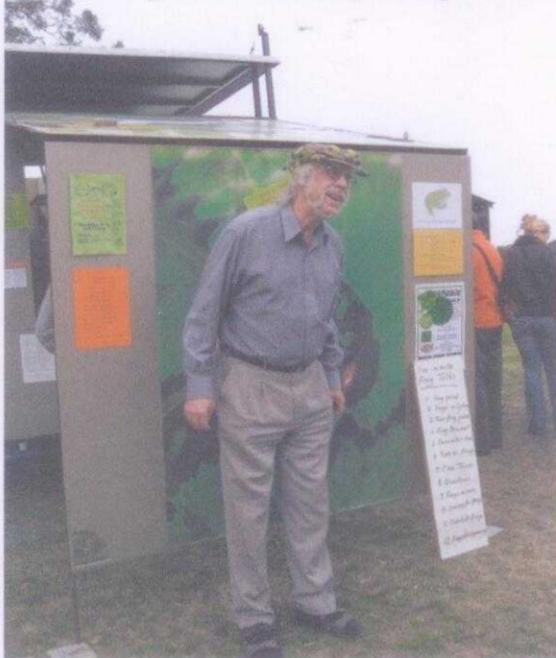


# FROG CALL

NEWSLETTER No. 97  
The Year of the Frog  
October 2008

THE FROG AND TADPOLE STUDY GROUP OF NSW INC  
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Lothar Voigt - Photo taken by Phillip Grimm



Farewell Frogmobile – Centennial Park 12 July 2008  
New home for our Frogmobile - to be announced soon.

## FATS WILL MEET ON THE SECOND FRIDAY OF OCTOBER

### MEETING FORMAT for 10<sup>th</sup> October 2008

- 6.30 pm Lost frogs needing homes. Please bring your FATS membership card, donation & amphibian licence to home a froggy friend.
- 7.00 pm Welcome and announcements.
- 7.30 pm The main speaker is Jodi Rowley  
Frog adventures in Viet Nam and Thailand  
David Nelson will report on the Smith Lakes flood trip.
- 9.00 pm Field trip reports and five favourite slides. Tell us about your recent frogging trips or experiences. If you have slides or other images, bring them along as well. Evenings end with our regular guessing competition, light refreshments and pleasant conversation.

*Please join us at our next meeting  
Arrive at 6.30pm for a 7.00 pm start*

**Friday 10<sup>th</sup> October 2008**

*end of Jamieson St. (off Holker St),  
Follow the signs to Building 22  
Homebush Bay, Sydney Olympic Park  
Accessible by bus or train. Call us for details.*



See page 3  
\*\*\*\* FROG-O-GRAPHIC \*\*\*\*  
\*\*\*\* COMPETITION, 2008 \*\*\*\*

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Pobblebonk *Limnodynastes dumerilii* Photo by David Nelson

## LAST MEETING 1<sup>st</sup> AUGUST 2008

**G**rant Webster opened the meeting, welcomed visitors and members and gave announcements. The election of the committee was carried out after Arthur White presented the President's report and Karen White, the Treasurer's report. We would especially like to thank the outgoing committee who have worked so hard behind the scenes. Lothar Voigt and Elvira Latham did stand again, due to other commitments.

For over a decade, Lothar has been our ambassador, the face and voice of FATS and former President. It is not known how we will fare without the enormous time and expertise Lothar has offered FATS. It will be up to our members to champion our cause, put time and effort in to the organisation, if we wish to keep this frog group viable. The President's report and our financial statement will be publicized in the December Frogcall.

David Nelson was our main speaker at the last meeting. He spoke about his honours project, under the supervision of Rick Shine and Michael Crossland. "Bufo for breakfast" How Cane Toads affect native predators and their prey.

Cane Toads have been in Australia for about 70 years. There have been attempts to find bio controls within its current range of 1.2 million square kilometres. It is predicted that the Cane Toad range will increase to 2 million square kilometres of Australia or even double their current range. They have a cocktail of toxins in their body, not found in Australian frogs. Native frogs have not co-evolved with Cane Toads. Surprisingly little is known about them.

There are no known extinctions of natives by Cane Toads, but declines of monitors, quolls, large elapid snakes and freshwater crocs have been recorded.

Animals who are surviving toads, use the following methods:

- Don't attempt to eat it ie Water python only eats rats
- Reject toad before it is fatal
- Have resistance to toxins or work around toxic parts of toad ie keelbacks, crows

Living with toads:

- Evolved responses – toxin resistant – innate aversion
- Learned responses

Monitors have low resistance to toxins but are still prevalent in Queensland, so they are getting around the problem somehow. Large elapids have prey selection, can't eat toads due to their head size and are toxin resistant.



David Nelson's study was carried out at Fog Dam, one hour from Darwin. He focused on two predators, the Northern Trout Gudgeon *Mogurnda mogurnda* (above) and Dahl's Aquatic Frog *Litoria dahlia* (below). It was observed that animals can learn, however in the short term it may be a catastrophe for some predators. It is not known why some quolls and monitors survive.



Dahl's aquatic frog, *Litoria dahlia* Photo by David Nelson

Australia has toxic natives now. It could be that the Cane Toad will become just another toxic frog. It may depend on how much neuro-plasticity natives have, to learn not to eat toxic prey. Will ecological and evolutionary processes dampen the toxic impact of toads? Will the evolution be too late for some species? MW



Rockhole frog, *Litoria meiriana* Photo by David Nelson

## FROG-O-GRAPHIC COMPETITION 2008

**T**he time has come again for you all to get creative with frogs and tadpoles as your subject. Either dig out your digitals or get your digits working with paint and get your entries in to FATS by the 15<sup>th</sup> November, 2008. The categories are:

1. Best Frog Photo - Junior and Senior
2. Most unusual/interesting - Junior and Senior
3. Best Frog Art Work - Junior and Senior
4. People's Choice Award - one only

**THERE IS NO FROG CALL OUT BEFORE THE CLOSING DATE, SO YOU WILL NEED TO REMIND YOURSELF!!**

Prizes will be awarded at the December meeting.

So have fun and post entries with your name, address and phone no. attached. Electronic images should be in Jpeg format and please keep the size of each photo under about 5 meg, as this will be plenty for a good display. You may email your photos to Marion at:

**frogpole@tpg.com.au** by the 15<sup>th</sup>,  
or post printed photos or artwork to:

**Marion Anstis  
26 Wideview Rd.,  
Berowra Hts 2082**

Good Luck!!

### PERONS WITH FRACTURED LEG



**F**ATS thanks veterinary Lee Peacock and the Bird and Exotics Veterinarians at Waterloo/Green Square, for their generosity and commitment to a lost and injured Perons Tree Frog, found at a Camperdown scaffolding yard, Sydney. The frog, which had a fractured leg, was delivered to the Bird and Exotics Vets, a couple of months ago by a worker from the scaffolding yard.

After x-rays, a splint was applied. It stayed on long enough for a reasonably stable callous to form. When the splint came off the fracture seemed stable enough to continue healing without any further stabilisation. It appears that frog bones heal faster than the literature suggests, which is a good thing for the frog!

The fracture however did overlap causing a slight reduction in the length of the bone but it doesn't seem to be bothering the frog at this stage. It is being kept confined to prevent jumping. The reduced length may limit future jumping ability.

It was carrying a reasonable number of parasites. The vets are only treating those considered to be a potential problem until he is fully recovered. He is now able to climb walls and hop around. The frog seems to be relatively happy. It is eating well and is quite active. Lucky frog! It will be x-rayed again soon to check on its progress. **The Bird and Exotics Veterinarians are at shop 3 Block D 1 Hunter St Green Square 2017, corner McEvoy Waterloo, ph 9319 6111 M to F 9 to 6.30pm and Sat 9 to 1pm AH, emergencies 9758 8666. MW**



# Native frogs born in rice bays consume rice pests

Christina Castellano, Sarah Ross, Sean Doody & Will Osborne  
Institute for Applied Ecology, University of Canberra

## in a rice hull

- Insectivorous frogs may be important for pest control in agricultural ecosystems
- Nearly five billion frogs may be produced in rice bays in the Riverina each year
- Native frogs born in rice bays consume a wide range of invertebrate pest species

**Frogs play very important roles in the ecosystems in which they live because they are a food source for many other animals including birds and reptiles, and they may be important in regulating populations of their prey species. There is also some evidence that suggests that insectivorous frogs that consume different types of insects may be important for pest control in agricultural ecosystems.**

Frogs are an important source of biological diversity. Biodiversity can be broadly defined as every species of wildlife, the ecosystems in which they live and their various ecological functions. Australia is a hotspot of biodiversity and is home to many species of reptiles and frogs. About 220 species of frogs inhabit this continent, 93% of which occur nowhere else in the world.

Although frogs have existed in Australia for the last 45 million years, their numbers are in drastic decline. The main causes of this decline are considered to be habitat loss, degradation and fragmentation, the introduction of non-native species into their habitats, the use of herbicides and pesticides, and infectious diseases, in particular a little understood fungus called chytrid.

## The importance of frogs in rice agroecosystems

Nearly a dozen species of frogs can be found in the Riverina, including the eastern banjo frog (*Limnodynastes dumerilii*) named for its call that sounds like the plucking of a banjo string, and Sudell's Frog (*Neobatrachus sudelli*), a burrowing species that may only be observed following a warm summer's rain.

Two of the more common species however, are the spotted grass frog (*Limnodynastes tasmaniensis*) and barking marsh frog (*L. fletcheri*). These species live in remnant patches of bushlands beneath logs, bark and in crevices in the ground. They breed in flooded rice bays, irrigation channels and dams between August and May. Males trying to attract females can often be heard calling during this time. While breeding, males hug females in a process called amplexus in order to stimulate them to lay eggs (Figure 1). Females

deposit foamy masses ranging from 80–1500 eggs around young rice plants. Tadpoles hatch after a few days but can take up to five months to develop legs and transform into adults. During this period, young frogs consume invertebrate prey while growing before they leave the rice bays and enter the terrestrial environment.

While there is recognition that frogs may be important in controlling invertebrate populations, little is known of their role as a natural control of pest species in agricultural ecosystems. Our research program, supported by RIRDC, RGA and the University of Canberra, aimed to:

- use pitfall trapping to estimate the number of spotted grass frogs produced in rice bays each year in order to calculate their annual invertebrate consumption
- determine through stomach content analyses the species of rice pests and other invertebrate fauna that frogs consume on rice farms.



Figure 1: Male and female spotted grass frogs in amplexus (Photo: Lydia Fucsko/frogs.org.au).



The research took place on four rice farms in the Gogeldrie and Jerilderie Environmental Champions Program (ECP) cluster groups: *Old Coree* (Jerilderie) and three properties owned by the Houghton and Kirkup families (Leeton). These farms were chosen because of their participation in the ECP and because rice was grown here during the study period.

### How many frogs in Riverina rice fields?

To estimate the number of frogs produced in rice bays each year, six experimental rice bays measuring 45 x 15 m were constructed at *Old Coree* (RRAPL). Pitfall traps made of silt fencing with 20 L buckets buried in the ground at 10 m intervals were erected around the bays (Figure 2). Young frogs dispersing out of the bays to terrestrial habitats were captured in the buckets and counted. The total number of frogs produced in the experimental rice bays was used to estimate the number of frogs produced per hectare of rice grown in the Riverina. Two estimates were calculated to determine the range between normal and drought years.

Our data support the estimate calculated in our previous study, which indicates that about 500 million frogs may be produced in rice bays each year in the Riverina. Our current estimates indicate that nearly five billion frogs may be produced in normal years when approximately 150,000 ha of rice are sown. However, this figure falls to about 37 million in drought years when the amount of rice sown is roughly 12,000 ha.

### What are frogs in rice fields eating?

A gentle and basically harmless stomach flushing technique was used to determine the types of invertebrate fauna that frogs consume on rice farms. In this procedure a small, flexible tube that is attached to a water-filled syringe is first inserted into the frog's throat and then into its stomach (Figure 3). The water pumped into the stomach flushes out any prey items present. The prey items obtained in the present study were then identified using a microscope in

the laboratory. Prey items were identified to the order level, except when pest species were detected. In the latter case, items were identified to the species level.

The frogs ingested a wide variety of prey items; however, the most frequently consumed invertebrates were beetles (order: Coleoptera), ants (Hymenoptera), true bugs (Hemiptera) and caterpillars (Lepidoptera).

The frogs also consumed a range of rice pest species including: the stink bug (*Eysarcoris trimaculatus*), water snails (*Glytophysa* sp. and *Isidorella newcombi*), paddy bug (*Leptocoris acuta*), slender rice bug (*L. oratorius*), common armyworm (*Leuciana convecta*), sugarcane looper (*Mocis frugalis*), rice root aphid (*Rhopalosiphum rufiabdominalis*), day-feeding armyworm (*Spodoptera exempta*) and lawn armyworm (*S. mauritia*).

Furthermore, our estimates indicate that spotted grass frogs may consume about eight insects each evening during their nine-month active season (September–May). Therefore, if the 37 million frogs produced in rice bays in the Riverina during our study period consumed an average of eight insects per night for about 300 nights over their active season, then approximately 80 billion insects may be consumed in a given year.

The dietary habits of insectivorous frogs may affect the health of rice plants. Future research may determine if spotted grass frogs affect the health of rice plants by consuming pest species. Pest abundance and plant health may be compared between rice bays with and without frogs present. ☼

### RIRDC Project UCA-11A

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Figure 2: Experimental rice bay at Old Coree (RRAPL) with pitfall traps and silt fencing used to capture frogs exiting the bays.



Figure 3: The stomach contents of the frogs were flushed out with this gentle technique. Prey items were captured in a sieve and later identified in the laboratory.



## DOWN TO THE LAST CROAK *RHEOBATRACHUS SILUS*

**W**as one of the world's truly remarkable animals. The so-called platypus frog was one of a kind. The only species of land vertebrate animal, amphibian, reptile, mammal or bird, to rear its young inside its stomach. That makes the small black frogs as special as kangaroos or koalas. They were found nowhere but in the rainforests of two mountain ranges in southern Queensland.



Zoologist and environmental consultant Glen Ingram was studying them in 1977 in the Conondale Range, in the Sunshine Coast hinterland. "There were plenty of frogs in the streams at that time," Ingram recalls now. A year later, he could find just two. In 1979, there were none, and none have been found since, anywhere, despite exhaustive searches. "Like the Tasmanian tiger, it is one of the great wildlife tragedies that this astonishing animal is extinct," Ingram says.

Also known as the gastric-brooding frog, *Rheobatrachus* was first discovered in 1972. A year later, its breeding biology was unearthed when a wildlife enthusiast watched enthralled as a female in an aquarium spewed fully developed baby frogs from her mouth. This was so bizarre - gastric juices would normally destroy young animals in a stomach - that scientists initially refused to believe it.

Between discovery and extinction, the frog was known to humankind for less than a decade - an infinitesimal fraction of its time on Earth.

By the early '90s, another seven Queensland frog species were also extinct. At the same time, frogs were disappearing from other continents. Observers declared that the phenomenon of the vanishing frogs was the "canary in the coalmine": the harbinger of insidious and potentially catastrophic global climate changes.

The worldwide demise of amphibians continues, with a third of the 5700 frog and salamander species now considered at risk of extinction.

Scientists have long established that frogs are being killed by chytrid fungal disease. Fungal spores attach to the amphibian's skin, thickening it and reducing the animal's capacity to drink and respire. The fungus also damages the nervous system.

What puzzles the experts is that the chytrid fungus is not necessarily hazardous to frogs; it is established in many areas where amphibian populations have not declined. Conversely, the fungus has the potential to wipe out entire frog populations within several weeks.

Scientists believe something is both facilitating the spread of the fungus and making it selectively fatal to frogs. A widely accepted theory is that the trigger is some kind of climate change. Increased ultraviolet radiation due to a shrinking ozone layer, or more cloud cover resulting from rising greenhouse gas emissions, are cited as potential factors that change the fungus from something benign to a killer.

Now, however, researchers are increasingly convinced that agricultural chemicals are implicated in the frogs' demise, both by killing them directly and by making them more vulnerable to chytrid fungus and other diseases. Climate change may not be the critical factor it was thought to be, although opinion is divided on this score.

Says Ingram: "One of the last platypus frogs I saw was sitting on a rock, covered in white slime. I never could work it out and I have a problem with the theory that the culprit is simply a fungus being spread by temperature changes. It makes sense to me that pesticides or other chemicals are implicated."

No research in Australia has been done to determine a link between chemicals and disappearing frogs, but mounting evidence of one is reflected in a series of recent studies in California, where similar chemicals are used and where frog populations have similarly crashed.

Guidelines for resource managers issued by the Western Ecological Research Centre in California say organophosphorus pesticides are highly toxic to amphibians and have been implicated in the decline of several species in the state.

These chemicals include chlorpyrifos, malathion and diazinon, all of which have been used extensively as pesticides in Australia. A new study published in the journal *Environmental Pollution* concludes that concentrations of the three chemicals had been harmful to frogs in the California Central Valley.

Chlorpyrifos is a commonly used insecticide in Australia. Malathion has been applied extensively to treat stored wheat and barley in Australia. Diazinon has been used widely in Australian sheep dips.

A study in the Sierra Nevada in the US showed that pesticides are carried considerable distances by wind from agricultural areas, where they are sprayed, to otherwise pristine frog habitat in the mountains. These chemicals are associated with serious impacts on the development of tadpoles including depressed growth rates, increased vulnerability to predators, and greater mortality. Measurable concentrations of chlorpyrifos, malathion and diazinon were found in wilderness areas such as the Sequoia National Park.

A recent study by University of California scientists showed that a combination of chemicals used on corn fields retarded growth in frogs and increased their susceptibility to meningitis. Another study by the university showed that the herbicide atrazine disrupted the sexual development of frogs, turning males into hermaphrodites; in effect, male frogs were being chemically castrated. Atrazine, which has been banned by the European Union, is also used widely in Australia.

A study published in the journal *Conservation Biology* by three senior Californian scientists found that upwind agricultural land use, with the potential for windborne pesticides, was linked to declines in all four frog species which they studied.

A 2004 review by the Australian Pesticides and Veterinary Medicines Authority noted claims about the impact of atrazine on frogs but said there were "inconsistencies between studies". An updated review of the herbicide will be released soon.

APVMA chemical review chief Les Davies says he is unaware of the American studies suggesting adverse impacts on frogs from organophosphorus pesticides. However, approved uses for chlorpyrifos in Australia had been modified in response to concerns that the chemical damaged the brains of human fetuses. Davies says potentially toxic byproducts of malathion had been stabilised, while diazinon was being phased out as a sheep dip.

Several overseas studies show that the sexual development and behaviour of frogs can be affected adversely by pesticides at much lower levels than those required to kill animals outright. Populations could be disappearing because of relatively subtle changes such as damage to the vocal cords of males, preventing them from calling and therefore attracting mates.

The demise of frogs in Australia has parallels with changes in agricultural chemical regimes. Organochlorines such as DDT and dieldrin, which were connected to an extensive range of environmental and health problems, were largely phased out between the late '70s and late '80s, the period when most of Queensland's frog extinctions took place. The place of the organochlorines was taken by supposedly less toxic organophosphorus and other chemicals.

Research by Griffith University scientists Jean-Marc Hero and Kerry Kriger has done much to unravel the mystery surrounding the chytrid fungus in Australia. An unpublished study shows that while the fungus is widespread, frogs from temperate regions have much more severe infections than frogs in the tropics. The severity of infections is greater at sites with high rainfall and cool temperatures.

Another Griffith University study found that 38 per cent of 798 frogs sampled in southeast Queensland were infected with the fungus. Contrary to a generally accepted view, the study found that frogs at high altitudes - where all of Queensland's extinct species once lived - were no more likely to be infected than lowland frogs. Frogs that lay relatively small numbers of eggs are more vulnerable than more fecund species.

Hero agrees that the big unanswered question is what makes the fungus selectively lethal. "The disease is everywhere, at all altitudes from Cairns to Victoria and across to the southwest of Western Australia. Yet it is present in populations which have not declined at all."

The first Australian frog extinctions, in southeast Queensland in the late '70s, coincided with extinctions in Brazil and Costa Rica. Hero says there were no significant climate changes in southeast Queensland at the time, or in the wet tropics of north Queensland when several frog species became extinct there in the '80s.

Hero suspects that chemicals are implicated. He recalls once being in the Eungella Range inland from Mackay, where two frog species became extinct, when he was showered with ashes from distant burning sugarcane fields. "We were 900m up and a long way away but we were covered in ash. There's every potential for chemical spray drift. There just hasn't been a debate in the scientific literature about the various theories for what's going on."

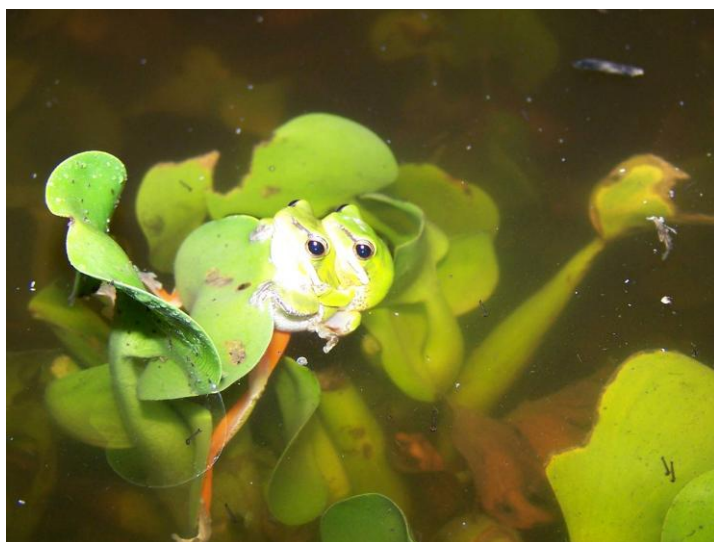
James Cook University researcher Ross Alford and colleagues conducted tests for chemical residues in the wet tropics of north Queensland after rainforest frogs began declining.

Alford says now that the testing was inadequate, and the sampling would not have necessarily picked up potentially lethal levels of chemicals. He believes chemicals could change micro-organisms on the skin of frogs in ways which allow the chytrid fungus to flourish.

Alford says evidence in some places overseas suggests a climate change link to frog disappearances: for instance, in the cloud forests of Costa Rica. "I don't think it's one or the other, climate change or chemicals. I think there's good evidence for both. What we can be sure of is that amphibian populations are being stressed before they are hit with these outbreaks of fungus."

There is a bright spot, albeit a dim one, on the horizon for the beleaguered amphibians. The Griffith University researchers have found that adult frogs infected with chytrid fungus are capable of shedding it. The fungus does not appear to thrive in warmer weather. Ironically, climate change may have a beneficial consequence.

<http://www.theaustralian.news.com.au/story/0,25197,23007420-30417,00.html> Greg Roberts 5| Jan 2008 Sent to Frogcall By George Madani



*Litoria fallax* amplexing photo Ben Harrington

## FROGBITS AND TADPIECES

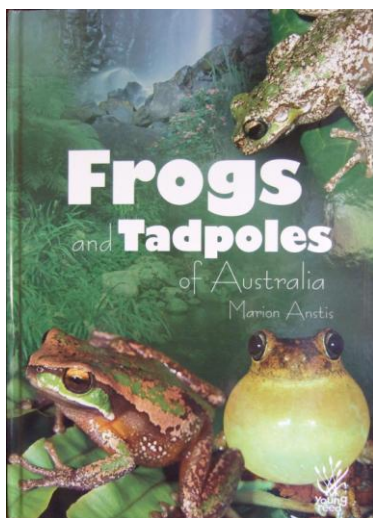
**Extinct frog found near Cairns. A species of frog thought to be extinct has been found thriving in far north Queensland. The armoured mist frog was last seen in 1991 and was thought to have been wiped out by a fungal disease.**

But James Cook University frog expert, Professor Ross Alford, says the frog has been found thriving in rainforests to the north and west of Cairns. "It turns out that these frogs are living in an area that we wouldn't have expected them to be living at," he said. "Out past the western edge of the rainforest, particularly if the climate changes the edges may become the centres, so we need to conserve not just the best possible habitat, but a whole sample of the places species might live."

<http://www.abc.net.au:80/news/stories/2008/09/12/2362564.htm?section=justin> 12 Sep 2008 ABC News

Forwarded to Frogcall by Andrew Nelson

## CHRISTMAS PRESENT SUGGESTION



Come to our FATS meetings or visit a good bookshop and select one of many frog books as a Christmas present for friends or family. Some are written by our FATS members, such as Marion Anstis, author of **Tadpoles of South-eastern Australia**.

**FROGS and TADPOLES of Australia** takes us into the private world of frogs and tadpoles and how they live and breed in many different habitats across Australia.

Hard cover, 48 pages in full colour design enough to wet anyone's appetite, and there are even activities to do at the end! Attractively priced at **\$19.95**, it is available from the author email: [frogpole@tpg.com.au](mailto:frogpole@tpg.com.au) or FATS, ISBN: 9781921073076.

## 'COLD FEET' MAY HALT TOAD MARCH

**The relentless cane toad invasion of Australia may grind to a halt once it becomes too cold for them to jump.**

Scientists staged a 2m sprint event in their own laboratory "toad Olympics". Toads from the frontline of the invasion could only hop at 0.3 km per hour at 15C, but as fast as 2km per hour at 30C, Ecography journal reports. Areas of southern Australia that experience cooler and drier climates - such as Melbourne - may escape the invasion, they say.

So, what will be the final destination of the toad invasion? The results of the laboratory race - where the scientists measured the speed of the toads over 2m, at five different temperatures - may have provided the answer to this question. Previous studies predicted that Melbourne and other southern regions of Australia will eventually face the toad invasion. However, Dr Kearney from the department of zoology at the University of Melbourne told BBC News: "The toads have made it to Darwin where they are doing well. They have had trouble establishing in Sydney despite lots of toads finding their way there. But our

predictions make us feel quite safe from toads in Melbourne." The research team used their own computer software to determine the current climatic conditions across Australia - as well as to predict the impact of future global warming. They calculated that the toads reached "hopping speeds" equivalent to more than 50km per year in warm and wet Darwin.

The scientists suggest that their approach could be applied to study the effect of climate on other organisms: "We are currently using it to study butterflies, disease-causing mosquitoes and possums," commented Dr Kearney.

By Elizabeth Mitchell Science reporter, BBC News  
<http://news.bbc.co.uk/2/hi/science/nature/7584815.stm>  
(extracts) Forwarded to Frogcall by Andrew Nelson

## WHY FROGS DON'T LIKE MOBILE PHONES

An interesting snippet coming up on ABC Radio Barrie Oldfield is a member and past president of the Western Australian branch of Men of the Trees and he discusses the decline of frog populations in this International Year of the Frog. He suggests that maybe electro magnetic radiation may be the reasons for this calamity. Presenter Robyn Williams Producer Brigitte Seega Radio National often provides links to external websites to complement program information. While producers have taken care with all selections, they can neither endorse nor take final responsibility for the content of those sites.

<http://www.abc.net.au/rn/ockhamsrazor/stories/2008/2/175264.htm> Sunday 8:45am, from 2 March 08

**Comment from Lothar Vogt** So, Galvani with his frogs' legs still has a lot to answer for. It makes me twitch in sympathy when I think there might still be a frog left in that used sphagnum moss I scraped out of the cage, rinsed and happily microwaved to sterilise it, so that I can use it again. I do hope I haven't been sterilising the world's frogs into the bargain.

Now I keep thinking about what might happen to a leftover frog in the microwave. I will have to peer in, although that might be eye-popping, maybe for both of us. Sadly, liquid water doesn't have much of a favourite resonant frequency to absorb. Otherwise that radiation would get trapped only skin-deep and crisp the chytrid out of it, maybe even with a mobile phone. The Helpline could have been so useful then. ("My frog's got chytrid." "Just hold your phone over the frog while I do an incantation.")

Quite clearly, mobile phones make even us stupid. (Just look around you on the bus!) But it goes both ways - actio est reactio. As MRI scans pick up brain patterns, so must MRI and other radiation influence brain patterns back again. With us, that might only result in an inability to turn the TV off. Frogs, being so wet and watery, might end up really hot and bothered. They might get superheated. I now suspect they might be the ones that cause ball lightning.

Just a thought. **Lothar Vogt**





## THE NATIONAL TRUST OF AUSTRALIA (NSW)

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Media enquiries: Dominic O'Grady M: 0400 110 169

Kathy Scott 9258 0131 or 0415 764 159

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Monday 7 April 2008

### TRAP THAT TOAD SCOOPS THE POOL

A quirky response to Australia's cane toad scourge has won a prestigious EnergyAustralia National Trust Heritage Award.

The project, called Trap That Toad, was recognised today at the annual EnergyAustralia National Trust Heritage Awards presentation in Sydney. The awards were hosted by National Trust (NSW) president Dr Zeny Edwards and journalist David Marr.

Trap That Toad teaches school students how to distinguish a Cane Toad from a native frog. It also teaches students how to ethically catch and dispatch the toad. It comes complete with a stuffed toad and an mp3 player loaded with audio files of native frog calls and Cane Toad croaks.

Trap That Toad was produced by an operations officer, Susan Crocetti, and colleagues from the Department of Environment and Climate Change. The kit's impact is being felt across Australia and internationally, with the United Nations' South Pacific environmental program adopting it for use against Samoa's emerging Cane Toad problem.

Other winners at today's EnergyAustralia National Trust Heritage Award ceremony were the 2.5km National Pass walking track at Wentworth Falls in the Blue Mountains, the Lake Wollumboola Little Tern Conservation Program on the NSW South Coast, the Taronga Zoo Landscape Management Plan, the Carriageworks at Eveleigh, and the Grafton Heritage Trail.

Award judges described the National Pass project as "a conservation project of a heroic scale". The Lake Wollumboola project, they said, is an example of how endangered species can be protected at a local level.

The judges for this year's awards were **Paul Berkemeier**, director of Paul Berkemeier Architect Pty Ltd; heritage consultant **Bob Moore** of Robert A Moore Pty Ltd; senior heritage officer **Bruce Baskerville** from the Heritage Branch of the Department of Planning; **Maclaren North**, heritage adviser to EnergyAustralia; and **Tina Jackson**, former executive director of the National Trust of Australia (NSW).

The heritage awards are a signature event in the National Trust (NSW) heritage festival, which kicked off on Saturday 5 April and runs through to Sunday 20 April. The festival theme this year is 'Our Place', and it includes over 150 events throughout metropolitan and regional NSW. A 2008 festival program is online at [www.nsw.nationaltrust.org.au](http://www.nsw.nationaltrust.org.au)

#### Media contacts:

Dominic O'Grady on 0400 110 169 or Kathy Scott on (02) 9258 0131 or 0415 764 159.

Trap That Toad media contact is Susan Crocetti. Ph: 6650 7100

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The National Trust is Australia's oldest conservation charity. It is not-for-profit and independent, relying on support from its members and the community to assist its work – which includes advocacy for the protection of built, natural and cultural heritage, conservation and education.



Amplexing Roth's Treefrogs, *Litoria rothii* Photo by David Nelson

## HERPDIGEST

**H**erpDigest: The Only Free Weekly Electronic Newsletter That Reports on The Latest News on Herpetological Conservation and Science extracts below from Volume 8 Issue 42 and 45, 6 and 27 September 2008. Publisher/Editor- Allen Salzberg

Abstracts of the over 500 papers being presented <http://www.worldcongressofherpetology.org/index.php?section=51>  
HerpDigest.org: is a free weekly web service that reports the latest news on herpetology, conservation and science [www.HerpDigest.org](http://www.HerpDigest.org)

### MALFORMED FROGS,

The Collapse of Aquatic Ecosystems – new book

**T**he widespread appearance of frogs with deformed bodies has generated much press coverage over the past decade. Frogs with extra limbs or digits, missing limbs or digits, or misaligned appendages raise an alarming question: "Are deformed humans next?" Taking a fresh look at this disturbing environmental problem, this reference provides a balanced overview of the science behind the malformed frog phenomenon. Bringing together data from ecology, parasitology, and other disciplines, Michael Lannoo considers the possible causes of these deformities, tells which frogs have been affected, and addresses questions about what these malformations might mean to human populations. Featuring high-quality radiographic images, *Malformed Frogs* suggests that our focus should be on finding practical solutions, a key component of which will be controlling chemical, nutrient, and pesticide runoff into wetlands.

Michael Lannoo is Professor at the Indiana University School of Medicine and editor of *Amphibian Declines: The Conservation Status of United States Species* (UC Press) 1115 pages, 8-1/2 x 11 inches, 288 maps, 99 line illustrations, 53 tables about \$100.00. "Malformed Frogs" 288 pages, 6 x 9 inches, 6 colour illustrations, 76 b/w photographs, 14 line illustrations, 9 tables, University of California Press about \$65.00.

### DISCOVERY THAT AMPHIBIAN CHYTRID FUNGUS KILLED BY SMALL INCREASES IN SALT WATER CONCENTRATIONS

**G**iven One Of 20 Given Eureka Awards In Australia. For Michelle Stockwell it was a surprising discovery. Frogs usually prefer pristine environments but she has found that living

in a polluted and degraded habitat is the reason some Australian frogs have survived a fatal fungus infection that has decimated the amphibian world. The young University of Newcastle researcher studies the amphibian chytrid fungus that attacks the skin of adult frogs, and which has led to the decline or extinction of up to 200 frog species. Among them are Australia's Green and Golden Bell Frogs, which have disappeared from about 90 per cent of their habitat.

Her research, which she will present at the sixth World Congress of Herpetology in Brazil next week, raises the possibility of manipulating salt levels in ponds to reintroduce the frogs into their old habitats **Blue Mountains Gazette, 14/8/08**

## WHY BE DIURNAL?

### Shifts In Activity Time Enable Young Cane Toads To Evade Cannibalistic Conspecifics

**Abstract:** Why are some animals active by day and others by night? The selective forces that favour diurnal versus nocturnal activity may be evaluated by comparing age classes within a species that exhibits intraspecific (ontogenetic) variation in activity times. In many species of toads, adults are nocturnally active but postmetamorphic animals are primarily diurnal. The small body sizes of these animals render them vulnerable to desiccation and overheating-so why are they active by day?

To answer this question, we studied an invasive population of cane toads (*Bufo marinus*) in tropical Australia. In the field, these small toads often encounter cannibalistic conspecifics because desiccation risk concentrates toads around the moist margins of the natal pond. We manipulated factors that differ between day and night (time of day, illumination, presence of cannibalistic conspecifics, scent, or visual cues from cannibalistic conspecifics) to identify the proximate cues and fitness advantages associated with diurnal versus nocturnal activity. Activity levels, response to disturbance, and feeding rates of metamorph toads were enhanced by light but suppressed by the presence of a larger conspecific. Metamorphs used both visual and scent cues to detect larger toads. An endogenous diel rhythm in activity was present also but weaker in metamorph toads than in larger (cannibal sized) individuals. The risk of cannibalism was high only at night and only in dark conditions. Thus, the diurnal activity of metamorph toads enables these vulnerable animals to avoid conspecific predators.

**Behavioral Ecology 2008 19(5):990-997** Lígia Pizzatto, Travis Child and Richard Shine School of Biological Sciences A08, University of Sydney, New South Wales 2006, Australia Address correspondence to R. Shine. E-mail: [rics@bio.usyd.edu.au](mailto:rics@bio.usyd.edu.au).

NATIVE wildlife is clinging to survival around Sydney, despite habitats being cleared for development or shelled by the army.

A study has found 550 invertebrate species inhabit the 1860 square kilometres controlled by the Sydney Metropolitan Catchment Management Authority. However, 53 species – almost one in 10 – are listed as threatened, including eight rated as endangered.

Released yesterday to mark the start of Landcare Week, the study identified the Holsworthy military base and Kurnell – home

to sand mining, an oil refinery and a water desalination plant – as among Sydney's top-10 wildlife hotspots.

About half of all areas ranked as high or very high importance for native fauna were found to be outside sites preserved and managed for conservation.

Landcare Australia's chief executive, Brian Scarsbrick, appealed to Sydneysiders to help protect habitats. "This study is an alarming call to arms for anyone interested in preserving our wildlife to volunteer for their urban land care group." The study, conducted by the Department of Environment and Cli-



*Litoria fallax* photo Ben Harrington

mate Change, included Warriewood in the north, Toongabbie in the west, Campbelltown in the south-west and Darke Forest to the south.

While the Royal National Park was given the highest ranking for its "extremely high fauna density", the Holsworthy military base scored fifth spot, with 146 species of birds, 41 mammals, 32 reptiles and 17 frogs. Its wildlife included endangered broad-headed snakes and "vulnerable" koalas.

"Some reptile habitat such as rocky outcrops may be impacted by continued shelling from artillery," the study says.

Kurnell, in eighth spot, had en-

dangered shorebird communities and green and golden bell frogs. Even residential and industrial areas had threatened and "regionally significant" wildlife.

"The swift parrot is sometimes recorded foraging in flowering screescape and parkland trees" and some species of bats roost "in a variety of artificial structures such as under bridges, in storm-water drain and disused gunnery emplacements", the study says.

Birds, including the pied oystercatcher, the double-banded plover and the Australian pipit, were found "in artificial environments such as Sydney Airport".



Making the leap ... green and golden bell frogs are found at Kurnell.

**FROGWATCH HELPLINE 0419 249 728**

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*Thank you to the many FrogCall contributors including regulars such as Lothar Voigt, Steve Weir, Robert Wall, Karen & Arthur White, Wendy Grimm, Matthew Kemplay-Hill, Brad & Matt McCaffery, Grant Webster, Marion Anstis, Punia Jeffery, Fiorella, Andrew & David Nelson and Al MacDougall for forwarded articles, mailed media clippings, webpage uploads, membership administration, mail-out inserts & envelope preparation.*

## FIELD TRIPS

**Please book your place on field-trips; due to strong demand, numbers are limited phone 9681 5308.**

**Be sure to leave a contact number. Regardless of prevailing weather conditions, we will continue to schedule & advertise all monthly field-trips as planned. It is YOUR responsibility to re-confirm, in the final days, whether the field-trip is proceeding or has been cancelled. Phone Robert on ph. 9681 5308.**

**October 18. 6-30p.m. Murphys Glen, Woodford. Leader : Peter Spradbrow.**

Follow the Gt. Western Highway to Woodford. The turn-off to the station is sign-posted. Meet in the carpark (Railway Pde) on the southern side of Woodford Railway Station. Frogs & reptiles make up nearly half of our terrestrial vertebrate fauna. Tonight we will take a broader look at the herpetological world. We will look at the ways that frogs & reptiles together form part of an ecological community & how their lives are interconnected. We will also spend some time appreciating both the high elevations & rough dissected sandstone country of the Blue Mountains & how the cooler & wetter environments affect herpetological lifestyles. Peter has had a lifelong passion for all reptiles & has earned a reputation for his pursuit of excellence in herpetology. He has helped raise the profile of herpetology as a credible scientific discipline & has worked tirelessly to improve protocols in fieldwork & reptile handling.

**November 22. 8-30p.m. Sydney Olympic Park, Homebush Bay. Leader : Glenn Muir.**

Meet in the carpark near the corner of Hill Rd & Bennelong Rd, Homebush. The Green & Golden Bell Frog catapulted to national attention when its home became earmarked for Olympic Games construction projects. The Bell Frog stubbornly refused to move & eventually development plans were reluctantly & hastily revised. Tonight we will look at the natural & man-made wetland environments of the Olympic Park precinct. Glenn is regarded as one of the leading experts in Bell Frog ecology & has been closely involved in the long-term monitoring of the Homebush population. Tonight he will explain some of the work undertaken at this venue & will also interpret some of the data still coming in. **NOTE:** The Sydney Olympic Park Authority has graciously opened these areas for FATS members for tonight only. In the interests of the frogs, it has imposed strict limits on numbers. **BOOKINGS ARE ESSENTIAL.** Any member who arrives without a booking will unfortunately not be permitted to participate.

**December 6. 8-15p.m. Ourimbah. Leader : Chloe Neuman.**

Follow the F3 north. Take the Ourimbah exit & turn right at the roundabout. Travel 200m & look for the Shell Service Station on the left. Meet at the service station. Frogs subtly partition the resources of an environment in a variety of ways. Many species will breed at different times of the year or may call at different times of the night. Others may occupy slightly different zones around a pond. Scientists call this *temporal* (time) & *spatial* separation. By these means, many frog species avoid direct competition with each other. Understanding these concepts can help us in our search for a particular species. Tonight, we will look at some frogs & we will try to determine the ways in which they divide up the resources of a pond. Most members would be more familiar with Chloe's strikingly beautiful photographic work. Few realise she has quickly become an accomplished fieldworker who has accumulated considerable experience studying the frogs of both the coastal region as well as the more remote parts of NSW.

**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 field trips are strictly for members only - newcomers are however, welcome to take out membership before the commencement of the field-trip. 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.**

**INSURANCE DISCLAIMER** FATS has public liability insurance for its various public functions. Members should be aware that this insurance does not cover FATS members, it covers the public & indemnifies FATS. We are currently checking with insurance firms to see whether a realistic group policy can be organised to cover FATS volunteers & people who attend field trips.

**FATS MEETINGS** commence at about 7.00pm, end about 10.00pm and usually are held on the first Friday of every EVEN month February, April, June, August, October and December (NB The October 2008 meeting will be on 10/10/2008), at Building 22, RANAD, off Jamieson St, Sydney Olympic Park, Homebush Bay (accessible by car, train or bus). We hold 6 informative, informal, topical and practical meetings each year. Visitors are welcome. We are actively involved in monitoring frog populations, other field studies, produce the newsletter FROGCALL & 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. **Material from FROGCALL MAY NOT BE REPRODUCED** without the prior consent of the Editor or President of FATS. Permission from FATS and/or author/s must be obtained prior to any commercial use of material. The author/s and source must be fully acknowledged.