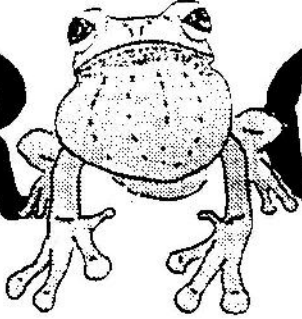


FROG CALL



Number 17 - May 1995

THE FROG AND TADPOLE
STUDY GROUP OF NSW INC.

P.O. Box A2405
Sydney South NSW 2000

The Next Meeting

Friday 2nd June, 7:00 for a 7:30 pm start at the Australian Museum

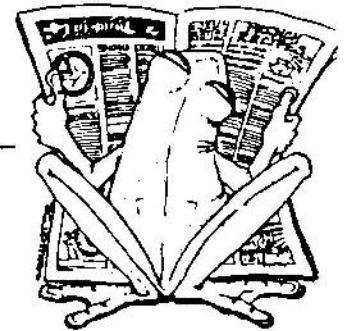
SPEAKERS:



- Frank Lemckert Frogs of the Dorrigo
- Lothar Voigt Beyond Frogfacts 2:
 The frogfriendly garden
- You My 5 favourite frog slides
- You again The raffle and your annual membership fee (bring all your money!)
- Right at the end: The Annual General Meeting and election of the new committee

REGULAR FEATURES

News announcements
Refreshments
Project updates
Informal atmosphere and fun
Discussions
Visitors and neighbours welcome
No \$2 door donation for paid-up members



Current major
FATS Group activities

Endangered Frog Survey:

A study of the habitat characteristics, present distribution and population sizes of 21 species of "at risk" frogs in NSW. Partly funded through the National Estate Grant Program.

The postage costs of *Frog-call* are a present from the Australian Museum.

Contents

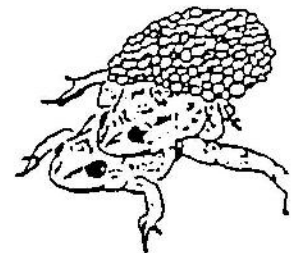
- The next meeting, these very contents, the committee p1
- The last meeting, memberships, frog viruses p2
- Are frogs fighting dirty?, Pseudophryne toadlets, frogs can't count p3
- Bloopers & blunders, breeding insects p4
- Invitation to Taronga Serpentarium, froggy happenings p5
- Claude's getting thinner at last p6
- Press clippings p7
- The lost frogs of Queensland p8
- Special insert: your membership renewal form

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Frog Week:

First week every November. Many activities take place to focus public attention and interest in endangered frogs. We encourage much public involvement.



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, October, December) at 7 for 7:30 pm. Visitors are welcome. We are actively involved in monitoring frog populations and frog studies, and we produce a newsletter FROGCALL and the FROGFACTS information sheets.

The Last Meeting (7.4. 95)

Arthur White gave a talk about what's happening to the **Green-and-Golden Bell Frog** around Sydney. The Sydney metropolitan area has more *Litoria aurea* sites than anywhere else in Australia, and even here they have declined drastically. Only perhaps six sites in NSW are secure. Most sites have no more than five adult frogs. There are none left at Rosebery, the site having been handed over for development. However, five breeding pairs were rescued and sent to Taronga where they all spawned! 7000 eggs! The offspring will need to be re-released somewhere in southern Sydney, but it's a high risk.

Jacque Recsei treated us to some more information brought back from the **ASH conference**. Not just the papers but also the gossip and other important stuff.

Michael Mahony did a double act. **Lesueur's Frog** is not one frog but three as it now turns out. The one southward of Sydney Harbour has blue spots in the thigh mottling, not yellow as the one north of the harbour. They are also genetically different, their sonograms are a bit different but they hybridise in a narrow zone. (They also hybridise with the Booroolong Frog.) The true, initially described *Litoria lesueuri* is the southern one, the other one now being *Litoria wilcoxi*. On Michael's attempts to borrow a voucher specimen from the Paris Museum: "Getting a frog out of the French is a hard task". - A third species, up in the Atherton Tablelands, is still being described.

Michael went on to shed some light onto radio-tracked Great Barred Frogs. The transmitter is implanted into the body cavity, which was first tested on captive ones for six months.

The *Mixophyes* in NSW:

- halbus* - blue eye top, mottled
disappeared from 70% of its range
- fasciolatus*- white upper lip, sometimes a golden eye top
- fleayii* - same blue eyes, wider leg bars
MM saw only 3 this year, 7 last year
- iteratus*- huge (female 250g)
also gone from 70% of its range
still ok around Dorrigo / Coffs Harbour

Harald Ehmman was up north in the rains and saw 40-50,000 frogs on that trip. In Nyngan he counted up to 28 baby **Green Tree Frogs** per tussock. Many of them get eaten by just-metamorphosed **Waterholding Frogs**, some still with tail. He also saw *Cyclorana* tads ganging up on shield shrimps.

Ken Griffiths, Jacque Recsei and Arthur White also brought great frog slides along for our entertainment.

The raffle fetched \$92, a new record! Many thanks to those who brought goodies in. Please bring more!

Your Memberships

Membership fees are due in May for everybody (excepting a very small number of members who recently paid for a year and a half instead of for the first half year only). Please renew by filling in the enclosed, conveniently inserted, great-fun-to-fill-in subscription form. Then simply work out which half to keep, and send the other half with your cheque to the FATS Group, PO Box A2405, Sydney South 2000. But do it now, please.

L.V.



Is a Frog Virus the Main Culprit?

In January the Sun Mail in Queensland ran a chilling article of a suspected virus sweeping through frog populations in Australia and around the world. "Already threatened by chemical pollution, acid rain, habitat loss, stream salination and increasing levels of ultra-violet radiation from ozone depletion, the world's frogs may be in the middle of a lethal pandemic unprecedented in their 345 million year history", the article went.

Three North Queensland biologists are hunting a virus which infects frogs. Around Townsville sick frogs have been found with an iridovirus in their tissue. This virus appears to have the capacity to infect a very wide range of frog species and maybe even fish.

Queensland's frog declines started near Brisbane in the early 1970s, it seems, and progressed northwards to Cairns. Now seven species are missing altogether and seven other once common species have become rare. This northward progression may be the signature of a virus rather than of UV radiation through the ozone hole. (Also, the ozone hole should not greatly affect tropical frogs and shade-loving rainforest frogs, but these are among the ones most affected - see Jean-Marc Hero's list on page 8.)

However, the extinctions are happening at the higher altitudes. "In the tropical north, some frog species that range between coastal lowlands and mountain peaks have become extinct only at altitudes above 300m", the article says. One of the researchers, CSIRO's Dr Bill Laurance, thinks the virus may function at cooler temperatures, or it is being transmitted by a mosquito or other insect that prefers montane environments. [If he is right, and if the virus has spread south as well, one would expect it to be active also in our lowlands, eg where the Green-and-Golden Bell Frog used to be.]

L.V.

Are Frogs Fighting Dirty?

Consider the following five points and tell me if I'm imagining things:

- The ABC Science Show on 15 March interviewed San Diego Zoo on their endangered antelope breeding project. A big worry is that a stray virus might wipe their small herds out, especially since they know that wildebeest harbour a herpes-like one (yes, forever) which is fatal to other antelopes but does not greatly inconvenience the wildebeest. The speculation was that in times of drought or other stress this virus breaks out of the wildebeest and obligingly eliminates their competition.
- Another Herpes-like virus causes chicken pox in people, then goes dormant until it erupts at a time of stress when it erupts again as shingles.
- A recent book on invertebrate bio-diversity, edited by Glen Ingram, contains conference papers stressing the importance of preserving parasites along with their hosts, to ensure the host's ongoing shaping by evolution. (The "EQUAL RIGHTS FOR PARASITES" banners are already printed for the next virus liberation rally!)
- The Brown-striped Marsh Frog monopolises the inner Sydney suburbs, it more or less dominates the outer ones but it takes no more than its share in the chorus of the presumably less stressful countryside. Poisonous as they may well be to other frogs, one wonders if stress does not bring out the worst in them. How else could they be so much more competitive in city living? Are they also such great colonisers and then hoppers in the country? Where then?
- Cane Toads do have a virus on or in them, in South America. CSIRO's plan, as announced at last year's Congress in Adelaide, is to give that virus to Australian ones too, on an offshore island at first where it will hopefully show that it slows them down without infecting our local frogs. Sounded great, until I listened to that story about the wildebeest.

Maybe no gnus is good gnus after all.

L.V.

Pseudophryne Toadlet Special

The Red-crowned Toadlet (RCT or *Pseudophryne australis*).

Thank you to 15-year-old Mich Stone of Berowra for a new RCT study site. Mich has received a copy of Martyn Robinson's Field Guide, as his site will be used for our ENDFROGS survey. We hope to welcome Mich to our next FATS meeting!

The RCT has been in the Land and Environment Court twice more since the Hornsby Heights case. In the Manly Dam Reserve case at Allamby Heights the local council rejected an application for over 60

houses, due to their concerns over endangered flora and fauna, including RCTs. At the court, Dr Hal Cogger spoke for the council and Prof. Tyler spoke for Ardel, the developer. News came on 5.5.95 that the development was rejected by the court. Unfortunately we have not yet seen a copy of the judge's decision but we will keep you informed.

More recently, Gosford Council rejected a proposed house development, on the edge of Bouddi National Park, mainly for aesthetic reasons. Council (represented by John Allen) argued that inadequate fauna assessments had taken place, considering that RCTs had been found nearby and that the habitat is suitable for the species. No decision has been handed down yet.

The Smooth Toadlet (or Brown Toadlet or Bibron's Toadlet or *Pseudophryne bibronii*):

It has been very pleasing that we have received records of the Smooth Toadlet in the last two months. In and around the Sydney basin it used to be quite common but has in recent years all but disappeared. Now we have two new records from the proposed Dyarrabin Nature Reserve, six from the Putty Road at the edge of Wollemi National Park and also from the Watagans State Forest. Eggs were seen in April and May. The data from these field trips will be entered into our ENDFROGS survey. Please let us know of any more sightings.

Karen Thumm

Because They Can't Count Either

One of those field trips to Putty Road was to have another look at the Gibba Swamp / Tinda Creek site (the place of the proposed mushroom compost factory, and where all the frogs are - yes, including *bibronii*!).

We were on the way back that night, inching our way down the serpentines to the Colo River, when Ilze, Nick and I noticed that the Recsei family were no longer driving behind us. Obviously, they had either fallen off the road or found a Giant Burrowing Frog. We managed a three point turn, headed back up with ill bodings - and ahead of us the sky lit up with an enormous explosion! Round the next hairpin bend the Recsei car was safely parked, with Jacquie and Derek at the bottom of some incredible cliff poking around with their torches. *Helioporus* fever, as it turned out, they had neither seen nor heard the explosion. One serpentine further up, the only nearby place where we could have turned again, there was a car blazing like the dickens - stripped and doused of course - and with another car making off into the distance.

Instead of hairing off after them (which seemed somewhat preferable to hoisting Jacquie and Derek up the cliff again), we entered a state of mathematical confusion. I had seen only one car standing there on our first pass, Ilze and Nick thought they had counted two; and we had no idea whether the strippers had been thrown by both our vehicles going down past them and one coming back.

Back at Recsei's Precipice, we found that deep below Jacquie and Derek had triangulated a Giant Burrowing *Heleioporus* Owl of a Frog, who (who-who-who?) had of course stopped calling with the racket we were making. So Jacquie departed noisily, Derek stayed, frog started up again, frog was caught (and measured and released and licence is worth every one of those 100 dollars). Still, we felt sorry for the frog. He couldn't count to two!

L.V.

Errata

Frogfacts No. 5 (*The Green-and -Golden Bell Frog*) was the special insert in the last issue of *Frogcall*. Our readers who can count up to five will have noticed that the poor frog only had four toes. Please take a pencil and draw an extra one into your copy. And explain to your neighbours that frogs have four fingers but five toes, on each side. We suggest 10 to 12 neighbours a day, unless you lose count.

The last issue also stated that Ross Knowles had given a talk at ASH about the new frog genus in southern W.A. It was Dale Roberts of course. Apologies to both.

L.V.

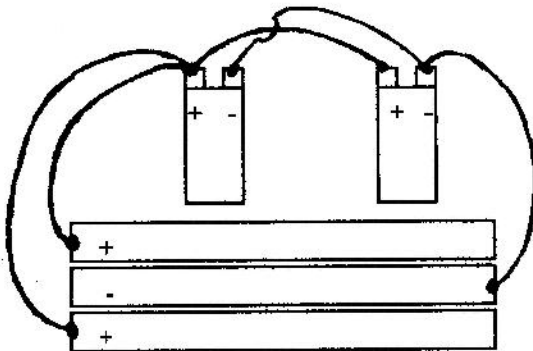
The following article is lifted, by kind permission, from a 1992 AHS newsletter:

Breeding Insects the Taronga Way

(A Telephone Interview with Nicki Gavin)

Q: Cockroaches have me stymied. How do you breed them?

A: In a garbage bin, with an electric fence made of sticky aluminium flashing tape near the top so they can't get out. Much better than a ring of vaseline. Apply 18 Volts, from two 9V batteries in series, to two or three rings of aluminium tape with a small gap between the rings:



Ventilate the lid, keep the temperature inside around 30° C, put an inch of ideally sawdust on the bottom to soak up their mess and provide plenty of cardboard hiding places (toilet roll cores, apple trays) for them to lay their eggs on and to stop them from attacking each other.

Q: How do you feed them?

A: With a dry dog kibble and daily shredded lettuce and carrot. Stuff some cotton wool on their drinking container. A bird drinking tube will do. And try to keep the humidity up to make the eggs hatch quicker. Then breed straight from the bin.

Q: Can cockroaches make asthmatics wheeze?

A: Yes. Keep them in the garage then. What? No, the cockroaches.

Q: How about breeding crickets? Aren't they too noisy?

A: No, they're fairly quiet and you get used to them. But could you speak up a bit?

Q: I said how do you breed crickets?

A: Right. Start with say 15 crickets, feed and shelter them like the cockroaches but no need to electrify their cage. Keep them at a reliable 30° C. Spray them with water daily. Put moist sand into a shallow dish for them to lay their eggs in and remove the dish after 24 hours and keep that also at 30°. The young hatch after 7-11 days. That's all.

Q: Would you bother about grasshoppers or locusts?

A: No, there's probably less goodness in them, only grass, and they may be too spiky.

Q: Are flies easy to breed?

A: Yes, you can raise tons. You put a shallow container out on the compost heap, with a thin paste of bran, milk powder and a bit of yeast. Flies will lay their eggs in there. (Don't keep meat scraps in the compost unless you want blow flies.) In the meantime, make a cage of suspended fly screen or of gauze netting, either around a wire frame or hung by the corners onto the legs of an upturned table - so that the cage is suspended all around. Through an overlapped slit in the cage, insert the dish with the eggs and also the drinking water. A margarine pot full of water, with a paper towel over the top and sticking out, and with the margarine lid put back on, will allow them to drink from the wet paper. The paper that's sticking out should be folded over the margarine lid, so it won't siphon the water out. When the flies emerge, give them dishes for egg laying and for food (like the one on the compost but with a thicker paste and with also some honey and glycerine. Give them some fruit as well.

Q: Sounds yummy. Is there a no-fuss way of raising fruit flies?

A: Just take some jars, put a banana peel in each and put them on the compost heap for a while. Bring them in with trapped adults as well as eggs and put them on the mantelpiece with a gauze lid or - with a lid with a hole in it - straight into the frog cage. The frog cage should have a good lid so the fruit flies can't escape.

Thank you, Nicki.

L.V.

Come to the Zoo!

FATS at the Zoo Serpentarium! We are invited to Taronga's brand new reptile, frog and insect house! Their curator, Terry Boylan, will meet us at the Zoo's Education Section's side entrance (to the right of the main entrance) and give us a tour behind the scenes.

Date: Saturday, 10th June
Time: 2 pm sharp

Cost free! (Yes, no admission fee. But FATS members only.)

Maximum number 25 (Put your name on a list at the meeting.)

Very many thanks, Terry!

Froggy Happenings

The Study and Care of Frogs and Reptiles is a hands-on evening course that's been running in Blacktown for years and that will now also run in Rose Bay. Ten evenings, once a week, \$80

The Blacktown course starts on Monday, 22.5.95. Ring Blacktown District Community College on (02) 628-2079

The Rose Bay one starts in September. Ring me (that's Lothar) on (02) 371-9129

A Kimberley Frog Night will be held (well, was held by the time you get to read this) in Kununurra, W.A. Frogs appear to have an image problem out there. They are seen as nuisances and they don't even pull in the tourists, like their crocodiles do! Not so long ago the huge lake at Kununurra was sprayed with Roundup to get rid of the rushes, so local frogfriends may have quite a job turning red-neck toadlets into green frogs. Jo Vandemark is organising it, Mike Tyler is speaking, other entertainment is also arranged and the walls will be graced by some of our FATS Group posters.

A CD-ROM on Reptiles and Frogs is out. A singing, dancing "multimedia experience" by Webster Publishing, in the book shops and computer stores for \$79 [Not to be confused with the Wilson / Knowles CD-ROM "Reptiles of Australia" | It is based on the Australian Museum's Encyclopedia of Reptiles (Ehmann) and Encyclopedia of Frogs (Tyler) but is updated and goes well beyond the book versions. It also includes an audio-visual component by Philip Green on frogs.

Totally Wild, the TV show with this lush redhead, used to be one of my favourites. Now they have Philip Green and his frogs and his funny outfits on every time I switch it on. No doubt a great improvement, from a frog's point of view.

Scientific American announced in the March issue that the April one will carry an article "the Puzzle of Declining Amphibian Populations". Since we are two months behind the times out here, your

newsagent will have it in June. (Let's hope our frog decline also lags behind.)

The World's Largest Sperm seems to be the name of another US mag (but then it says "Discover, March 95" underneath). It runs an article where one Christopher Murphy fed an extra cricket to a wild population of marked frogs. He used the Barking Tree Frog (*Hyla gratiosa*) of the southeastern USA. On an average night during the breeding season, only about 50 males out of a population of 800 participated in the chorus. The ones with the additional cricket sang twice as many nights though. The cricket gave them the extra fuel: to make all the noise, as Murphy said. Or was it to make those big sperm the magazine promised? - Have you ever been on a field trip and they weren't calling? For no good reason? And you had no spare cricket in your pocket? Murphy's Law.

Cane Toads on the export menu? Martyn rang this one through, from a New Scientist story of 21.5.94. According to the Bureau of Resource Sciences, they're not bad when skinned and gutted, and their market may be worth \$6m. This would be the first of several species for export, with feral cats and red foxes next. Well, if you can't beat them - eat them!

Licensing of frogkeeping by NSW NPWS is moving in the forward direction again. They have now been advised by the Crown Solicitor that there are no legal or regulatory impediments to them granting herp licenses. Provided any difficulties NPWS may have can be resolved in discussions with AHS and FATS, licenses could start rolling in the second half of this year.

Grant applications: We missed out on a federal VGCO grant ("not enough funds to go round") but we are still in the running for a Landcare one. As we have found, you can't run a Frogweek or an Australian Frog Count on the smell of a wet frog! Let's keep our fingers crossed.

Calling in May:

1. Karen and Jacquie heard the Heath Tree Frog (*Litoria littlejohni*) in the Watagans and the Giant Burrowing Frog (8 of them!) at West Head.
2. *Litoria verreauxii* and the Common Froglet (*Crinia signifera*) are carrying on everywhere.
3. The two main *bibronii* sites at Tinda Creek had about 50 males calling (vs. at least 140 on a similar night in April!).

Splashing everyone's boots: Ku-Ring-Gai Council held a "Frog Night" at their Wildflower Gardens. Thirty adults turned up with their kids and with their torches. When I hopped into the muck, just for a demonstration, a few kids followed me in, then the rest and after a while most of the adults did too. Shoes and good trousers and all. They simply could no longer bear the stigma of being left on the banks of the pond with everybody else having joined in. Afterwards, in the classroom, everyone was sitting there mud-encrusted up to the knees. We were all being kids again. And if mudpacks are that rejuvenating, wouldn't the next group like to dunk their heads in too?

L.V.

Environmental Education Seminar: On April 6 and 7, the NSW Department of School Education ran an Environmental Education Seminar at Morpeth, NSW. Over 120 educators attended from the Hunter Education Region and the Western Education Region, which reaches as far as Broken Hill.

The FATS Group was invited to present two workshops, showing teachers how frog topics and activities can be used as part of the school curriculum. Mike Mahony and I presented an action-packed itinerary of Frog-Fact-Fun & Fantasy that was extremely well received by the Environmental Educators.

As a result of the Frog Workshop, the Department's Field Study Centre at Dubbo will be putting in frog ponds (BIG ONES!) and purchasing frogging equipment for students to actively use during their overnight stays at the Centre. So a large number of students will have first-hand exposure to frogs in their natural environment and understand the need for care and conservation.

Philip Green

Hornsby North Public School will be building a frog pond on the 20th / 21st May weekend. Lothar has been advising them.

Karen Thumm

Claude's Got Much Thinner

We are out of stock again. The competition will catch up with us - even Taronga now! L'audace, toujours l'audace! I am worried. So kindly order more paint and more thinner, si vous plais.

Yeah, sure.

Everybody asks me if I got thinner. I tell them it's all gone, but they say they can see I got thinner. I can't see any. Perhaps there is something wrong with me.

Whyzatt, boss?

These electric shocks I am getting. All my appliances are trying to electrocute me. Even the nylon stockings which I must handle, professionally of course, they make me jump.

Mebbe you just got saltier when you shrivelled up like a prune. You've become a real bad insulator, Claude.

Hello, Monsieur! - Hi, we thought ... - Mister Monsieur, we need some help. It's my homework. - Yeah, we're helping her with it an' we need your help, too. - You see, we gotta find out whether little frogs are saltier.

What?? How did you guess? But mes enfants, I am not that much smaller ...

Galvani, she's doing Galvani. - We're doing Galvani, you see, an' our homework is to make an

improvement to his experiment. When he discovered electricity.

Oui, I remember. Naturellement, because Galvani put frogs' legs on a wire washing line to drip dry them, and whenever their toes touched the iron balcony railing, their legs jumped. N'est pas?

That's it, Monsieur! That's what we got to improve on. So we'll use baby frogs instead if they're any saltier. - An' that's what we've come to find out. - How much is a blender? - Not in a blender! You're gross.

But pour quoi, children? Why do you think baby frogs might be salty at all? And why ask me?

You know how fast some tadpoles shrink when they become frogs? And how fast their tails shrink back? - We thought all their salts might pile up in what's left of them. In the books it says their kidneys are pretty weak, you know. - Yeah, you can even drink Waterholding Frogs. As weak as ...OUCH! - If they do get saltier then, wouldn't that also explain why they drown so easily at that stage?

Why they drown? Mon Dieu! Yes, I mean oui, I mean they could drown osmotically, could they not? Through their skin? Water being pulled in by their salts!

Here, mister, here's your chair for you. - You see, when we were young, like last year, we thought only baby frogs drown that can't climb out. - But it happens to climbing ones too, and to baby frogs that can float without paddling, even to frogs where the water level is so low they can just sit up in it. - Yeah, an' we thought, well he did, that drowning means sinking an' getting water down the mouth. But they don't drink through the mouth anyway, an' maybe they don't have to breathe all that much if they're not struggling an' if the water is cool an' fresh. - And you know what? Some of the drowned ones float on the surface and some don't. They don't all sink first and then die, but they never do it when I'm watching. - We tried to attach a video camera over their tank, on slow motion. But it fell in. - Should have bought some gaffer tape.

Mes enfants, at what stage of development do you have most losses?

When the tail's just about gone and they're the saltiest, we think. - If some really had trouble breathing, wouldn't they drown much earlier? When the left arm pushes through the spiracle opening an' they can't breathe water out through it any longer? An' they'd have to start using their lungs? - Uncle Martyn thought it could be the lungs sticking together, maybe not straight away then but once they use them properly. - Alright then, why do some dead ones float and some don't? - Beats me! - Let's buy that blender, just for the dead ones. - Let's just squish 'em with Dad's spaghetti fork. Then we stick the Streamwatch conductivity meter into them. An' we do the same with any others that have died as tadpoles or as slightly older frogs! If there's a difference and they are saltier, then Galvani move over! - We'll

Zoo agog waits for love of a frog

BY CAROLINE MILBURN, environment reporter

A deluxe frog honeymoon suite has been built at the Melbourne Zoo to save both: extinction the world's last known members of the sharp-snouted day frog.

The only known remaining adult female of the tiny species was yesterday introduced to her potential suitor, an adult male *Taudactylus acutirostris*. The pair met in a custom-built aquarium where zoo officials hope they will breed.

So far the male has been shy, hiding in a heap of leaves, and keepers have laid out a smorgasbord of favorite frog food, hoping to entice him out to meet his bride.

The zoo's operations manager of amphibians and reptiles, Mr. Jon Birckett, brought the male frog by

air from Cairns on Monday night, with two other sub-adults of the species, the sex of which had yet to be determined, he said.

The brown and black frogs, 3 centimetres long, were extremely shy, delicate, and prone to illness, Mr. Birckett said.

"I hope he's not suffering from jet lag or blocked ears from the flight," Mr. Birckett said of his precocious male charge. "He hasn't moved from where we left him last night.

Only nine sharp-snouted day frogs, a species unique to Australia, are known to be alive in the world. Most of the last small population, in O'Keefe's Creek, south of Cooktown, was wiped out in 1993 by a mysterious virus.

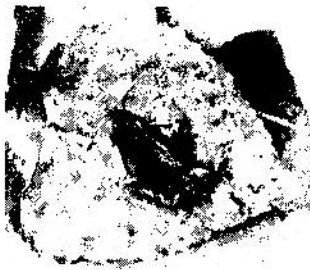
In an effort to help the survival of these rare frogs, universities and

launched when, recently, it was discovered that she was carrying eggs, which could be seen through her transparent abdominal membrane.

Mr. Birckett dashed to Queensland to find a male adult frog among the eight survivors being kept in a collection by Queensland's Department of Environment and Heritage at Manildra on the Atherton tablelands. The male and female at the Melbourne Zoo are now the world's only known fully grown adults.

The female has about 20 eggs ready to be released. She will deposit these under submerged rocks where the male will be able to fertilise them.

Mr. Birckett said the Melbourne Zoo's breeding program could save the species.



The sharp-snouted day frog awaits survival at Melbourne Zoo. Two were last year given barrels of tadpoles. Only one survived, the female now at Melbourne Zoo. The breeding experiment was

WEDNESDAY 26 MARCH 1995 THE AGE 3

NEW SCIENTIST
7 January 1995

cent, even in bad conditions. If we only knew what bad conditions for that are. - An' we shouldn't be mean to them. We shouldn't make their bad conditions worse than normal keeping.

I think that is right, children. You may also need an expensive Agriculture research licence and Animal Ethics approval otherwise.

Did Galvani have any?

He didn't have to. He ate the evidence.

L.V.

Is a virus wiping out frogs?

Ian Anderson, Melbourne

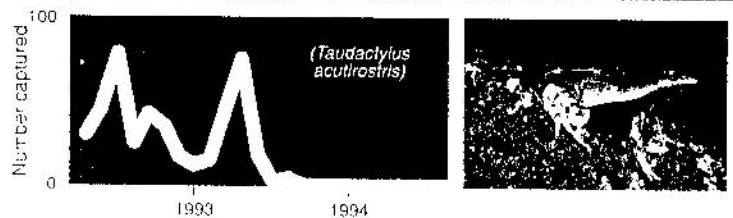
THE rapid decline of frogs on six continents may have been caused by a virus spread around the world by the trade in ornamental fish. Three biologists from Queensland suggest that a foreign virus may have wiped out 14 species of frogs in the rainforests of northeast Australia over the past 15 years, and that the same virus could be responsible for the demise of frogs elsewhere.

Bill Laurance, Keith McDonald and Richard Speare claim that the pattern of

knows what we do about it," says Mike Tyler, a herpetologist at the University of Adelaide. "We don't have the resources to deal with it."

The three researchers say that the area where frogs are in sharp decline in eastern Queensland is advancing 100 kilometres a year and has spread nearly 1500 kilometres so far. They believe that the frogs began disappearing in the late 1970s or early 1980s in the subtropical rainforests south of Brisbane. At least two frogs, including the southern gastric-brooding frog (*Rheobatrachus silus*), have not been

Decline of the sharp-snouted day frog



sickness and death among the 14 Australian species—starting near the border of New South Wales and Queensland and spreading north through streams at altitudes above 300 metres—suggests that a highly virulent pathogen is on the move. According to McDonald, from the Queensland Department of the Environment, in some of his study areas entire populations disappeared within three months.

Laurance and his colleagues suspect that a type of virus called an iridovirus is to blame. Speare, who is based at James Cook University, has isolated the Bolle iridovirus from one frog, the ornate burrowing frog (*Lamnodon ornatus*), but it has not yet been found in other species.

But last week, Alex Hyatt, a virologist from the Australian Animal Health Laboratory in Geelong, New South Wales, said it was too early to say that an iridovirus was responsible. "However, their general point that a virulent pathogen is at work is plausible and should be investigated with some urgency."

According to Laurance, who works at the CSIRO Division of Wildlife and Ecology in Atherton, Queensland, in the past 20 years frogs have declined "alarmingly" at higher altitudes in Australia, South America, western North America, Central America, Eastern Europe, Asia and Africa. Factors such as drought, salinisation, pesticides, acid rain, increased ultraviolet radiation reaching Earth through the ozone "hole", and unusual rainfall patterns have all been invoked as possible causes.

"If these Queensland people are right and an epidemic disease is rampant, then God

sighted since 1981. The populations of three other species in the area have decreased by more than 90 per cent.

By the mid-1980s, two species of frog, the Eungella day frog (*Taudactylus eungellensis*) and the northern gastric-brooding frog (*R. vitellinus*), began disappearing from the rainforest near Eungella, about 700 kilometres north of Brisbane. Since then at least seven other species have been affected in a region stretching as far north as Cooktown.

In every case, the frogs live in upland streams and the victims are generally adults and juveniles rather than tadpoles. "The fact that only stream dwelling frogs are being affected suggests that we are dealing with a waterborne pathogen," says Laurance. "It could be carried by aquatic insects such as dragonflies and mosquitoes." The researchers are puzzled why species that are dying in upland areas are surviving in warmer lowland areas. Laurance suggests that cold-blooded vertebrates living in cooler regions may be more susceptible to disease.

In an unpublished paper, Laurance, Speare and McDonald argue that exotic fish could be spreading the disease. Tilapia, guppies and carp have all been released into the wild in Australia. The suspect iridovirus is found in fish and insects as well as amphibians, and has been isolated from dwarf gourami imported from Singapore.

This month, Speare, McDonald, and Hyatt will begin collecting frogs from north Queensland in an attempt to isolate a pathogen.

MISSING FROGS OF THE WET TROPICS

Stream-dwelling rainforest frogs which have disappeared from many sites searched in recent years.

MOUNTAIN MIST FROG

Litoria nyakalensis

LAST FROG SEEN: November, 1990; Carbine Tableland.

HISTORICAL DISTRIBUTION: Douglas Creek, Kirrama State Forest to Alexander Creek, Cape Tribulation.

NORTHERN TINKER-FROG

Taudactylus rheophilus

LAST FROG SEEN: October, 1991; Mt. Spurgeon, Carbine Tableland.

HISTORICAL DISTRIBUTION: 940-1300m altitude; Mt. Bellenden Ker, Mt. Haig, Mt. Spurgeon, Mt. Lewis, Thornton Peak.

ARMOURED MIST FROG

Litoria lorica

LAST FROG SEEN: 1991; Thornton Peak

HISTORICAL DISTRIBUTION: Thornton Peak area, north of the Daintree River.

SHARP-SNOUDED DAY FROG

Taudactylus acutirostris

LAST FROG SEEN: January, 1994; tadpoles observed Aug. 1994; Big Tableland.

HISTORICAL DISTRIBUTION: Mt. Graham, Kirrama State Forest (Ingham) to Big Tableland (Cooktown).

DECLINING FROGS OF THE WET TROPICS

Stream-dwelling rainforest frogs which have disappeared from sites at altitudes over 450m above sea level since 1990; but are still found at lower altitudes.

WATERFALL FROG

Litoria nannotis

Still found in lowlands between Townsville and Cooktown.

COMMON MIST FROG

Litoria rheocola

Still found in lowlands between Ingham (Herbert River) and Cooktown.

AUSTRALIAN LACE-LID

Nyctimystes dayi

Still found in lowlands between Ingham (Herbert River) and Cooktown. Last seen at Mt. Spec. Patuna in June 1990.

MISSING FROGS OF MID-EASTERN QUEENSLAND

NORTHERN GASTRIC-BROODING FROG

Rheobatrachus vitellinus

(NORTHERN PLATYPUS FROG)

LAST SEEN: March, 1985; Cattle Creek, Eungella N. P.

HISTORICAL DISTRIBUTION: Undisturbed rainforest above 400 m altitude, streams surrounding Mt. Dalrymple, Eungella National Park.

STATUS UNCERTAIN

EUNGELLA TORRENT FROG

Taudactylus eungellensis

(EUNGELLA DAYFROG)

LAST SEEN: June 1994; Finch Hatten Creek, Eungella.

HISTORICAL DISTRIBUTION: reported as abundant along streams surrounding Mt. Dalrymple and small tributaries of Broken River, Eungella National Park prior to 1985; then as missing between 1985 and 1992 (McDonald, 1990; Couper, 1992). Searches between November 1993 and July 1994 have found low numbers of frogs along six streams surrounding Mt. Dalrymple (J-M Hero and R. Retallick, pers. comm.).

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MISSING FROGS OF SOUTHERN QUEENSLAND

GASTRIC-BROODING FROG

Rheobatrachus silus

(SOUTHERN PLATYPUS FROG)

LAST SEEN: September, 1981; Conondale Range.

HISTORICAL DISTRIBUTION: Conondale Range near Brisbane.

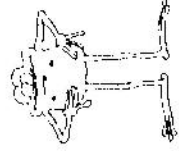
SOUTHERN DAYFROG

Taudactylus diurnus

LAST SEEN: January, 1979; Conondale Range.

HISTORICAL DISTRIBUTION: three sub-coastal mountain ranges (Blackall, Conondale and D'Aguilar Ranges) near Brisbane.

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