secure the mate as he is less likely to be challenged by duller rivals – even if it was not this male's call that initially attracted the female to the pond. This way the yellow colour is propagated by 'scramble competition' where colour acts to promote quick recognition of mates and is not subject to female choice.

By investigating the prevalence of dynamic dichromatism globally, I found many dichromatic species to be 'explosive' or large aggregation breeders, with a male-biased sex ratio – promoting high competition over females. This is certainly the case in the Whirring Tree Frog. On one night we counted 350 males and only 15 females around the breeding site. This is good supporting evidence for the scramble competition hypothesis, where colour is used to identify mates and signal status to rival males, not to attract females. This has also been suggested for the Moor Frog (*Rana arvalis*) from Europe and Asia, an explosive breeder in which breeding males turn blue. As a continuation of this research I have now identified dynamic dichromatism in 182 frog species globally, when it was previously only known from 31. This is an area of research which is gaining momentum and there will be many more discoveries in coming years, but yes, the yellower the better.

I would like to thank my supervisor, Martin Whiting, Macquarie University and the Lizard Lab, all the people who volunteered their time to assist me in the field and FATS for the generous grants that went a long way to helping me complete this project! All photos by Grant Webster.

NB: Grant was successful in winning the award for the best Honours student paper at the Australian Society of Herpetologists meeting, 2012.

Smith's Lake Glimpses

Smith's Lake in the central coast region of NSW is our favourite field trip camp site, and many of our members have enjoyed some great times together there on our bi-annual trips to the area. Here are some 'non-frog' glimpses of our special place. Our thanks to Arthur and Karen White who make these trips possible.



A view of the wonderful exposed roots of the *Melaleuca* trees which crowd the shoreline around the lake. This is in the grounds of the Smith's Lake Field Study Centre managed by the University of NSW and is where FATS goes for our popular bi-annual weekend field trips. Photo by Riona Twomey



Kooka at entrance to nest in termite mound on tree



Sacred Kingfisher beside the lake



Andrew and Barbara enjoy a late afternoon stroll by the lake

Wendy finds a tiny Flying Duck orchid



A cheeky smile from Emariki after dinner!



Photos by Marion Anstis

Field Trips

Please book your place on field trips! Due to strong demand, numbers are limited. (phone Robert on 9681-5308).

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 as to whether the field trip is proceeding or has been cancelled. Check with Robert (9681-5308).

7th December. 7.30 pm The Watagans. Leaders: Brad and Matt McCaffery.

Take the freeway north. After approx. 83km, take the Morisset/Cooranbong exit. Turn right and travel approx. 2 km to the corner of Mandalong Rd and Freemans Dr, Morisset.

Tonight, Brad and Matt, who have a wonderful mastery of the use of Latin in scientific names, will help us understand their use as they employ their impressive frogging talents to find us some of the most spectacular frogs of this region.

18th January. 10.00 am Kariong (unless advised otherwise) Leader: Marion Anstis.

Take the M1 (F3) to the Gosford turn-off. Turn right at Woy Woy Rd and park on the left about 100 m or so along this road (look for TAD42C, grey Nissan X-Trail).

We are fortunate to have Marion Anstis available to us today. Identifying tadpoles can be a very useful method of determining frog populations and can be carried out in the more comfortable daylight hours. We will go in search of taddies and Marion will guide us through the sometimes tricky task of identifying them. This is a unique opportunity to gain important and useful fieldwork skills. Suitable for everyone from the beginner to the professional field biologist. Please note the morning start time. Wear/bring shorts, hat, sun protection and strong shoes that can get wet if you wish to get involved in the hunt! You will need a fine hand net (small holes) for tadpoling. A picnic lunch and water will be necessary. Make sure you contact Marion (frogpole@tpg.com.au) to confirm one week prior.

22nd February. 6.00 pm Scheyville National Park. Leader: Grant Webster.

Meet at the corner of Scheyville Rd and Dormitory Hill Rd, Scheyville. Our September field trip to this site was cancelled due to hot, dry and windy conditions. Grant has kindly agreed to lead this field trip again for us tonight.

Today, the remnant Cumberland Plain Woodlands are listed as an endangered ecological community. This once-vast woodland plain, encompassing most of western Sydney, has largely succumbed to urban development. Remaining fragments such as Scheyville reveal an astonishing array of biodiversity. The frogs of this shale country endure quite different conditions to their cousins of the coastal sandstone (Hint: refer to Frogfacts sheet #7 for further discussion of these differences). Tonight we will look in the field for some of these differences. We will also meet slightly earlier than usual to take advantage of the last light of the day so that we may take a closer look at those elements of botany and ecology that distinguish the Cumberland Plain as a unique community. Bring a light tea (such as a sandwich or thermos of soup and a fold-up chair). Grant has been part of an ecological team researching the biota of the Cumberland Plain, and we are fortunate to have his extraordinary expertise available to us tonight.

NB: In the event of uncertain frogging conditions, please phone 9681-5308. Remember, rain is generally ideal for frogging! Children must be accompanied and supervised 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. All field trips are strictly for members only – newcomers are welcome to take out membership before the commencement of the field trip.

Field Trip Disclaimer:

All participants accept that there is some inherent risk associated with outdoor field trips and by attending they agree to a release of all claims, a waiver of liability, and an assumption of risk.

Australian Reptile Park Annual BBQ

The Australian Reptile Park, Pacific Hwy Somersby www.reptilepark.com.au will hold its Inter-club Christmas BBQ on Sunday 9th December 2013 from 10 am to 3pm. This is a once a year get-together of herpetological societies and is an event not to be missed. Free entry to FATS members. Please take your current FATS membership card as proof of current membership.

**FATS meet at 7pm, on the first Friday of every EVEN month
at the Education Centre, Bicentennial Park, Sydney Olympic Park**



Thank you to the many Frogcall supporters.
Your articles, photos, media clippings, webpage uploads, membership administration, mail-out inserts and envelope preparation are greatly appreciated.
Special thanks to newsletter contributors: Lothar Voigt, Robert Wall, George Madani, Karen & Arthur White, Wendy & Phillip Grimm, Grant Webster, Peter Spradbrow, Marion Anstis, David & Andrew Nelson and Bill Wangmann.
The FATS committee especially thank Marion Anstis for producing our December Colour Editions.

FATS MEETINGS: Commence at 7 pm, (arrive 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, June, August, October and December (but not Good Friday). Call, check our web site or email us for further directions. We hold six informative, informal, topical and practical free meetings each year. Visitors are welcome. We are actively involved in monitoring frog populations, other field studies; produce the newsletter FROGCALL and FROGFACTS information sheets. All expressions of opinion and information 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 have over 600 facebook members from almost every continent. Posts vary from husbandry and frog identification enquiries, to photos and posts about pets, wild frogs and habitats from all over the world. The page includes frog related information files: <https://www.facebook.com/groups/FATSNSW/> **Monica Wangmann**

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