FROG CALL

THE FROG AND TADPOLE STUDY GROUP OF NSW INC

NUMBER 24 - JULY 1996

PO Box A2405
Sydney South NSW 2000

THE NEXT MEETING

Friday 2nd August at 7:00 pm for a 7:30 start
at the Australian Museum (William St. entrance)
We aim to finish at 9:30 with coffee afterwards.

The Frog and Tadpole Study Group of NSW Inc
FATS GROUP

SPEAKERS:

Noel Tait	**Frog parasites and immunity**
Ken Griffiths	**A frog of the Sydney region:** The one with the maniacal cackle
Everybody	**My 5 favourite frog slides** (or 5 minutes, whichever comes first)

REGULAR FEATURES

News and announcements, field trips, projects, refreshments!
Auction, discussions, gossip, welcome table, things you can buy!
No $2 door donation for paid-up members: Bring a visitor!

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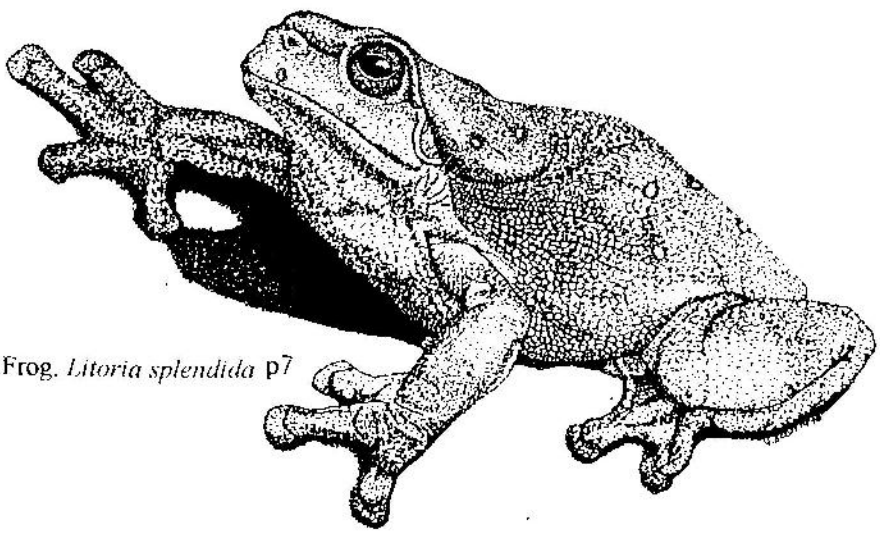


The Magnificent Tree Frog, *Litoria splendida* p7

THE LAST MEETING (12. 4. 96)

Flooding in the Museum! We flooded their frog exhibition before our meeting proper started and surged to and fro between cages, dioramas, habitats, PCs, videos and display boards. Many thanks to the Museum for letting us in without a ticket.

"A frog of the Sydney region" was this time a talk and slide show about *Crinia signifera*, the ubiquitous Common Eastern Froglet. This, the second one in the series, was presented by Frank Lemckert. Frank spent two years working on these frogs and caught 2000 of them in the process, all in the one 15 metre pond.

Frank's handout is reproduced on the next page. Flooded as we were, he inundated us with much extra information:

- Don't judge a frog by its colour. The Common Eastern Froglets have not only "back pattern polymorphism" but also different tummy patterns. Even their tadpole colour is variable.
- Males are a bit red-brown on the jaw angles and more barrel-chested, females are wider in the hips. (Calling and making eggs are both hard work.)
- Males fight and are territorial. They space themselves out 60 to 100 cm apart.
- They have a sexy pelvic amplexus.
- The eggs take 4 to 7 days to hatch: and 2 to 4 clutches per year.

Gorgeous slides by Ken Griffiths: Crucifix Toad, Red-eyed Tree Frog, Laughing Tree Frog, Giant Burrowing Frog, Green-and-Golden Bell Frog basking. The finale was two Blue Mountains Tree Frogs blissfully amplexing on a leaf, somewhere near Helensburgh.

Display cage pix were shown by Lothar Voigt, together with a shot of tadpoles clearly showing distress in water with a blue-green algal bloom and ammonia buildup. There was also an Ornate Burrowing Frog which had to inflate itself hugely before a Waterholding Frog spat it out again.

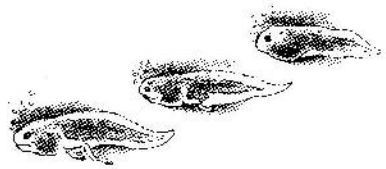
Bell Frogs and Wallum Froglets don't mix: The big fella would eat the little fella, but it likes to be near alkaline water and the Wallum one likes acid water. Arthur White did a study on both at Kurnell and he showed us his slides:

- The site has sand dunes and dredge ponds, with a rubbish tip and with some ponds infested with *Gambusia*. It is proposed for a housing and resort development.
- The population there of Green-and-Golden Bell Frogs (*Litoria aurea*) is possibly as big as that of the Homebush site.
- The Bell Frogs like basking on the bulrushes. If one is disturbed, it later goes back to the same spot.
- The Wallum Froglets (*Crinia tinnula*) are on soggy ground (with dense tubular reeds, bottlebrush etc) but without open water. The water seepages there are brackish, acid (pH 4 - 5) and with a very high redox potential
- At this site the Wallum Froglet is sympatric (i.e. it occurs together) with the Common Eastern Froglet. Both are equally polymorphic in their pattern, even with the same kinds of pattern coming up.
- Arthur had the tinkling calls of these Wallum Froglets sonogrammed, just to be sure because they are so far south of any other distribution of the species. But it's them alright.

Arthur also let us in on a pre-experiment which he is now dying to do with everything controlled: His *aurea* tadpoles with water from a tank containing Striped Marsh Frog tadpoles don't grow all that well. His other *aurea* tads, in the same kind of a tank and the same kind of water, but without the skin-secretions-or-whatever from the Marsh Frog tads, they are growing much better! (If you're also dying to do such things, all you need is a licence and a few boxes and such like.)

The raffle and auction: Wonderful and wondrous things were donated again, netting a total of $137! Many thanks to all who helped; and a special thanks to Adele and Sam who brought enough designer T-shirts back from Galapagos for our next four meetings. T-shirts to kill for, even if it makes our meetings more murderous than ever. As always, bring all your money.

L.V.



The Annual General Meeting

Following bumper to bumper after our normal meeting (mind you, what's "normal" for us?), there came the AGM.

On behalf of all members, Lothar Voigt as outgoing President thanked all committee members and all others who had volunteered such a lot of their time and effort to the FATS Group. He recalled some of the highlights of the year, the work done and the work still ahead of us.

Arthur White as outgoing Treasurer presented the financial report, which was accepted by the meeting and which is reprinted hereunder. Anthony Nicholson volunteered to audit it, and Chris Waugh volunteered to audit the next one in a year's time.

Nominations for the new committee had been received prior to the meeting for all but two positions. Those were filled at the meeting without contest.

Welcome to our two new committee members Michael Harvey and Gabrielle Scott! (As you will see when you turn over the next pages, they have lost no time rolling up their sleeves: Michael as our science journo and Gabrielle doing the tadpole page.)

The tyranny of distance: we have lost from the committee Harald Ehmann, our Group's founder, and Michael Mahony, long-time committee member and consultant to the Endangered Frog Survey. They were foremost amongst our midwives and nursemaids; gratefully remembered as we now strike ahead into our fifth year.

L.V.

Frog Feature:	Common Eastern Froglet *Crinia signifera*
Introduction:	Most common frog in eastern Australia. Widespread through all habitats, both urban and natural and can be heard anywhere and anytime
Appearance:	Small frog, max. 3 cm S-V Variable back pattern (polymorphic) with three main types - smooth, warty and lyrate and intergrades Wide variety of colours Belly black and white mottled to varying degrees Long, thin fringed fingers and toes (unwebbed)
Sexual Differences:	No colour or marking differences Females larger than males (Average 25 mm Vs 20 mm)
Mating Call:	"Crick, Crick, Crick" (but can be variable) Calling occurs throughout year in Sydney Males call from under cover (rock or veg.) on the edge of the water or floating in the water
Reproduction:	Eggs glued onto submerged vegetation, either a few together or singly, scattered over a number of leaves Between 100 and 200 eggs laid at a time Females may lay up to four clutches per year Will breed in anything from tiny temporary puddles to large permanent ponds and streams
Tadpole:	Evenly dark, with no dorsal markings Lentic (still or very slow moving water) Growth rate variable, metamorphosis occurs between 4 and 12 weeks Herbivorous Dental formula

$$\frac{1}{1}\ \frac{1}{2}$$

Distribution:	South eastern Australia (Tasmania to southern Qld.)
Conservation Status:	Common all states
Scientific Name:	*Crinia* = obscure?, *signifera* = sign bearing

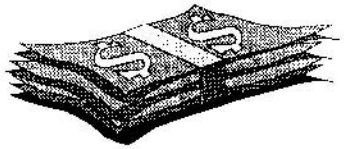
Frog and Tadpole Study Group of NSW

Annual Accounts 1995 - 1996

Opening Balance (as of 1.7.95) $ 1,726.20.

Income:

Membership Fees	$ 1,885.00
Auction/Raffle	$ 598.00
Donations	$ 158.60
Sales of frog tapes	$ 870.00
Smith's Lakes Field trip	$ 155.00
Interest	$ 17.94



Total Income: $ 3,684.54

Expenditure:

Printing:	Frogcalls (16-23)	$ 2,009.00
	Memb. Applic. Forms	$ 114.00
	Posters/ display materials	$ 252.55
Photocopying:		
	Frog Facts/ Letterheads	$ 223.75
Purchase Herpetofauna:		
	Aust. Affil. Herp. Societies	$ 718.00
Purchase of Frog tapes:		
	Nature Sound	$ 770.50
Smith's Lake Field Station Hire:		$ 155.00
Aust. Museum Venue Hire:		$ 140.00
Dept. Consumer Affairs: Annual Statement		$ 30.00
Public Liability Insurance		$ 250.88
Tea/coffee/biscuits for meetings		$ 9.95
Australia Post: Post Box rental		$ 125.00
Stationary/ phone		$ 53.40
Bank Charges		$ 12.11
Postage		$ 247.50

Total Debits: $ 5,111.64

Total Loss for year $ 1,427.10

Closing Balance: (as of 31.5.96) $ 299.10

The Science Page

with Michael Garvey

FROGCHOMP - DINNER TIME FOR AMPHIBIANS

There are plenty of cartoons around showing frogs eating. They almost always involve a stationary frog shooting out a long sticky tongue and snacking on a fly. However it is not that simple. As with any discussion on frogs, it is better to start by splitting the subject of food into two questions - 'how do tadpoles feed?', and 'how do frogs feed?'.

Frogs and tadpoles lead completely different lives, and this is very obvious when we look at their food and eating habits. Tadpoles are mostly vegetarians, and feed by scraping at water plants, and algae or bacteria with rows of tiny teeth (in fact the structure of the tooth rows can help with the identification of a tadpole). If you look closely at the underside of a good-sized tadpole you may see a neatly coiled gut beneath the thin belly skin. This long gut allows the tadpole to extract as much nutrient as possible from its food. As the tadpole grows, it may eat other types of food, including dead insects and even other tadpoles, as well as plant material

After the tadpole has metamorphosed into a froglet, the diet changes dramatically. Tadpoles only have small mouths, and tiny rasping teeth. They aren't into overpowering and swallowing live prey. Frogs, on the other hand, have large mouths and powerful jumping legs. The froglet may look cute and harmless, but it now has the equipment to become a voracious predator.

Adult frogs normally only eat live, moving food. They have teeth (yes - frogs do have teeth!), but these are very small, so frogs do not bite food into small chunks. The food all has to fit in the mouth at one go. This basically means that frogs are limited to eating prey that is smaller than the frog's head. Given that frogs are generally fairly small, invertebrates are the most commonly eaten prey. Frogs and toads have been recorded to eat insects, spiders, millipedes, centipedes, worms and a whole host of other invertebrates. Larger frogs will also try their luck with vertebrates. As they often live in the same areas smaller frogs are often eaten - even those of the same species (for example the Green and Golden Bell Frog is a well-known cannibal). There are also records of frogs and toads eating small snakes, lizards and mammals.

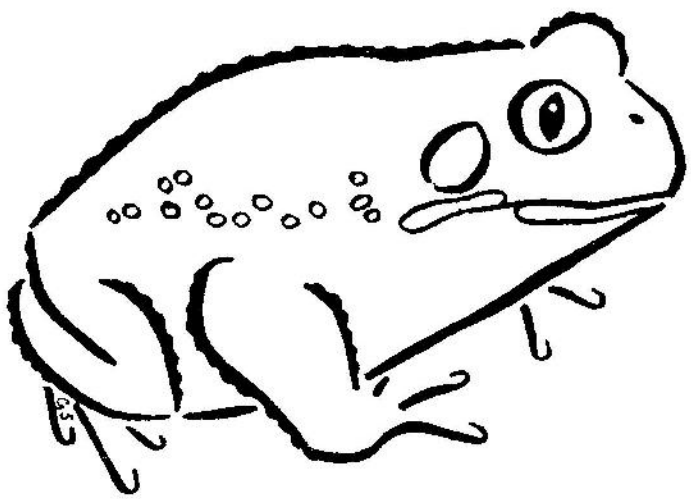
Of course if a frog eats one meal of the maximum possible size, that will save it from needing to look for lots of small meals. Consequently frogs have become adapted to swallowing practically anything that will fit. One of the features of swallowing in frogs is a big blink. This isn't just contentment with a big meal - the blink has a definite purpose. When the frog blinks, its eyeballs are retracted back into its head. The backs of the eyeballs are helping to push the food down the frog's throat! If the prey does not disappear easily, the frog can also use its hands to either clean any dirt or other matter from the prey, or to help stuff the victim into the frogs mouth.

The main stimulus for feeding in adult frogs is movement. Frogs will often ignore a stationary insect, only to grab it as soon as it moves. However it's not all visual. There are records of frogs using scent to help them find food (for example the ever-versatile Cane Toad has been seen eating pet food).

When a frog sees a moving object it will often turn its whole body to stare carefully at it. If it's moving at about the right speed, and is about the right size, it will be grabbed as soon as it is in range. To catch its prey, the frog may merely sit in a camouflaged position and wait for something suitable to wander close enough for a lightning-fast strike or the frog may actively search for, and stalk prey. Either way, once the unfortunate victim is within lunging distance the frog simply snaps it up, or uses a its sticky tongue to pull it into its mouth. A frog's tongue is attached not to the back of the mouth as ours is, but at the front. This enables the frog to flip it out much further that we can.

On the face of it, frogs may look to have a fairly simple approach to eating: 'if it moves and you reckon it will fit in your mouth - eat it'. It is certainly true that some frogs seem to follow this rule pretty literally. Cane Toads have even been found with several bees in their stomachs, with several bee stings sticking into their skin. Other frogs may be a little more selective. Some species are capable of learning not to eat food that is poisonous or painful. A European Toad which was fed a bee (and was stung) subsequently avoided eating bees - and harmless bee-mimicking insects too

One feature of a frog's digestive system which allows it to try many food types in safety is its ability to regurgitate painful or distasteful objects with remarkable efficiency. Frogs and toads are actually able to virtually turn their stomachs inside out in order to get rid of nasty food items. In fact a recent article in *Nature* discussed the way that regurgitating toads use their hands to help this process. Once a frog has turned its stomach outside its mouth it uses its hands to wipe it clean and push it back in. Because frogs are not exactly symmetrical on the inside, the stomach tends to pop out more on the right side than on the left. This has apparently led to frogs becomin predominantly right-handed! Perhaps that's something of which every cartoonist should be aware...

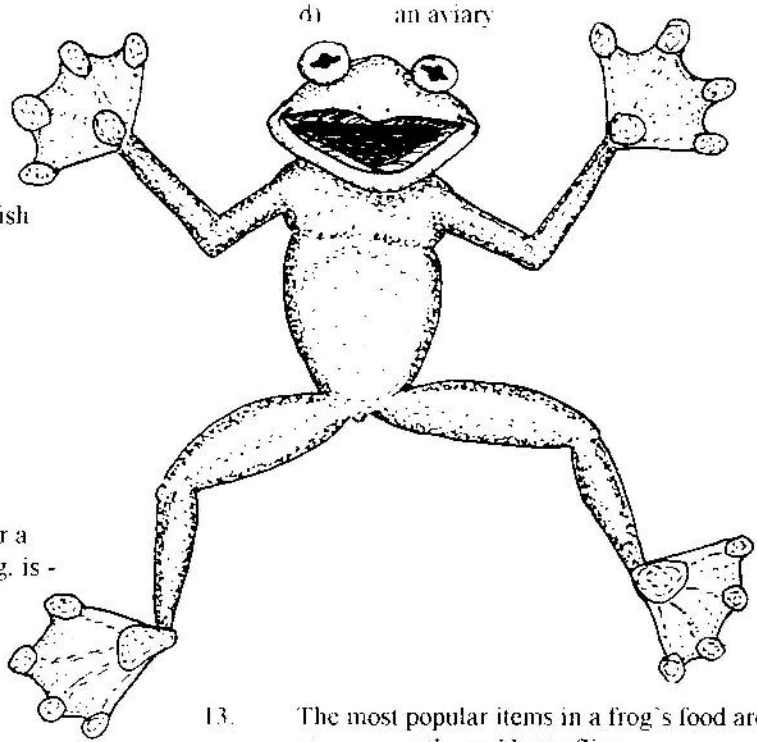


The Tadpole Page

with Gabrielle Scott

Hi, kids! I have a great little quiz for you. Here it is:

1. An animal whose Class name means "Double Life", living on land and in water, is -
   a) a reptile
   b) an amphibian
   c) an insect
   d) a mammal
2. The change from one body form to another (like from tadpole to frog) is called -
   a) different
   b) metamorphling
   c) metamorphosis
   d) none of the above
3. Introduced in 1935 to try to control the Cane Beetle was the -
   a) Axolotl or Mexican Walking Fish
   b) Cane Toad
   c) camel
   d) rabbit
4. A group of the same species, living in a particular area, is a -
   a) population
   b) family
   c) bunch
   d) crowd
5. The name of special inflatable bag under a male frog's jaw which is used for calling, is -
   a) luggage
   b) balloon
   c) amplifier
   d) vocal sac
6. Most frogs need ths to breed in -
   a) a storm
   b) a waterfall
   c) a river
   d) water
7. The ear drum of a frog is called the -
   a) tympanum
   b) lobe
   c) pinna
   d) ear ring
8. The boldly coloured black and yellow frog found in the Australian Alps is the -
   a) Sphagnum Frog
   b) Corroboree Frog
   c) Green-and-Golden Bell Frog
   d) Giant Burrowing Frog
9. The sound a frog makes is -
   a) owl-like "oo..oo..oo"
   b) "croak"
   c) "crick-crick-crick"
   d) all of the above
10. The ..... has a cross-like pattern on its back.
    a) Jesus Christ Frog
    b) Rocket Frog
    c) Crucifix Toad
    d) Smooth Toadlet
11. The ..... looks more like a reptile than a frog.
    a) Turtle Frog
    b) Cane Toad
    c) Brown Froglet
    d) Great Barred Frog
12. What is the most popular kind of indoor frog cage?
    a) A pot plant
    b) an aquarium
    c) a cardboard box
    d) an aviary



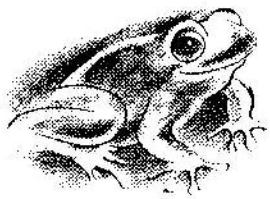
13. The most popular items in a frog's food are -
    a) moths and butterflies
    b) crickets and grasshoppers
    c) flies and cockroaches
    d) all of the above
14. A baby frog with a tail but with no legs is called -
    a) an egg
    b) a tadpole
    c) spawn
    d) an Axolotl
15. The Order frogs belong to is called -
    a) Litoria
    b) Euphoria
    c) Anura or Salienta
    d) Caudata
16. The Green Tree Frog's scientific name is Litoria caerulea. 'Litoria' means shore or beach, but what does 'caerulea' mean?
    a) blue
    b) green
    c) tree
    d) frog

(The answers are on the next page.)

Answers: 1b, 2c, 3b, 4a, 5d, 6d, 7a, 8b, 9d, 10c, 11a, 12b, 13d, 14b, 15c, 16a. Was it very hard?

QUEEN RECOGNISES COGGER THE FROGGER

Congratulations to Hal Cogger, who has been recognised for his contribution to the community in the 1996 Queen's Birthday honours list. He has been appointed Member of the Order of Australia (AM). It is nice to see that his work on reptiles and amphibians of Australia is being appreciated by the general public.



THE WEST SIDE STORY FROG

I just bred a frog named *aurea* ...

Excited phone call and a fax from Martyn at the Australian Museum: "At the last meeting FATS members were treated to the sight of amplexing Green-and-Golden Bell Frogs in the Museum's "Frogs" exhibition. I will report here that the frogs did in fact spawn sometime over the long weekend and that I was presented with the view of a couple of thousand newly hatched tadpoles when I got back to work. It was only a small spawn but still presents the problem of what to do with it all! I sure hope Arthur's got another brick pit ready!"

Well, Arthur did come along, scooped many of the *aurea* taddies out and released them back at the Homebush Bay brick pit where their parents came from. It's good to be able to lend an endangered species a helping hand. Congratulations to all involved in breeding them!

But no matter whether you call it the Green-and-Golden Bell Frog, or the Olympic Frog or the West Side Story Frog,

I'll never stop saying *aurea* !

L.V.

FROGBITS & TADPIECES

Microphone sex: The Animal Research Review Panel of NSW Agriculture's Animal Welfare Unit is producing Field Studies Guidelines for amateur naturalists belonging to recognised organisations. They plan to include recommendations on "activities such as observation, recording of frog calls and bat and bird banding". (These activities would be exempted from research licensing and animal ethics committee requirements provided the guidelines are followed.) The one concern expressed to me was the inappropriate playback of frog call recordings, in case that puts stress on the frogs.

It may be helpful for the FATS Group to offer our input before their guidelines are finalised. Unfortunately, I don't really know how to play calls back to the frogs inappropriately and what to guard against. (Presumably it's the females who suffer the stress when they find out it was only a mike?) Please help me and write in with examples of aural practices to be avoided.

Parking problems. Car burglars (*Autoknackers*, ve call zem) on our field trips are not the only threat to our smelly steeds. At our last meeting, while we were frolicking in the Museum, one of our members had his car cleaned out - if one overlooks all the glass shards that were left behind. What can one do? Try to arrive early and get a parking spot in a main road, don't keep valuables in your car, have an alarm system (a tape of a guard frog?) and keep your anterior digits crossed. Or hop on public transport.

Tadpoles that can hunt after things: Martyn rang in with an observation that taddies of the Emerald-spotted Tree Frog (*Litoria peronii*) are able to catch mosquito larvae and water fleas. Please let us know of any other examples, or if you have found a way of having a fish-free and mozzie-free frog pond.

Gerry Marantelli, President of the Victorian Frog Group and extraordinary large-scale frog breeder, descended upon Sydney with his assistant Natalie White. (Ascended, we lik to think. And while we're thinking: No, frogs don't have large scales.) His photos show rows and rows of frog cages and tadpole tanks and indoor swimming pools and plumbing like in an oil refinery. I think he said something about having to sleep in his car because his house is too full of frogs now. He left a price list of live frog food for our next meeting.

L.V.

(And there is much more, but that will have to be held over till next time. – Your editors)

What the heavies said at TAMS:

In February, the Australian Museum Society arranged a series of four evening speakers in the Hallstrom Theatre, to mark the opening of the frog exhibition. Just in case you missed out, or if you didn't, because it was so good, they are being summarised in *Frogcall*. Here is the first one:

THE WONDERFUL MARVELLOUS DIVERSITY OF FROGS

Mike Tyler calls himself a frogologist, but only for want of a better word. There isn't even a recognised discipline of "amphibology", having been thrown in arbitrarily with the study of reptiles, of all creatures.

Frogs are instantly recognisable, being so conservative in their body shape. They have hit upon a magnificent design and got firmly stuck in that groove. Mike talked about the fossil record and about some 3000 frogs he found in rocks from the Riversleigh fossil hills. Riversleigh also represents a link between today's very discontinuous distributions of t. genus Lechriodus (in N.E. NSW and in Papua New Guinea), but 10 or 20 million years ago they were also in between.

And new ones are still being discovered, as one of Mike's table of frog species shows:

	1963	1996
TAS	10	11
VIC	18	33
NSW	38	83
WA	35	77
SA	11	28
QLD	41	117
NT	14	49

Even the behaviour of frogs is conservative. One example: In foam nest builders across various groups of frogs, the female beats up the foam by hand (not legs) and traps the bubbles under her tummy.

Mike has a female Magnificent Tree Frog (*Litoria splendida*), who, after 20 years in captivity, has now become a mother of 10,120 eggs - out of which 5000 tadpoles are surviving! She had a bit of help, not only from a male but also from a hormone injection (costing $75 per milligram and hard to get). Mike now has permission to distribute them to zoos around Australia.

He found a way of frogs squeezing out their skin secretions to science, without doing them damage. He uses an acupuncture unit with modified electrodes, and is now finding anti-fungal and anti-viral agents amongst the peptides in the secretions. He's also identified mosquito repellents in them and a non-toxic glue that can stick wet organ tissue together. - Just in case someone asks you what good frogs are anyway!

By the time Mike had fooled a raptured audience with slides of preposterously weird frogs from South America, and had recounted his ordeal in a French restaurant (the thighbone was too big for the frog species claimed on the menu!), by that time had well and truly converted everybody to frogology.

L.V.

FROG ROUNDUP

Herbicides may not be as benign to frogs and tadpoles as we would like. In 1994 the W.A. Department of Environmental Protection commissioned Curtin University to report on the issue, after a proposal was referred to it for aerial spraying of Lake Kununurra in the Kimberleys, to control an emergent water weed.

The report "Acute toxicity of a herbicide to selected frog species" came out in June 1995 (Bidwell, J.R. and Gorrie, J.R., for D.E.P., Technical Series 79, Perth) and must have caused some heartache to the herbicide industry. The two products investigated were glyphosate and the main herbicide formulation based on glyphosate, Monsanto's Roundup 360. Roundup also contains a "surfactant", a detergent-like wetting agent, to make the glyphosate more effective on plants.

I will now quote directly from the report's Abstract:

"... In both screening and definitive studies, the formulated herbicide was more toxic to frogs than the glyphosate alone. ... Tadpoles were significantly more sensitive to Roundup 360 than juveniles or adults. The 48 h LC_{50} *(ed: that's the lethal concentration where 50% of them die within 48 hours)* for *Litoria moorei* tadpoles was 11.6 mg/L Roundup 360 as glyphosate, an order of magnitude lower than the 48 h LC_{50} of 121.5 mg/L generated for *L. moorei* tadpoles in exposure to technical grade glyphosate alone. Screening studies with *C. insignifera* tadpoles indicated a similar sensitivity. ... *C. insignifera* adults were significantly more sensitive to Roundup 360 than the larger L. moorei adults, demonstrating that species-specific differences in response to the herbicide can be expected. ... The sharp difference in toxicity between technical grade glyphosate and Roundup 360 is probably due to toxicity of the surfactant in the formulated herbicide. While data on environmental concentrations and persistence of the herbicide must be additionally considered to make final conclusions, a potential hazard exists for frogs and tadpoles in shallow water bodies."

Perhaps needless to say, Monsanto's lawyers got busy after that report. Fortunately, their chemists got busy too, as the following press clipping shows.

L.V.

Wednesday, April 10, 1996

SMH

Virus is ruled out as threat to frogs

By GREG ROBERTS

Theories that a disease is ing the decline and extinc- Australian frogs have by the failure of a virus in

Thursday, May 9, 1996

SMH

Virus linked to dying frogs

By LEIGH DAYTON
Science Writer

A plague that has killed tens of thousands of frogs in Britain has provided the first hard evidence that a deadly virus is implicated in the mysterious decline of the world's frog population.

The virus was discovered in British frogs by Dr Andrew Cunningham, a veterinary pathologist at the Institute of Zoology in London. In February he brought samples of the virus to the Australian Animal Health Laboratory (AAHL) in Geelong where virologist Dr Alex Hyatt and his colleagues have now identified it as an iridovirus.

Dr Hyatt said iridoviruses were known to cause diseases in some fish and insects, and one type of iridovirus, Bohle, is known to infect a Queensland burrowing frog.

"It is very tempting, very exciting, but [the link to disappearing frogs] is still unproven," a frog expert, Associate Professor Mike Tyler, of the University of Adelaide, cautioned yesterday.

According to Dr Cunningham, huge numbers of frog deaths were first reported in southern England in 1985. Since then between 7,000 and 8,000 deaths have been reported annually by the public.

"That's an underestimate of the actual number dying per year", he told the *Herald* last week before returning to London.

Dr Cunningham is now conducting "transmission trials" to confirm the virus is definitely the British culprit. "It is the likeliest candidate," he said, having ruled out toxins, pollution, parasites, bacteria "and so on" as causes of the British epidemic.

Meanwhile, the AAHL scientists have joined with Dr Rick Speare, a virologist at James Cook University in Townsville, biologist Dr Keith McDonald, of the Queensland Department of Environment and Heritage, and Professor Tyler to look for evidence of the British virus in Australian frogs.

If findings are positive, the international collaborators will have strong evidence that the virus is the final blow, killing animals already weakened by destruction of their habitat.

WEDNESDAY JUNE 12 1996
THE AUSTRALIAN FINANCIAL REVIEW

Controls on herbicide use

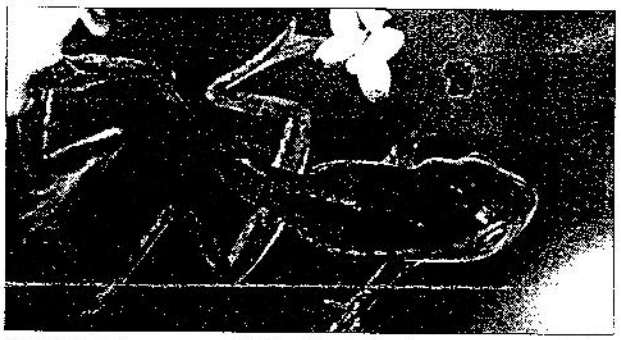
Cathy Bolt

One of Australia's most commonly used herbicides, glyphosate, will be subject to much stricter guidelines near waterways following a finding by the National Registration Authority that it poses too high a risk to some aquatic species.

But the herbicide's major local manufacturer, Monsanto Australia Ltd, which uses the trade name Roundup, said yesterday it could benefit from the move since it had just released a new Roundup formulation which would meet the higher safety requirements.

The new product, Biactive, was launched last week, pre-empting the public release of the NRA's findings.

The NRA initiated the inquiry because of "a high degree of public concern" about the effect on aquatic life of glyphosate and, in particular, new laboratory research by the WA Department of Environment Protection which suggested that the surfactants, or spreading agents, used in glyphosate formulations could be acutely toxic to tadpoles.



Toxic to tadpoles . . . new guidelines for glyphosate. Picture: GREG WHITE

Its chairman, Professor Ben Selinger, said it had concluded that the aquatic toxicity of currently registered glyphosate products was undesirably high, although not because of the glyphosate – generally regarded as a safe chemical – but because of the associated surfactants.

It therefore would phase out their use for controlling weeds on or over water by June 30, 1997, and only formulations with a superior safety margin would now be registered for that purpose.

Label changes would also be required for existing glyphosate formulations to restrict their use to dry drains and irrigation channels and dry margins of dams, lakes and streams.

Other chemicals now under review include an important cotton industry chemical, endosulphan, suspected to be linked with fish kills, atrazine, a plantation forestry herbicide, and horticultural chemicals, mevinphos, parathion and parathion-methyl

The FATS plan for finally getting a bit cashed up

Have you paid your membership renewal? (It was due at the end of May.) If you're lost your form, there's another one for you in this issue. Otherwise, please pass it on to a friend. Many thanks.

We hold six informative, informal, topical and practical meetings each year at the Australian Museum (William Street entrance) in Sydney. Meetings are held on the first Friday of every even month (February, April, June, August, Oct. and Dec.) at 7 pm for a 7:30 start. Visitors are welcome. We are actively involved in monitoring frog populations and in other frog studies, and we produce the newsletter *FROGCALL* and *FROGFACTS* information sheets.

And our thanks to the Australian Museum, for the postage.

Your FATS Group