

# FROG CALL



THE FROG AND TADPOLE  
STUDY GROUP OF NSW INC.

NUMBER 33 - January 1998  
PO Box A2405  
Sydney South NSW 1235

## THE NEXT MEETING

7.00 PM, FRIDAY 6<sup>th</sup> FEBRUARY 1998  
AT THE AUSTRALIAN MUSEUM (WILLIAM ST ENTRANCE)

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from Christina James

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Compliments from Martyn Robinson

And a Partridge in a Pear Tree

### MEETING FORMAT for 6<sup>th</sup> FEBRUARY 1998

- 7:30pm Phillip Green will give a colourful talk on frogs in North America and the education programs there.
- 8.15pm 5 favourite frog slides or 5 minutes
- 8.40pm Raffle and Auction
- 9.00pm Finish for tea, coffee & biscuits



### REGULAR FEATURES

News and announcements, field trips, projects and committee reports.  
Discussions, advice, gossip, welcome table, auction, sales table!  
Bring a visitor!

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## THE LAST MEETING 5<sup>th</sup> December 1997

**A** passion for amphibians turned our last speaker, Garry Daly from collector to consultant. Garry also studies birds and mammals but amphibians remain his special interest. His amazing presentation gave us a glimpse of the depth and diversity of his studies and field work. From his coastal home south of Sydney Garry sets out on field trips that provide data on frog activity at selected sites.

We were treated to excellent slides and charts including data on strategies based on erratic and unreliable climates. His observations included the identification of large spawn clumps hatching in ponds that were reducing in volume. The tadpoles showed tendencies to delay further growth whilst overcrowded and would continue their growth when rain fell increasing the size of the pond.

Slides included *Crinia signifera* (Brown Froglet), and *Litoria chloris* (Red-eyed Tree Frog). The latter's tadpole life is short and it inhabits ephemeral creeks, and farm dams. They live 10 to 15 years as adults. Gary comments that data gathers quickly if you can find the right habitat!

Another strategy to avoid competition is used by *Litoria verreauxii* (Verreaux's Tree Frog) which is a winter breeder, amplexing under the ice in ponds, (which thaw in the day). These frogs adapt by laying eggs under water. Eggs take 10 days to hatch as there are fewer aquatic creatures preying them.

*Pseudophryne bibronii* (Bibron's Toadlet, with its distinctive orange flash on its upper thigh), inhabits the South Coast areas between Nowra and the Termil State Forest and builds tunnels saturated with water. The female selects several sites, not putting all her eggs in one basket! She then depends on the autumn rain to flush eggs into the creek. Eggs then hydrate and tadpoles hatch within minutes.

*Mixophyes fasciolatus* (Great Barred Frog) breeds in creeks, dams, open and closed forests and at all altitudes. Tadpoles take 2 to 3 years to metamorphose. It is holding its own in NSW. Metamorphs can take a few years to reach maturity.

So what does Garry observe about frog reproductive habits? They try to "get in first and get in often" We look forward to our long time FATS member Garry Daly, publishing his tadpole sketches!

Lothar Voigt talked about Water Week FATS displays at the Opera House, FATS displays at Taronga, and Kuringai Wildflower Gardens. He also demonstrated some wonderful frog containers with inbuilt water systems.


We were also treated to a slide show and talk by Phillip Green. Viewing many eye catching shots of *Crinia*, and other frogs, his 4 children with assorted frogs, Tobol Lagoon, feral Cane Toads from Belize,

and hearing about the "Ant dance" followed by the "Ant strip" (also know as "Don't stand still on ant trails") for the unwary walker at the Belize Rainforest Education Centre.

The auction made \$74. A Big thank you to all those who contributed and purchased froggie memorabilia, pond plants etc. MW

Wir fühlen uns  
verantwortlich.



Bayer 

## FATS CHRISTMAS PARTY

**M**any thanks to John Weigel and his staff for their hospitality. Yet again FATS members enjoyed a wonderful day of entertainment and information, grilled lunch and soft drinks at the Australian Reptile Park. We hope Eric, the crocodile recovers from injuries given by his "lady love". MW

## SMITH'S LAKE FIELD TRIP 26/2 to 1/3/98

**F**or some good frog therapy, come and see up to 20 species at Myall National Park on a 4 day field trip. Cost: \$10 per night per person. Bunk style accommodation at the Uni. of NSW field station which has lake views, toilets, hot showers and several bird species in the area. BYO bed sheets, pillows, blankets, food, drink and swimmers etc. If interested in any of these days contact Arthur White on 95991161.

AW

## FROG FACTS 6, 7, & 8

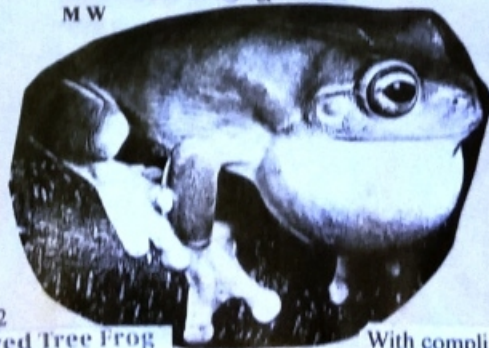
**F**rog FactSheets on Raising Tadpoles, Keeping Ground Dwelling and Tree Frogs are still being prepared. These will be included in our future newsletters as available.

MW

## DATA ON LITORIA CHLORIS

**R**ecent reports and records on sick and dying Red-eyed Tree Frogs are urgently required. This includes egg mass viability. Please pass on any information to Karen Thumm on 9482 1017 or EMAIL to kttoadlet@bigpond.com

MW



Red-eyed Tree Frog  
*Litoria chloris*

With compliments from  
Hal Cogger



## VECTOBAC

Comments offered by John Clarke to Frank Lemckert

"....I too am interested in this "biological pesticide". I sought information from one of our local technical officers who is good with this sort of thing. He had heard of the bacillus before and said it is widely used in biological control applications. He also sought further advice from an entomological contact of his.

The bacillus is specific to the larvae of the order Diptera (flies, mosquitoes) and appears to be very effective. My major concern is that if it is as effective as the manufacturers claim the impact on the food chain at a local level would be enormous. This would directly effect tadpoles, frogs, dragonflies, fish and crustaceans etc.

I guess this needs to be weighed-up against the nasty and long-term effects of the chemical alternatives. This is not easy - who has the data to quantify these impacts at present?

My gut reaction is that it should not be used in R&T habitats unless it is clear the alternative is the use of chemicals. It would be far better to exclude the R&T habitats from mosquito & midge control programmes."

## SHIPPING HERPETOFAUNA

Extracts provided by Allen Salzberg to Frank Lemckert concerning herp diseases in the USA. "The following letter was written by Dr. E. Jacobson in response to the proposed regulations for the humane shipment of reptiles and amphibians. He has given me permission to distribute the letter."

".....As a hobbyist who has kept reptiles and amphibians as pets since the age of 6, and as a clinical veterinarian in a university and researcher studying health problems, especially infectious disease problems of reptiles, for almost 23 years, I would like to make a few comments based upon many years of experience with reptiles and amphibians.

Over the years I have visited many reptile wholesalers and retailers, and can say fairly emphatically that most herps that I have seen were in a poor state of health upon arrival, especially those that were shipped in great numbers and packed densely in shipping crates. Shipping is extremely stressful to most animals and because of the attitude by many people that reptiles and amphibians can withstand a fair amount of abuse, especially since many do not have to be fed and for at least certain reptiles, watered as often as a bird or mammal. By many people they are relegated to a lower position on the vertebrate totem pole because of this image. The fact is that these animals have very complicated needs (especially considering their thermal biology and the influence of environmental parameters on their immune system), which often are not being met after they are collected and shipped and then sold.

Section 14.105, Consignment to carrier, covers issues pertaining to a qualified certified veterinarian inspecting shipments before and after shipment and states that "A sick or injured wild animal, bird, reptile, or amphibian shall be permitted transport to the United States only if the primary transport is for needed medical treatment and upon certification in writing by the examining veterinarian that

the treatment is necessary and the animal is able to withstand the normal rigors of travel in its present condition." It is my opinion that if this is made a requirement, it will only improve the quality and health of animals being transported. Unfortunately we are seeing a rise in the prevalence of certain diseases in captive reptiles world wide because of the ease at which these animals are transported around the globe. A paper soon to come out in an Australian veterinary journal will describe a retroviral associated infectious disease of pythons and boas that was first described in the United States. Many other infectious diseases are being spread around the globe with the movement of these animals. Will a veterinarian inspecting shipments completely eliminate this problem? Probably not, but I expect that it will vastly improve the situation. ....I would like to say that I still maintain a collection of reptiles and amphibians and so does my younger son. These animals have been a part of my life since I have been a child and I will probably die as a reptile/amphibian pet owner. The future is captive bred animals that are healthy. For most of us keeping herps, captive bred animals do far better than their wild collected counterparts..... Even with captive bred animals, pathogens are being spread around. ....As a major researcher on health issue of reptiles I keep up with most significant studies relating to health problems of these animals. The number of truly good studies around the globe are disappointingly low. For information pertaining to certain health problems (and research projects) of reptiles, please see our webpage at: [www.vetmed.ufl.edu/sacs/wildlife/wildzoo.html](http://www.vetmed.ufl.edu/sacs/wildlife/wildzoo.html)"

## HEPATITIS IN *LIT. CAERULEA*

HILL, B.D. GREEN, P.E. & LUCKE, H.A. (1997) "Hepatitis in the green tree frog (*Litoria caerulea*) associated with infection by a species of Myxidium." Australian Veterinary Journal 75(12):910-911 The hepatitis was isolated in 'thin' frogs in the Mt Larcom area (near Gladstone, Qld). some extracts:

"This report describes a severe hepatitis in the green tree frog associated with the presence of Myxidium trophozoites in the bile ducts. The distension and partial occlusion of bile ducts, together with the peribiliary fibrosis and associated inflammation, indicates that this parasite has a certain pathogenic potential for its host. Similar hepatic lesions have been described with myxosporean infection in Australian marine fishes."

"The features of the trophozoite and spore described in the present study are most similar to those already reported for *M. immersum*, which is the only species of Myxidium so far recorded in the gall bladder of Australian amphibians."

"To date, attempts to experimentally infect various amphibians with Myxidium spp have been unsuccessful and their life cycle remains unknown. This could limit experimental investigation of morbidity and mortality that may be attributable to the parasite described in this study. However, field investigations of declining frog populations should now consider Myxidium spp as a potential pathogen and submit appropriate specimens for laboratory examination." I hope someone out there understands the pathology jargon better than I do! **John Clarke**



## The Science Page

with Michael Harvey

### Year of the Frog - Part 2.

Michael Harvey continues his look at the frog stories which made news in 1997. This month, levitating frogs and the wonders of frog skin...

Scientists at the Nijmegen High Field Magnet Laboratory in the Netherlands have carried experiments showing that just about anything, including frogs, can be carried by a strong magnetic field. Andre Gien and Peter Main have magnetically lifted live animals for the first time in history. Grasshoppers, fish and a small frog floated in mid-air in a magnetic field (16 Tesla, in comparison to a stereo speaker's field of .001 - .01 Tesla). How is this possible? The water in the bodies of live animals expels a weak magnetic field. Just as like magnetic poles repel each other, the animals' magnetic fields were repelled by the very strong field used at Nijmegen. Small, light animals could therefore "float" above the magnet. The scientists said that the frog was "a symbol that the world around us is magnetic". What the frog thought of the experiment was not recorded, however the scientists said that the frog appeared to be unharmed (although possible dizzy and disoriented after its experience). I just *know* there's a Gary Larson style cartoon somewhere in this study.

Frogs from the genus *Atelopus* are unusual in that they do not have a true ear. These "earless" frogs lack the tiny bone which connects the eardrum to the inner ear. Yet the frogs still call to each other, so clearly they are not deaf. In 1996 the mystery of how *Atelopus* hears was solved by Erik Lindquist and Thomas Hetherington from Ohio State University. They looked at the Panamanian **Golden Frog** (*Atelopus zateki*). Male Golden Frogs could clearly "hear" as they quickly turned around to face a speaker playing the calls of another male. Some even answered back. The fact that the frogs responded to loudspeakers proved that it was the call, not the sight or smell of another frog that caught the males' attention. However sound is actually transmitted by vibrations in air. The frogs' skin was tuned to these vibrations, at exactly the frequency of the males' calls (about 2 kilohertz for the music buffs). So here is a species of frog that "hears" through its skin.

Frog skin can also insulate its owner from adverse environmental conditions. It is well-known that the **Water Holding Frog** (*Cyclorana platycephala*) survives in the desert by sitting out the dry season underground in a glad-wrap like cocoon. Observant frog keepers will also be well aware that frogs shed the outer layers of their skins at regular intervals. This outer layer is usually eaten as it is shed. But a West Australian scientist has shown that in the Water Holding Frog, this is what actually forms its cocoon. Phil Withers from the University of WA has observed the formation of the cocoons, and examined them using electron microscopes. *C. platycephala* does not eat its shed skin when hibernating, but slowly accumulates it to form the cocoon. When the rain finally arrives the frog wakes up and then swallows the cocoon.

M.H.

New Sunday Times  
5-10-97  
Singapore

# Deformed frogs could be result of agent in water

## ENVIRONMENT

ST PAUL (Minnesota): Something in the water is the likely cause of deformations in Minnesota frogs and possibly those in other parts of the country and Canada, researchers said.

"We're as close to 100 per cent sure as you can get," said George Lucier, director of the environmental toxicology programme at the National Institute of Environmental Health Sciences in North Carolina, which is working with the Minnesota Pollution Control Agency.

Reports of frogs with misshapen limbs, missing or shrunken eyes and smaller sex organs have come from throughout much of Minnesota and elsewhere.

Now scientists who mixed newly fertilised eggs with water from three sites in northern Minnesota say they produced frog embryos with deformities close to the rate found in nature.

"There are environmental agents in the water that can produce frog abnormality," Jim Burkhardt, a manager within the National Institute's environmental toxicology programme, said.

But the research has

not shown whether the harmful substance in the water will prove to be man-made or natural such as plants or algae. Burkhardt said more study is needed.

Specifically, researchers will chemically analyse the water to look for the particular contaminant. They also will try to determine, through possible tests on mammals, whether the contaminant has an effect on humans.

"We have no indication at all right now that this is a human health concern," said Peder Larson, commissioner of the Minnesota Pollution Control Agency.

Already, the State is distributing bottled water to four northern Minnesota households where tap water produced deformed frog embryos.

The agencies have been working on the study since April with several partners. The contaminated water came from wetland sites where high numbers of deformed frogs have been found in the past two years.

In addition to water, other researchers have speculated that ultraviolet radiation, parasites, viruses, disease or a combination of factors may be causing the deformities.

—AP



WATER-HOLDING FROG s/s

## REGIONAL OVERVIEWS

**Bell frogs** Michael Mahony.

**Department of Biological Sciences, The University of Newcastle, Callaghan NSW 2308.**

This paper will deal mostly with the bell frog species that occur/occurred in south eastern Australia, namely, *Litoria aurea*, *L. castanea/flavipunctata*, and *L. raniformis*. There is now considerable support for the earlier reports that the tablelands populations of *L. aurea*, *L. castanea/flavipunctata* and *L. raniformis*, have disappeared. Reconstruction of the time at which the decline/disappearances occurred indicates a period in the early 1980's. *Litoria castanea/flavipunctata* occurred only on the tablelands, and is now presumed to be extinct. *Litoria aurea* is now restricted to lowland populations, and the distribution, abundance, and status of this species has been recently reviewed (see papers in Pyke and Osborne, 1996). The status of *L. raniformis* is less certain. Populations in the Murray River Valley appear to be robust, although no standardised method of estimating abundance have been applied.

The bell frogs are in some respects similar to the other Australian frogs which have declined; high altitude species and populations are effected. However, they differ from most other declining species; they are not stream, vernal pool or forest frogs, and declines were not restricted to uplands. *L. aurea* has declined over extensive areas at low altitude. Finally, the introduced Mosquito fish (*Gambusia holbrooki*) has been implicated in population reductions. In biology it is often the exception to the general pattern that helps focus attention on what is important and what is unimportant in a pattern. *Litoria aurea* provides one of the best models to understand the phenomenon of frog declines in Australia; it is the only declining frog that has been bred for several generations in captivity, several thousand offspring have been used in translocation programs, it is a relatively large species (adults 70 to 90 mm), and disease has been observed in several populations.

## RESEARCH SUMMARIES

**Toxicological issues for amphibians in Australia**

**Reinier Mann\* and Joseph Bidwell**

Three questions will be addressed in this presentation:

1. What are the chemical assaults to which Australian frogs are exposed?

Pesticides, Salinity, Industrial effluents, Eutrophication, and Endocrine disrupters (EDCs) will be discussed.

2. What tools are available to study toxic effects on frogs? There are few standardised tools available for assessing amphibian susceptibility to chemical contaminants. Standard Acute Toxicity tests allow for the incorporation

of tadpoles, but there are no standard protocols for adults. FETAX (Frog Embryo Teratogenesis Assay-*Xenopus*) has been used extensively over the last 7-8 years but has been developed to study potentially mutagenic compounds in vertebrates rather than provide a tool for frog conservation. Microcosm/Mesocosm protocols have been used to study intra- and inter-specific community relationships and can be developed to study toxicology at an ecocosm level. Field validation is required to determine whether indeed a given toxicant is available for uptake by frogs.

3. What are the problems associated with amphibian toxicology?

The frog/tadpole dichotomy presents the biggest problem for amphibian toxicology. The literature which deals with toxic effects in adults is sparse and lacks uniformity in methodology. Species variability provides the strongest argument for a more thorough examination of as many species as possible where a potential threat has been identified. A constant supply of test animals is impossible when relying on field collected animals, and highlights the importance of commercial suppliers.

**The ecological characteristics of declining amphibians**  
**Jean-Marc Hero\*, Steve Williams & Bill Magnusson**  
**Corresponding Author: Dr Jean-Marc Hero; School of Applied Science, Griffith University Gold Coast, PMB 50 Gold Coast MC, Queensland 4127 Australia.**

**Tel. 07 - 5594 8661 Email: M.Hero@eas.gu.edu.au**

Analysis of patterns in nature is a fundamental tool for studying the process of extinction. Herein, we demonstrate that the declining species of frogs from relatively undisturbed sites at high altitudes throughout eastern Australia, share a combination of ecological characteristics that distinguish them from non-declining species. These characteristics are not clearly related to phylogeny. Declining species have low clutch size, restricted geographic ranges, are habitat specialists, and have aquatic larvae associated with stream habitats. Furthermore, several missing frogs from Central America and South America have similar characteristics. Non-declining species may share some but not all of these characteristics. We suggest that the combination of these characteristics makes some species more susceptible to population declines and extinction than others. We propose that, the fact that declining frogs have a common set of ecological characteristics makes some species more susceptible to population declines and extinction than others. We propose that, the fact that declining frogs have a common set of ecological characteristics throughout eastern Australia, implies that the observed declines in amphibian populations are not solely due to a series of isolated events at the local scale.



### Risk assessment and contingency strategies

Michael Mahony\*, John Clulow, Robert Browne, and Melissa Pomering, Department of Biological Sciences, The University of Newcastle, Callaghan NSW 2308.

The extent and pattern of declines and disappearances among Australian frogs has been covered in regional reviews and in several published papers. In the past ten years focus has switched to detection of the cause of declines, with the goal to prevent, control, and reverse the process. A number of candidates, with supporting field and laboratory evidence, have been postulated for the cause; UV-B radiation, a virulent pathogen, pollution, and stable synthetic hormonal antagonists in the atmosphere.

What could we do if any of these factors were identified as being widely responsible?

It is most unlikely that any of these could be mitigated in the short term.

If we accept this scenario, then Risk Assessment and Contingency Strategies must be a vital part of research and planning. We should keep in mind that it has taken 17 years, since the first disappearances occurred, to have narrowed the focus on potential causes, and in this time nine species have disappeared. Risk assessment requires a pro-active experimental approach to identifying which species are susceptible to decline, so that contingency means can be developed. The approach is to recognise that the frogs themselves are *the sensitive end point* and they should be exposed to determine susceptibility.

To prevent the total loss of species and genetic diversity among populations, a program of gene banking is desirable. Reproductive technologies provide powerful tools such as, methods for the non-intrusive collection of gametes using hormonal induction, *in vitro* fertilisation, and cryopreservation of gametes and possibly embryos.

Of course this approach is not a replacement to retaining species in functioning communities and ecosystems, however, it is vastly better for example than knowing that the entire subfamily Rheobatrachinae has vanished without any stored genetic material. These methods do not reduce the need to find the cause of declines, or to monitor populations, they are a contingency measure, a port of last resort to prevent the worst situation which is the total loss of unique evolutionary entities - species.

**Involving the community in threatened frogs monitoring and recovery** Harold Ehmann  
P 0 Box 9, Blackwood South Australia 505 1.

The sustained high public profile of threatened frogs (and their enthusiastic and entertaining advocates) has captivated the community. Secondary school classes were amongst the first large-scale community involvements. Frogwatch, Frogcensus and similar programs have met with exceptionally high community support and involvement in several states for up to nine years. Frog

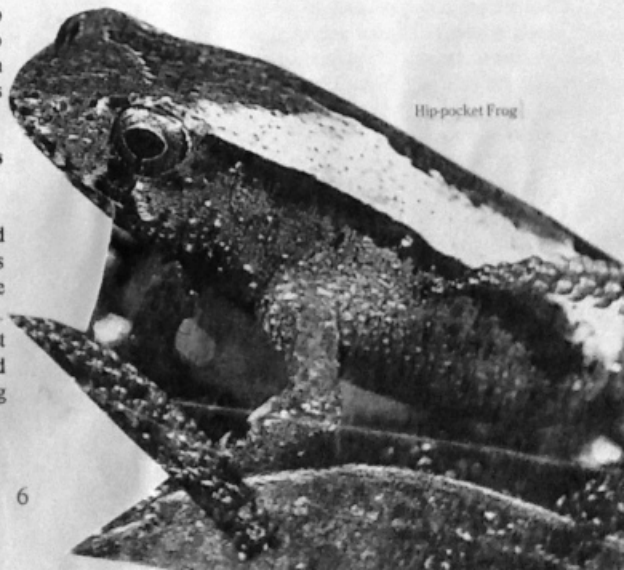
and tadpole interest groups with a high proportion of public participation are active in all states, and more are forming. Frogweeks and Frogdays are now fixtures in calendars at the national and state level. Resources such as Frogfacts sheets, retailed tape recordings of frog calls (on a regional and state level), public displays of wide scope and appeal, and information books and booklets have sustained strong community interest. Many community groups and individuals have become involved in frog habitat rehabilitation projects as well as monitoring activities.

The public's support and preparedness to get involved has not yet been fully realised. This paper examines how this can be done by: 1) ensuring that all stakeholders are satisfied, 2) developing new directions for involvement, 3) suggesting some low-cost frog rehabilitation projects that can be effectively implemented at the national, state, regional and even suburban level.

**The impacts of logging and burning on the hip-pocket frog (*Assa darlingtoni*)** Frank Lemckert

Research Officer, Forest Research & Developmt. Div., State Forests of NSW. PO Box 100 Beecroft NSW 2119.

The hip-pocket frog (*Assa Darlingtoni*) breeds in the leaf litter of rainforests and wet sclerophyll forests of northern NSW and southern Queensland. Surveys for this frog have continued in the Dorrigo area since 1993 with eight populations having been located. Seven of these populations were found within old growth forest, with the eighth being found in forest logged the previous year. In 1994 an uncontrolled wildfire destroyed the "logged population" and back-burning severely reduced another. These results suggest that this frog is sensitive to disturbance, however the species remains common in logged areas in more northern parts of its range. Individuals in the Dorrigo area may be less able to cope with disturbance because they are at the southern limit of the species' range and so at the extremes of their physiological tolerance. This has implications when considering the conservation of other rare species.



Hip-pocket Frog

Status of the green and golden bell frog in north-eastern NSW B. Lewis and R. Goldingay  
School of Resource Science and Management,  
Southern Cross University, Lismore, NSW.

The green and golden bell frog (*Litoria aurea*) has declined dramatically in NSW over the last 20 years and it is now listed as endangered. Historically its distribution in NSW extended from the Victorian border to as far north as Byron Bay. In order to adequately secure this species it is important to conserve populations throughout its historic range. The first step is to conduct detailed surveys to determine its current distribution and abundance. The extent to which this has been done varies throughout NSW. The aim of this study was to conduct detailed surveys for this bell frog within its historic range in north-eastern NSW, north of Coffs Harbour. There were six historic sites within our study area. We identified one further site record from discussions with local zoologists. We surveyed each of these sites and seven additional sites containing potential habitat during 1996 and 1997. Each site was visited during the day and at night, and most sites were surveyed on at least five separate occasions. Bell frogs were detected at only two of these sites, both within Yuraygir National Park where they have been recorded during the last three years and both within dispersal distance of each other. Despite extended surveys, the total number of frogs recorded was less than 10. This confirms earlier records of a small population of bell frogs in Yuraygir. We also conducted surveys for the mosquito fish across all sites and found that it was present at low density at virtually all sites except those in Yuraygir. There are several conclusions from this study: i) the demise of the bell frog in this region may be due to habitat destruction, the presence of the cane toad and the mosquito fish, ii) there appears to be only one population remaining in northern NSW and, iii) the remaining population is anything but secure, despite being located within a National Park. We recommend that a management plan is urgently needed for the bell frogs in Yuraygir and that further surveys be conducted over the next two years to verify that only one population remains.

**Need for community involvement in frog population analysis and recovery** Deborah Pergolotti Cape York Herpetological Society, PO Box 2731 Cairns FNQ 4870

As more and more issues - environmental and social - scream for attention and funding, the less money there is to go around. It has become a necessity for the community to be incorporated in wildlife conservation and recovery activities as governments and NGOs can no longer fully meet the ever increasing demand for available resources. Amateur naturalists and interested citizens can make valid and useful contributions to the work of scientists. For example: in Far North Queensland, volunteers are being used to undertake frog monitoring of declining species. This involvement came out of the community's concern over the cessation of 'official' monitoring after a change of Government in Queensland.

Experienced volunteers collect the desired data and train novices in work which does not require scientific expertise. There are other projects which the community can participate in such as collection of life history and juvenile development information, species location mapping and captive breeding. There are prerequisites however, to the inclusion of volunteers: the first is sufficient funds for proper coordination and expenses; and the second is a legal mechanism to allow non professionals to participate within the limitations of existing legislation.



November 2, 1997  
THE SUN-HERALD - SUPER SCENE ▲ (Pseudophryne australis)

**Incremental loss and degradation of red-crowned toadlet habitat in the Sydney region.**

Karen Thumm\*, Michael Mahony  
Department of Biological Sciences, The University of Newcastle, Callaghan NSW 2308.

The Red-Crowned Toadlet (*Pseudophryne australis*), is a vulnerable species which is restricted to the Sandstone Basin around Sydney. Urbanisation is leading to the destruction and degradation of its habitat. Although the reason for the loss of populations appears evident, there is no room for complacency, as unexplained declines have been documented for other congeners (e.g. *P. corroboree* and *P. bibroni*). After detailed field examination and habitat analysis of over 55 extant and former sites, we conclude that *Pseudophryne australis* is an ecological specialist, breeding typically below the first sandstone escarpment in ephemeral first-order drainage lines. Reproductive losses are high with a large proportion of the terrestrial egg masses and tadpoles drying up before replenishing rain falls. Houses in Sydney are generally built on top of sandstone ridges. There is immediate destruction of habitat as well as the indirect degradation of habitat by stormwater pollution, changes to hydrology, removal of bushrock for landscaping, clearing for fuel set-back zones, and frequent fire hazard reduction burns. In order to assess the sensitivity of the species to various and cumulative human impacts, data on the reproductive output of field populations and of individual captive females is being studied. Specific studies are being carried out on the plasticity observed in clutch size, ovum diameter, embryonic behaviour and weights at metamorphosis as well as the relationship between inter-clutch interval and clutch size. In order to remove the threats to this species and to develop and implement conservation management procedures it is vital to understand its reproductive ecology and its population demography.





## A THOUGHT ON THE KEEPING OF FROGS

As everyone should know now, the licensing system is up and running and so the opportunity is there for anyone interested to get into keeping a frog as a pet. Obtaining a license and then (legally) a frog will open the way to the world of these fascinating and little understood animals and help to educate more people about the creatures in our environment. However, before everyone goes about collecting an army of frogs to keep as pets please consider the following:

a) If your frog escapes what effect might it have on the local populations. It may simply just alter the genetic balance ever so slightly if it is a species which naturally occurs there. However, if it is a species not naturally occurring there what might happen. Probably the frog/s will just die, but if they don't the results could be serious. If by chance a male and female make a successful bid for freedom and then start reproducing then a new species may take residence which is probably going to cause some problems ecologically. They may just compete with the local frogs, but they may also wipe them out. This sounds improbable, but remember what has happened with cane toads in Australia (amongst other countries) and bell frogs in New Zealand. The safest bet is to stick with local frogs.

b) Be aware of the possibility of disease. Recent work in Australia has found a micro-organism in sick and dead frogs which may explain many of the previously mysterious declines. Unfortunately, it appears that this organism (as yet not certainly identified) appears to have already been introduced into captive populations in other states and is killing frogs. It may even have been transferred to some temporarily held wild frogs which caused the loss of a wild population. If you get frogs from a person with lots of frogs recently collected from the wild you run the real risk of spreading the disease around. The same is true if frogs come from someone who is dealing with large numbers of frogs on a continuous basis. I am not saying that frogs cannot be obtained from other people, but that we need to be careful where we get frogs from and mixing lots of frogs and then giving or selling them to other people is a dangerous thing to do.

c) Make sure that your frogs are from a reputable source. There is the potential for frogs to be brought from other states or from people within NSW who have obtained them from unreliable sources. Notwithstanding the above concerns, if someone puts a lot of collecting pressure on already depleted populations in urban areas, we could see some real declines in the remaining populations of frogs such as green tree frogs. Make sure that the person who you get the frog from has the right licenses and be confident that their frogs (or tadpoles) have been obtained in a manner which you would not be unhappy with if you were a frog.

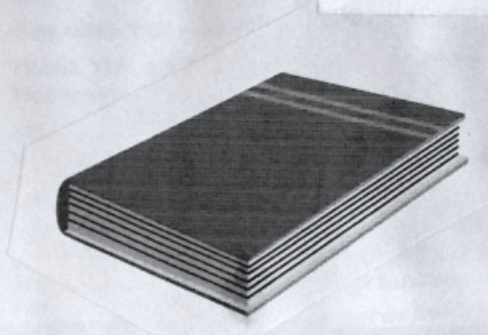
These are just a few thoughts from someone who is concerned that we should not be going open slather on

frogs just because we can. Just keeping a couple of frogs is usually challenging enough.

### Need for green tree frogs

Having just said how we should all be careful on where we get frogs from, I have a friend who has asked me if I know of anyone who could give them a green tree frog or two to give to their grandson for Christmas. I don't have any, but if someone does and the frogs come from as close to the Rose Bay area as possible could they please contact me.

BY EL PRESIDENTE FRANK LEMCKERT



### BOOK REVIEW

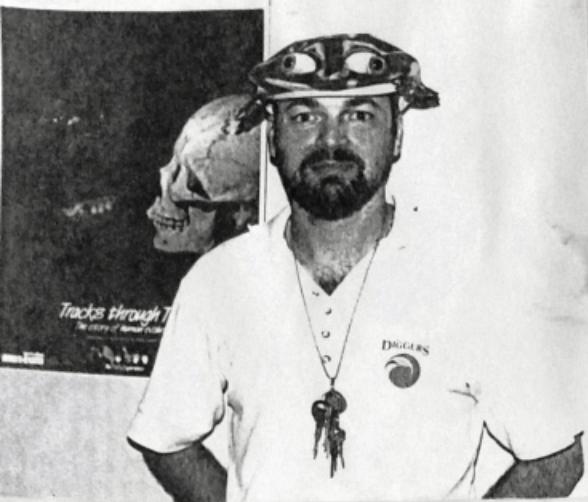
**Frogs and Reptiles of the Sydney Region, Ken Griffiths** published by the Uni of NSW Press, Sydney, NSW 1997. Softback, 125pp., avail. from The Australian Museum Bookshop, \$19.95 + \$3.50 P&H.

This is a handy ready reckoner for identifying frogs and reptiles around the Sydney area. Being long and thin means it is ideal for carrying in one's pocket on field trips. The introduction gives a basic overview of identification methods, the do's and do nots of studying frogs and reptiles in their natural environment and the concern about the decline of local species. The first fifty or so pages concentrates on frogs with the remainder on reptiles. A little over 100 species of herpetofauna have been photographed with basic information on points such as breeding and eating habits. The pictures are excellent and all in colour making identification easy. The author has also included similar species and 'frog sounds like..' notations to make identification between similar species easier. A good bibliography has been included for those that wish to go into more detail about the species they encounter. The frogs have been divided into two groups - tree and ground species and the layout is excellent and for ease of reading it rates highly. The only draw back is that the paper used is of such good quality that one may not wish to get it dirty on a field trip! This book can be highly recommended for both the amateur and beginner. It is also useful for those that are more experienced that may come across a frog that they are not familiar with.

Carl Spears

Ken is also a member of the FATS committee. Ed





### INTRODUCING MARTYN ROBINSON

**M**artyn grew up in Homsby Heights, a northern suburb of Sydney, at a time when the now threatened Red Crown Toadlet was common in ditches and drains. He even remembers a friend finding an adult albino one. They were 'the good old days'.

He says he has always loved frogs and no matter what walk of life he had chosen he would have managed to squeeze them into it somehow. As things have worked out he has an ideal job as an 'Education Naturalist' at the Australian Museum. This involves him in putting together teaching material on natural history subjects for the 'Museum in a Box' distance learning program.

Martyn also produced the very comprehensive "A Field Guide to Frogs of Australia - from Port Augusta to Fraser Island including Tasmania". This is a highly recommended publication.

Martyn says his favourite genus of frogs is *Cyclorana* of which he thinks the Wide-mouthed Burrowing Frog, *Novaehollandiae*, is the most impressive. "This is because it is wonderfully adapted for its way of life" he says. "These frogs live in very dry parts of inland Australia and are only active three to four months of the year - if they're lucky. Some years if there is not enough rain they are not active at all."

He waxes lyrical when he talks about their appearance: "The adults are generally brown with mottles and the young are bright emerald green. They have stunning eyes - a dull gold little diamond-shaped horizontal pupil surrounded by a ring of bright gold."

Martyn says part of the reason he is fascinated by Wide-mouthed Burrowing Frogs is that very little has been written about them. He has been trying to breed them in captivity without much success. The first group came down with TB (the first time this disease was recorded in frogs) and he found this very distressing. The second lot he had calling but not spawning. With plenty of TLC from Martyn, it will only be a matter of time.

**Pam Mawbey**

### WIDE-MOUTHED FROG JOKE

There was once a Wide-mouthed Frog who was very, very curious. He wanted to find out what other animals ate so he decided to go ahead and ask them. First he asked a rabbit.

HELLO, MR RABBIT, WHAT DO YOU EAT?

"I eat roots and grass and carrots" said the rabbit.

THANK YOU, MR RABBIT said the Wide-Mouthed Frog. Then he met a fox.

HELLO, MR FOX, WHAT DO YOU EAT?

"I eat rabbits, birds and mice" said the fox.

THANK YOU, MR FOX, said the Wide Mouthed Frog. Then he met a snake.

HELLO, MR SNAKE WHAT DO YOU EAT? said the Wide-Mouthed Frog.

"I eat birds, eggs and Wide-mouthed Frogs.

With lips pursed tightly: YOU DONT SEE TOO MANY OF THEM AROUND HERE DO YOU? said the frog.

P M

*Cyclorana  
novaehollandiae*



With compliments from  
Hal Cogger





# Professor finds himself caught in the spotlight

SMH  
21/10/97



By LEIGH DAYTON  
Science Writer

Biologist Michael Tyler has been caught wielding a torch in public toilets and the backyards of strangers, all in the name of freedom.

And last night the University of Adelaide associate professor was caught at the Australian Museum receiving the Michael Daley Eureka Prize for the Promotion of Science, worth \$7,000.

Professor Tyler's award acknowledged his concern for the plight of the world's amphibians. Thanks to his entertaining and informative efforts, growing numbers of Australians, especially children, now appreciate that "frogs are beautiful creatures", as well as sensitive indicators of environmental health.

"I'm being rewarded for something I enjoy doing," said Professor Tyler, who added that scientists had "a responsibility" to convey to the public the wonders and importance of their research.

Since 1990, the Eureka prizes, worth a total of \$78,000, have celebrated the best in Australian science.

Professor Jamie Kirkpatrick of the University of Tasmania received the POL Eureka Prize for Environmental Research for his "outstanding" contribution to knowledge of Tasmanian plants and conservation.

The Australian Skeptics Eureka Prize for Critical Thinking went to Dr Amanda Barnier of the University of New South Wales for her myth-busting work on post-hypnotic suggestion.

Deakin University Associate Professor Noel Gough earned the Allan Strom Eureka Prize for Environmental Education for linking complex social theories to environmental education.

And Ms Penny van Oosterzee was honoured with the New Scientist/Reed Books Eureka Science Book Prize for *Where Worlds Collide: the Wallace Line*, an examination of the revolutionary and evolutionary theories of Sir Alfred Russel Wallace.

Finally, Sustainable Technologies Australia Ltd received the Australian Museum Eureka Prize for Industry. Over eight years, the company has developed a novel range of energy efficient building products, all based on Australian know-how.

# Bizarre parasite is clue to dying frogs

By LEIGH DAYTON  
Science Writer

SMH  
21/10/97

A bizarre parasite found in the skin of Australian frogs has provided strong evidence that deadly plagues could be responsible for the mysterious decline of the world's frog population, Australian scientists say.

Experts are meeting this week in Chicago to decide if the peculiar micro-organism, with characteristics of a protozoan and a fungus, is the same as recently found in the skin of dead and dying frogs in the United States and Panama.

"What we have here is one organism which may very well be involved with the sudden population crashes of some frog species," said Dr Alex Hyatt, a virologist and electron microscopist at the Australian Animal Health Laboratory (AAHL) in Geelong.

"Preliminary findings indicate that we have a common disease worldwide," said Dr Hyatt, who supervised AAHL's participation in the project, in collaboration with James Cook University in Townsville.

If the organism, as yet unclassified, were proved to be involved in frog deaths, that would raise the disturbing possibility that the international trade in aquarium fishes was spreading the organism, said Dr Allen Greer of the Australian Museum.

"It could be transported around the world in 24 hours. It's hard to stop



Australian frogs are carrying the suspected killer in their skin.

the small things [entering a country]". In Australia, researchers have struggled to discover why, in less than 20 years, seven species of rainforest frogs have vanished and populations of seven others have been devastated. Similar declines have been seen worldwide.

Recent work at the AAHL and Britain's Institute of Zoology pointed to an iridovirus, a group known to cause diseases in some fish, insects and a Queensland burrowing frog.

The new organism was previously seen in some Queensland frogs by Dr Ron Slocumb of the Veterinary School of Werribee in Melbourne, and James Cook University's Dr Rick Spears.

But Dr Lee Berger, a doctoral student and veterinarian at AAHL, later found it in 10 species of frogs in NSW, Victoria and South Australia as well as Queensland. She demonstrated the microbe's killing power by infecting six native frogs with scrapings from dead frogs.



David Galley and friend

green tree frogs are important for their croaking music which sends me to sleep at night

By KATHERINE GLASCOTT

FROGS have broken down multicultural barriers at an inner-city NSW primary school, which yesterday won a national environmental award for designing a "frog bog" to save the amphibians.

The unlikely topic of frogs has been dominating the classrooms at Dulwich Hill Public School and bringing classmates

from diverse ethnic backgrounds together.

The students have put aside their differences to save the frogs. They plan to build a protective habitat for tadpoles on the school's grounds.

School principal Sue Doran said the students had a "solid fascination" with the frogs, which had been discovered in a nearby ditch.

"The frogs improve their knowledge of Australian flora and fauna, which is difficult in an urban, industrial area," she said.

"The frogs have also helped to connect the students who come from non-English speaking backgrounds."

Dulwich Hill was chosen from 230 entries to the annual Readers Digest Environment Awards, which offer \$25,000 to schools and community groups across the country that are

working to protect their local environment.

Other winners were the Kalamunda Remote Community School in Western Australia, which won \$3000 for creating an indigenous food garden in the Kimberleys, and the Gurindah School and Community Group in NSW, for building frog ponds in constructed wetlands.

AUST 17-11-97



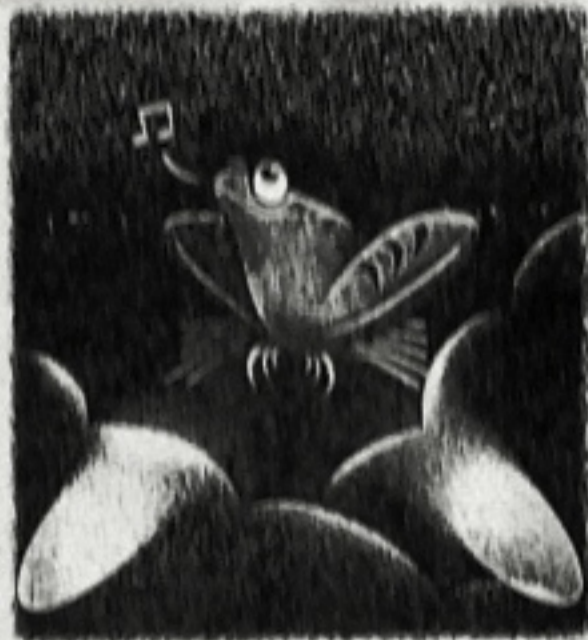
## How to find frogs

Tracking down frogs and watching them in their natural habitat, especially if it is your backyard, is very exciting.

Frogs are nocturnal creatures. This means they are most active at night. Wet, warm rainy nights are the best time to look for frogs. During hot dry weather, frogs stay well hidden.

The easiest way to find frogs, is to listen! The males call to attract females. Sneak up on a calling frog with a torch. You will have to be patient because if the frog hears you approaching, it may stop calling. Here are two tricks that people studying frogs often use:

1. Use a small recorder to tape a frog calling. If you play the tape back, the male frog might think another male is calling and join in. (Frogs like choruses as the sound may reach more females).
2. If there are two of you with torches, stand apart from each other and shine your torches in the direction of the calling frog. Where the torch beams cross — the frog is likely to be hiding. Creep up and try again until you are closer and able to find the frog. Don't grab the frog. Keep quiet and treat the animal gently — better still, just look!



*Remember to be careful at night! Frog-eating snakes may also be on the lookout so wear shoes and walk carefully. Wear insect repellent, but remember that this can harm the frog if you handle it.*

*Frogs are protected animals. There are rules about keeping them. You need to check with your state museum, frog club or national park rangers before keeping any frogs.*

Photograph by STEVEN SIEWERT

## Toxic frog can give the kiss of death to development

By MURRAY HOGARTH  
Environment Editor

It oozes toxins, is as big as a modest-sized cane toad and can be the kiss of death for development.

But despite rarely being seen, the giant burrowing frog and its amphibian cousins have become the king-bitters under the Threatened Species Act in NSW.

The stuttering frog posed problems for the Timbarra goldmine project in the State's far north, the red-crowned toadlet is a terror for housing estate developers and the green and golden bell frog has won Olympics site fame.

So what of the elusive giant burrowing frog?

Its obscurity changed this week when conservationists out spotlighting to count feral foxes found one sitting on Bloodwood Road, Arcadia, on Sydney's north-west outskirts.

It is believed to be one of only two reported in Sydney this year.

And preventing this particular rare and endangered frog becoming a road kill required evasive driving action, one of the spotters said yesterday.

Hornsby Shire's Councillor Scott Cardamatis, who is also the founder of SAFE Australia, hopes the frog discovery will stop work on expanding and sealing the road on which it was found.

Hornsby Council had temporarily halted work on the dead-end road yesterday morning but was still considering future action.

Cr Cardamatis said there was growing evidence that sealing roads with bitumen and blue metal could harm sensitive species such as frogs.

The National Parks and Wildlife Service has been advised of the find. The specimen was an adult male.

SAFE Australia had kept it for 24 hours, because reports of such rare creatures often were treated with great scepticism.

The frog was to be released last night.

## Latino frogs fry in global warm-up

By NICK NUTTALL  
in Kyoto

ALMOST half the species of frogs and toads in the cloud forests of Central America have been killed by global warming this decade, scientists believe.

Researchers studying some of the globe's rarest and most spectacular amphibians in the Monteverde region of Costa Rica have discovered that 40 per cent of species there have disappeared during the 1990s.

The findings were released in a report by Birdlife International, of Cambridge, and the World Wide Fund for Nature at the Kyoto climate conference.

The losses, which cover up to 20 species including colourful harlequin frogs, have occurred at a time of rising temperatures in the region. These have pushed the area's moist clouds, formed by trade winds on low-lying slopes and which drift through the forest, about 100m up the mountain.

The scientists, led by Alan Pounds of the Monte Verde Research Station, believe the frogs and toads need the moist conditions to survive and have been unable to respond to the rapid loss of damp conditions at the lower levels.

Barnaby Briggs of the Royal Society for the Protection of Birds said other species capable of reacting to the sudden climate change had confirmed the trend. Birds such as the keel-billed toucan have moved to higher altitudes during the past seven years, along with other species such as blue-crowned motmots.

At least one amphibian species, the golden toad, appears extinct as it was only known in one 30km sq region.

*The Times*  
AUG. 5.12.97



SMH 29-10-97



# It's not easy being right SMH 12-597

**N**O DOUBT you were wondering why, as we reported recently, the top physiologists of Australia and Italy have been sticking bits of paper onto the noses of frogs and then watching to see how the frogs remove them. Now we are in a position to enlighten you. It seems that our earlier report about frogs vomiting up their stomachs and cleaning them has nothing to do with the case in hand. We have received this explanation from Professor Lesley Rogers, of the University of New England ...

"The research that the Italian and Australian teams reported in the international



journal *Nature* showed that toads are right-pawed. They prefer to use the right paw to wipe their snouts or to pivot their bodies. It is not known whether they use the right paw to clean their stomachs. Some species of frogs do vomit up their stomachs when poison is pumped directly into them. This vomiting behaviour occurs very rarely, if at all, in

the wild. Thus Professor Lesley Rogers, Andrew Robins and their Italian colleagues suggest that pawedness in toads relates to feeding, and not to vomiting.

"It used to be thought that only humans have (right) handedness and only in humans does one hemisphere of the brain control a different set of functions than the other. We now know that many other species have different left and right sides of the brain - birds, rodents, monkeys, and even toads. Both sides of the brain look the same but function differently. Anthropologists are incorrect when they claim that

right handedness, tool use and language all evolved together! Handedness evolved 350 million years ago."

We think that's enough about frogs for this month.



**Ready to croak . . . a woman dressed as a frog shouts slogans in Paris, where animal welfare activists condemned the trade in frogs' legs, considered a French national delicacy, and distributed leaflets on the animals' suffering.**

Photograph by REUTERS/CHARLES PLATIAU



*Litoria chloris*



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phone first (h)

between 7pm and 8pm

## INVITATION TO GO FROG SPOTTING

**O**ur Field Trip Co-ordinator, Ken Griffiths is continuing his invitation to all FATS members to join him frog spotting. Please call Ken on 9520 9961 between 7pm and 8pm to arrange to join him. Ken regularly goes on long and short, easy and rigorous excursions and would be very happy to include enthusiasts. Families welcome. So don't be shy. Give him a call!

M W

And our thanks to all the people who helped contribute to the Newsletter.



Your FATS Group

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.