

FROG CALL



THE FROG AND TADPOLE
STUDY GROUP OF NSW INC.
ABN 34 282 154 794

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PO Box 296
Rockdale NSW 2216

EMAIL fatsgroupnsw@hotmail.com
wangmann@tig.com.au for editorial material
<http://www.fats.org.au>

6.30 PM for a 7.30 PM start, , FRIDAY

5th October 2001 AUSTRALIAN MUSEUM, WILLIAM ST ENTRANCE

the DECEMBER MEETING WILL BE ON SUNDAY 9 /12 -

A **TRIVIA NIGHT** celebrating our 10th anniversary - there will be no meeting on the 7th December 2001

Join the fun,
book now for
TRIVIA NIGHT
6 - 9.30pm Sunday
9th December
contact Arthur White
on 9599 1161

Photo : Lothar Voigt
Frogman at Summer Hill
with Di Woods Ashfield Council
Waste Project Officer
Winter Solstice Street Fair

MEETING FORMAT for 5th October 2001

- 6.30 pm: - Lost Frogs for FATS members to collect
- 7.40 pm Marion Anstis - Tadpoles of South eastern Australia.
TADPOLE POSTERS available at our meeting
- 8.00 pm Surprise 10th anniversary speaker
- 8.45 pm Panel Question Time,
5 favourite frog slides or 5 minutes and
Guessing competition and Auction
- 9:30 pm Remaining rescued frogs placed with FATS members
- 9.45 pm Finish for tea, coffee & biscuits



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THE LAST MEETING 3rd AUGUST 2001

FATS welcomed new and long term members and representatives from various community groups including WIRES. Discussions on the reduction of funding to protect frog species identified that 50% of frog species in Australia are listed as threatened or endangered. FATS support the NSW National Parks and Wildlife Service's need for \$10m per annum funding for the threatened species recovery programs. Most of these programs will not be carried out because they have not been funded. 218 native animal species are threatened or vulnerable and 40 animal species have become extinct in NSW. Over 1,430 Australian Plant and animal species are on the road to extinction. Many more species are facing extinction. Once lost, these species will be gone forever. As we approach Threatened Species Day on 7/9, it is the right time for the NSW government to commit funding to halt our world record rate of species loss.

Noel Plumb representing the Save the ADI (Australian Defence Industries) site at St Marys and the Sydney Bushland Action Group spoke about the 1535 ha publicly owned site which is listed for large scale redevelopment - 8000 dwellings and an industrial area- by Comland Ltd which is 100% Commonwealth Government owned and Lend Lease Developments Pty Ltd. The NSW government has given general endorsement of the project. This will have devastating impacts on the remaining endangered native wildlife, including bats, birds, lizards and frogs, wetlands, creeks, and remnant Cumberland Plain Woodlands. The State government's decision to disband the Hawkesbury Nepean Catchment Management Trust is a loss of an organisation that has been very effective in addressing a range of key environmental issues in the catchment.

Save the ADI Party has been created to fight for the protection of this endangered ecological community and its protection as a Regional Park and Nature Reserve. The entire site was listed in the NSW National Trust Heritage Register in 1996 for its contribution to biodiversity conservation, its rare and endangered species and its contribution to water quality. Both Federal and State legislation protect it. FATS members applauded these community groups for their efforts to save the ADI site.

The Protectors of Public Lands (PPL) Coalition will have its launch on Thursday 28 September 2001. The coalition is likely to include many Local Governments, such as Ashfield and Leichhardt, environmental and community groups such as Friends of Callan Park, Defenders of Sydney Harbour Foreshores, Hunter's Hill High School, Prince Henry Coast Hospital Conservation Area Committee, Friends of the Quarantine Station, Friends of the Earth, National Parks Association, National Trust of Australia, Australian Conservation Foundation Sydney Branch, Friends of Malabar Head, Save Our Suburbs NSW and Save the ADI site community groups. **ADI Residents Action Group 02 4722 6313** cwmalis@mpx.com.au - **Sydney Bushland Action Group 0412 975 575** nplumb@idx.com.au - **ADI WEBSITE** www.savetheadise.bmt.com.au **Protectors of Public Land PPL Coalition Leichhardt Council 9367 9217** annalenel@lmc.nsw.gov.au, callanpark@lmc.nsw.gov.au,

Members viewed video clips of the FATS Frog Rescue Program produced by Animal Hospital and The Today Show with Stephen van Mil on frog declines. The latter video produced 70 phone calls a day to the FrogWatch helpline. 2

Arthur White described the Blue Mountains frog study where 22 pairs of sites were compared as an economical way to assess water quality. 2

Polluted water in rivers is sometimes discharged in pulses so chemical analysis can miss pollution. Frogs provide a cumulative response by animal groups to urban runoff. This was the first study of this type in Australia.

Arthur presented an introduction to Australian frogs. Australia is the driest continent yet we have a disproportional number of species. Go to any part of Australia and you will find frogs.

Some frog species are only recently discovered. Some similar species breed in different months or spend ¾ of the year underground.

Arthur described a variety of frogs such as the sunset frog, horned frog, crucifix frog and burrowing frogs. Frog biology, calls, eggs, amplexing, tadpole development, metamorphosis were discussed. Australian frogs are opportunistic and will speed development up or slow it down depending on environmental conditions. Some frogs eliminate the aquatic stage - like the red crowned toadlet which grow in their eggs and hatch as small frogs during rainy periods. Horned frogs use their tusks to dispatch competitors. As always Arthur was an excellent speaker and we thank him for the great slides and interesting introduction to Australian frogs.

Congratulations to the winners of the raffle and auction items. Many thanks to members and guests who bring all those wonderful items for our auctions. MW

CARNIVAL OF CULTURES, SUNDAY 14 OCT

FATS will have a stall at Ashfield Park, Pembroke Street Ashfield. We will continue to celebrate our 10th anniversary. Hope on over and be a frog explainer. See how many Frog Group members can stand in a pond drinking champagne. Bob for bugs? MW

TADPOLES OF SOUTH-EASTERN AUSTRALIA by Marion Anstis

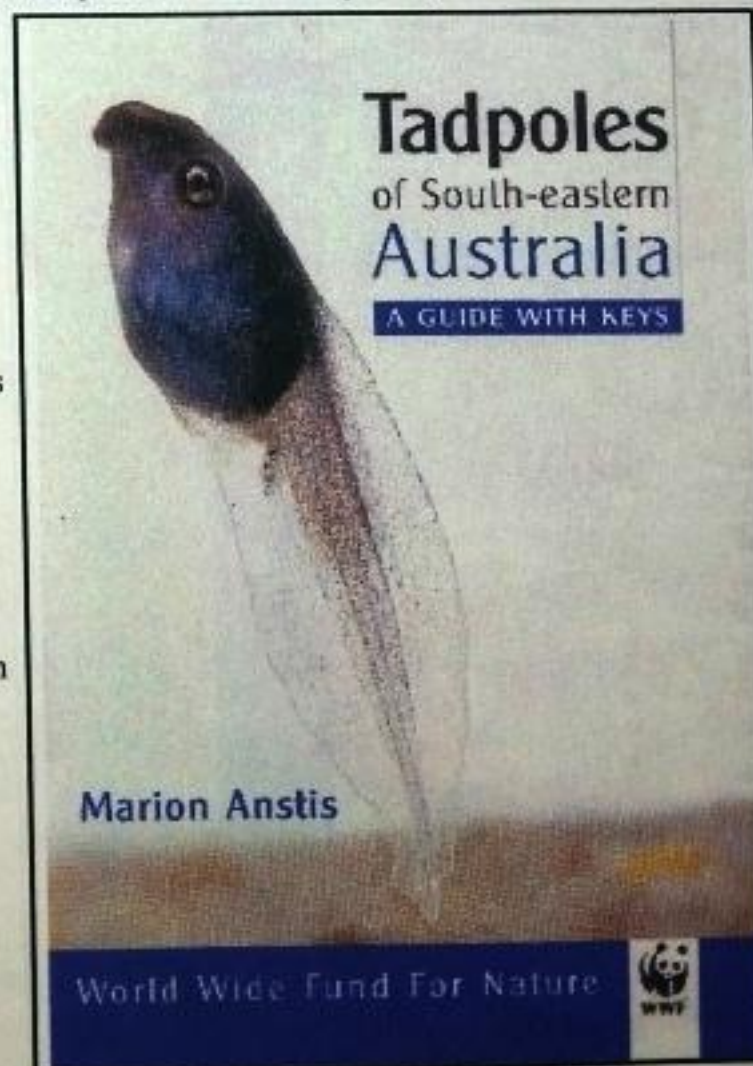
281 pages, high quality glossy paper, hard cover with jacket, 268 colour photos of tadpoles, adult frogs and eggs and 300 drawings, detailed descriptions of 84 species of tadpoles and frog eggs, distribution maps for each species, notes on behaviour, breeding, metamorphosis and similar species,

keys to tadpoles and to eggs and embryos,

fully illustrated explanations of terms used,

overview of frog and tadpole conservation issues,

how to collect and raise tadpoles and more.....



Marion Anstis

World Wide Fund For Nature



BARRINGTON TOPS FIELD TRIP

Below is a copy of a proposal that was put forward by Marion Anstis during the First National Conference of Frog Groups. It formalises the popular proposition that our discussions should continue with regard to building on the community spirit established at the first conference. There was general agreement that communications links between groups needs to be improved, and that it is desirable to hold annual conferences. Discussions continue on the proposition of forming a national "entity" How would it be configured? How would it operate? Is it premature to take this step? Is it necessary? Is it feasible? What are the advantages? What are the disadvantages? I have my own ideas about all this, but what is required now is for everyone to chew on this concept for awhile. Then consider how palatable it is to your individual tastes, and what it needs in terms of garnish and spice. There is no urgency to decide these questions - the important step is to begin seriously thinking about them. **Stan**

The Barrington Tops region, to the north of the Hunter Valley is a volcanic mountain range that contains a number of interesting frog species. A field trip will be held on the weekend of the 27th and 28th of October in the Barrington Tops. Anyone interested in going should ring Karen and Arthur White (on 9599-1161) and let them know.

Proposed: Marion Anstis Seconded: Craig Cleeland
Sunday 10th September, 2001 **Carried unanimously**

Peter and Robyn Law (a FATS member) has kindly offered the use of his land for us to camp on over the weekend. We will be camping so you will need to bring a tent, sleeping bag, wet weather gear and cooking utensils. You will also need to bring your frogging gear (torch, gumboots or solid footwear, rain coat).

We, as a representative body of Frog Groups across Australia, propose to investigate the possibility of establishing a National Frog Group Entity for the purpose of coming together and interacting to promote the welfare and conservation of frogs through a network of regional groups.

One of the main purposes of the trip is to visit a number of sites where the recently described frog *Litoria daviesii* occurs (this frog was previously considered to be the same species as the New England Tree Frog *Litoria subglandulosa* but recent genetic studies have shown them to be quite different species). We will also visit areas of alpine bog and platypus-infested streams.

The first step towards this end could be that participants at this First National Conference of Frog Groups begin discussion about the proposal with members of their own groups and report back to Stan Orchard, who will disseminate the findings to the representative body at this conference.

It can be quite cold on the Tops so make sure that you have warm clothing with you. Our campsite is not on the tops and is in a warmer area. If you are able to leave Sydney on Friday afternoon, you can stay at the Law's on the Friday night. **AW**

SMITHS LAKE FIELD TRIP

Resolution from the first conference of frog group representatives held at Homebush, Sydney 9/10 September 2001 Moved: Harald Ehmann Seconded: Lothar Voigt
Passed unanimously by the representatives with resounding applause.

As part of Frog Week 2001, FATS will hold afield trip at Smiths Lake, in the Myall Lakes National Park. For those who have not been there before, we stay in the University of New South Wales' Research Station. There is dormitory-style accommodation as well as hot showers and toilets. You are guaranteed of seeing quite a range of species of frogs (and reptiles) on this trip.

WHEREAS, this is the first Conference (accretion) of representatives of the frog groups in Australia; and,

The field trip will be held on the Friday/Saturday and Sunday of the 9th/10th and 11th of November. Come for the three days if you can manage it, otherwise come for the weekend. It is a little over three and a half hours drive from Sydney to Smiths Lake.

WHEREAS, we representatives have benefited greatly from this Conference and will convey these benefits to our groups; and,

There is a charge for accommodation: \$ 12 per night per adult, \$10 per child per night. It is a very safe area to take small children. There is a shallow lake at your doorstep and surfing beaches within short driving distances.

WHEREAS, we are committed to developing our intergroup communications through all means available; and,

The days will be very relaxed. You can do whatever you like - relax, swim, bird watch, play cricket and chinwag. At night, we will head out to nearby frog spots for some nighttime viewing of the local frogs. You will need to bring clothing (including swimmers), food, sleeping bag or blankets and pillow and a torch. There is crockery and cutlery at the Research Station. There are also cooking facilities and barbeque areas.

WHEREAS, we will continue to work towards frog conservation through all means available and to the best of our groups' abilities; therefore

If you can go for some or this entire trip, contact Karen and Arthur White on (02) 9599-1161. If you need a lift to Smiths Lake, contact us and we will try to arrange a ride with someone going up. **Arthur White**

BE IT RESOLVED, that we express our appreciation and thanks to WWF, Rio Tinto and Stan Orchard for bringing this historic meeting together; and be it further

SYMPATHY TO USA

RESOLVED, that we request and encourage WWF to favourably consider our recommendations made during this Conference to further frog conservation.

I am sure all members join with me in expressing our shock and disbelief at the terrorist attack on the Trade Centre and Pentagon, USA. We pray for the families of those who lost relatives and friends, for the rescue workers and volunteers, to give them the strength to continue with their grim task. **MW**

Stan A. Orchard National Co-ordinator - WWF/Rio Tinto Frogs! Program, World Wide Fund for Nature Australia
GPO Box 528 Sydney, N S W AUSTRALIA, 2001
Telephone: 61 2 9281 5515 Fax: 9281 1060

THE FROG AND TADPOLE STUDY GROUP NSW INC

FATS has always tried to keep members informed and up to date on froggy happenings by regularly producing the newsletter, Frogcall, and holding bi-monthly meetings. We believe that both the newsletter and meetings are essential to keep information flowing within the group. It has become apparent that whilst everybody receives the newsletter, many people in regional NSW are unable to attend the meetings on a regular basis. To try to encourage people from outside of Sydney to participate in FATS activities it has been decided to trial the concept of Area Co-ordinators. We are also seeking to collaborate with frog and wildlife rescue groups that have a presence in the countryside.

Initial duties could be expected to include organising local meetings and handling general enquiries from your nominated area including supplying membership forms. These may expand to encompass submitting a brief report for the newsletter, possibly field trips, the Frog Rescue Service, and basically raising the profile of frogs and FATS in the local area.

Initially the plan from me is to just ask via the newsletter if anyone currently a member wants to volunteer as an Area Co-ordinator, and to nominate the area they wish to cover. Give a north-south and east-west range you believe you could comfortably cover. If two people volunteer for essentially the same area they would share the duties.

Once I have a list of people covering various areas I'll publish the areas they have nominated to let other members know. If the volunteers give permission, I would prefer to publish names and contact details (phone and/or email only) in the newsletter.

I believe that by making the organisation more accessible to people from outside of Sydney we can only enhance the good work already being done for frogs by the members of FATS. If anyone is interested or would like to discuss the concept further, either phone me on 9710 6866, email, fatsgroupnsw@hotmail.com or send us a letter to the address on the front of the newsletter Looking forward to hearing from those keen to volunteer. **Steve Weir**

FROGBITS AND TADPIECES

Pond plants at meeting: To help mark the FATS Group's 10th anniversary, there will be 21 species of native and 9 species of other pond plants at the next meeting, and 5 types of water lilies.

Pond workshop on 20.10.: An all-day workshop "Making a beautiful frog pond" at Bondi Junction. See or ring Lothar for details (9371 9129).

The Ku-Ring-Gai Wildflower Festival on the last weekend in August was again reverberating with frog enthusiasts. Virtually the entire FATS committee had turned up to help, plus our more "normal" Frog Explainers Robyn, Peter, Karen, Ted and Vicky.

Talkback radio is going green. ABC's Simon Marnie (on 2BL 702) had me in the studio on 2nd September, talking about springtime for frog ponds and taking lots of phone calls.

Darke's Forest was the scene of a gruesome find on 19.9. Two long frog legs on a rock, bright green on the outside and red on the inner leg, still joined at the pelvis, but no

trace of the rest of the Blue Mountains Tree Frog – other than a large mass of spawn spilled all over the place. Someone obviously prefers the front half of the frog.

Centennial Park is going to be our Frogweek venue on the 3.11. and 4.11. weekend. We will be at the shelter pavilion near the Duck Pond from 9:30 – 4, trying as usual to make a big splash. Seasoned or unseasoned Frog Explainers please call me. **L.V.**

WHAT YOU CAN DO FOR FROG WEEK

There is an insert in this issue, titled "Frogweek 2001". That sheet is not for you. It is for you to hang in the window of your supermarket, school, uni, library or wherever. Please. If you can copy it first and hang several of them up, even better. **L.V.**

ANNUAL MEETING OF THE CARCNET

The 6th Annual Meeting of the Canadian Amphibian and Reptile Conservation Network will be held October 18 - 22, 2001, at the Howard Johnson Dutch Inn, Charlottetown, Prince Edward Island.

Presentations and posters for CARCNET sessions are open to all aspects of the conservation biology of amphibians and reptiles and herpetological research (e.g.: population and metapopulation dynamics, genetics, diseases, commercial harvest, status assessment and recovery plans, monitoring, habitat protection, etc.). Presentations on public education projects and ethics are also welcome. CARCNET website: <http://eqb-dqe.cciw.ca/partners/carcnet/carcnethome.html>

Bruce Pauli Discussions Related to Monitoring Amphibians

SAMPLE LETTER LOBBYING FOR BETTER THREATENED SPECIES FUNDING

Email of mail to bob.carr@parliament.nsw.gov.au
Mr Bob Carr, Premier
NSW State Government
Suite 501/806 Anzac Parade
Maroubra 2035

Dear Mr Carr,

I am a frog enthusiast and member of the Frog and Tadpole Study Group NSW inc. I have recently learnt that funding for threatened species work is to be slashed. Many of our native plants and animals are in decline due to land clearing, changes in land use, pollution, feral plants and animals, disease and habitat fragmentation. Frogs in particular have fared badly. Almost 50% of frog species in NSW are listed as Endangered or Threatened. Many so called common species are so uncommon that you can't find them any more.

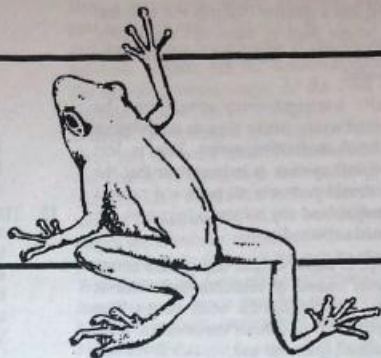
In view of this terrible plight of many of our native animals and plants it would seem inappropriate to be reducing funding for these species. Instead I believe that there should be an increase in funding. If the money that is available at present is insufficient to halt the decline of plants and animals in our state, the further reduction in spending can only hasten the demise of these species. I urge you to reconsider this action and if possible to increase funding for this valuable work. Yours Sincerely (extra emails as below)

Mr Robert Debus bluemountains@parliament.nsw.gov.au

Ms Peta Seton southernhighlands@parliament.nsw.gov.au

FROGFACTS

No. 8



The Frog and Tadpole
Study Group of NSW Inc
FATS GROUP

P.O. Box 296
Rockdale 2216

FROG HYGIENE FOR CAPTIVE FROGS

Introduction

There are new risks of serious emerging frog diseases. The amphibian Chytrid fungus (*Batrachochytrium dendrobatidis*) is spreading through much of Australia and is a major factor in the deaths of wild and captive frogs. Ranavirus has recently also been found in Australia and may likewise become a severe problem for our frogs. Current practices of frog keeping are no longer suitable: They facilitate the spreading of diseases between adjacent groups of captive frogs, between frogs held by different keepers and between captive and wild populations. This information sheet explains how to reduce the danger of infecting captive frogs with Chytrid fungus, and possibly also with other frog diseases. Please check for updates on this subject, because at the time of writing little of practical use is known about containing such rapidly spreading diseases.

Risk sources and risk levels

For captive frogs, the main risk sources of infection are probably:

- cross-infection between cages,
- consecutive infection where cages are used for new frogs,
- adding new cage inmates to existing stock,
- infecting your garden, even your suburb,
- infecting the wild,
- infection from garden or e.g. nursery plants, tadpoles or water,
- infection from other keepers, via handling or equipment.

The risk levels (likelihood x severity) are quite different for these risk sources. Some examples:

- Low risk level: single frog cage in upstairs flat.
- High risk: frog cages in the house, frog pond outside.
- Very high risk: frog cages indoors, frog pond outside; also trading/swapping/conducting frog rescue/quarantine.
- Extremely high risk: lack of or uninformed or casual quarantine with high frog throughput, where every frog entering the facility could be discharged with an unrecognised Chytrid fungus or other infection.

Some basic principles

1. We don't know enough about it.

At this stage, (a) Chytrid fungus is becoming increasingly common in wild and captive frogs; (b) it cannot be adequately detected by frog keepers, it cannot be quarantined against with certainty and it cannot be treated effectively; (c) even less is known about Ranavirus.

2. Chytrid is water-borne.

It is spread by water drops, and by wet or damp hands or equipment. The spores die upon drying out. Chytrid on equipment can be killed with disinfectants such as laundry

chlorine bleach. In frog skin it is embedded and hard to remove without harming the frog.

3. Keep your frogs perpetually at a reasonable level of quarantine.

Have two-way isolation between each of your cages, and between them and your garden. Have an intensive level of quarantine for new frogs and for cages in which a frog has become ill or has died.

4. Assume that all cages are infected, and at the same time that all cages can be infected from each other.

Frogs can be carriers for long periods and may or may not develop symptoms during the few days before their death. Realise that you are flying blind.

5. Service the least likely to be infected cages first.

This is a precaution against quarantine isolation not always being perfect. Spreading a droplet from a healthy cage to an infected one is less serious than vice versa. Likewise, service those cages with any threatened frogs or breeding stock before you deal with common or non-breeding frogs.

6. Decide whether your quarantine is curative or revealing.

If you quarantine frogs in essentially bare tanks at 30 - 32°C, with 0.05% salt added to their water, and if you spray them and their cage daily with water containing 10 mg/l benzalkonium chloride (less for smaller frogs) and 5 drops/l Alive-O Aqua-Remedy, then any Chytrid fungus on the frogs is likely to be either eradicated or held in check as long as the treatment continues (it is not known which).

On the other hand, if you keep them cooler (perhaps below 25°C) and unmedicated, any frogs with Chytrid fungus are likely to die within about three months. Because co-inmates should then normally be euthanased, the latter method is better suited where each frog has its own quarantine cage for the three months period.

Tadpoles can be split into a curative (warmth and salt) and a revealing group, where most of them will die shortly after metamorphosis if infected. The entire batch should in that event be euthanased.

A one-week curative treatment every month may be sufficient, with the intervening weeks at room temperature and with more diluted medication spray. This is less stressful for non-tropical species. It is important that the raised temperature should permeate all parts and corners of the cage, in water, air and any substrate (e.g. with the cage in a glass-fronted cupboard).

Where frogs are kept in cages without any ground cover, Betadine can be used instead of benzalkonium chloride plus Aqua-Remedy. Chytrid-infected adult Green Tree Frogs have recovered after continuous treatment in water with 25 drops Betadine/l (plus salt and warmth as above). The treatment lasted two weeks, with daily water changes, and was followed by a two month untreated period during which the disease did not reoccur.

7. Contain yourself. Don't be a compulsive collector.

Acquiring a frog from someone who has frogs from many different sources is risky. Similarly, if you acquire frogs from numerous sources, you run a much greater risk of infecting all your frogs and of spreading frog disease further.

8. Contain your frogs, and keep your hands out of the cage.

Don't release captive frogs and don't let them escape. Only touch your frog and the inside of its cage if there is a need to do so, and then either change disposable gloves or scrub your hands or your washing-up gloves, then dry them well, before putting your hands into the next cage. Especially if you have multiple cages, try to use a system with screw-on or plug-in food jars which you can access and change from the outside of the cage.

9. Keep ants out; keep food insects and furnishings uncontaminated.

It may be that ants spread frog disease when they travel between cages, or between a cage and the garden. Don't dip a contaminated hand into your mealworms, woodies, crickets, or fly pupae storage container.

10. Think ink. Don't drip, don't smear, don't spatter, don't forget.

One droplet could infect the next cage or the garden; one droplet from your pond could infect your cage. When you clean the cage or the water bowl or food bowl, pretend that each droplet you spatter around the sink or toilet is a strong ink that cannot be smeared completely away with a rag, and that your contaminated hands will stain anything you touch: rags, tap handles, water jug handles, door handles, light switches, spectacle frames. There is little point in scrubbing your hands or changing gloves if you promptly touch any of those items again. If a bucket held contaminated water before, and if you fill it to the level where the faucet dips in, or where drops splash up to it, you may now have contaminated the faucet. If you pour infected water down the sink and then omit wiping it with chlorine bleach, and if the next person later peels vegetables in that sink and throws the scraps on the compost, your garden may become contaminated. If you use a spray bottle to spray water into your cage through the perforated cage lid, and if droplets bounce off the lid onto the next cage, you could be transferring Chytrid fungus.

11. Disinfect cages and cage contents.

Disinfect cages and furnishings with laundry chlorine bleach (1 : 5 with water), before and after using them for

different frogs. Since a frog itself can't be disinfected, there is little point in thoroughly disinfecting its own cage during regular cleaning. Simply grab the frog through an inverted plastic bag, lightly inflate the bag, and leave the frog in it while you are cleaning its cage. Do not re-use the bag. Before putting any live plants into the cage, fully submerge them for one hour in a 1% salt solution - some plants are not suitable for this treatment. Don't use live plants in intensive-level quarantine cages.

12. The drain is just for rain.

Waste water from your cages must not go into the stormwater drain or into your garden, but it is thought to be safe to pour into the toilet. Also, solid waste from frog cages, including plants, should be wrapped up and placed in the garbage, not the garden. However, if you have a (suspected or known) Chytrid fungus outbreak or if you run a formal quarantine facility, please (a) chlorinate the waste water beforehand and (b) chlorinate solid waste and strain it before disposal into the garbage.

13. Unstressed frogs have better disease resistance; know their basic survival needs.

As a minimum, frogs need a water bowl with easy entry and egress, a dark hiding place, a clean cage (land and water), adequate humidity and temperature (including adequate night temperature for digesting), live food (mostly insects) with some variety and enrichment, unobstructed access to food, a suitable substrate for ground frogs and burrowing frogs, and an elevated perch and/or bright light for basking for some tree frogs. They need protection from larger frogs, from sharp objects in the cage or lid, from direct sunshine reaching the cage, from surplus adult crickets (unless a slice of carrot or other food for the crickets is available), and from overabundant flies if frogs have damaged noses or other skin damage. Individuals with damaged noses or with repetitive restless motions need larger cages and more hiding places of different types. Damaged noses must be treated, using e.g. Betadine or Nasalate cream. - Unless you have some understanding of biological filtration, don't pour water directly into the tank - water in a bowl which you can easily change twice a week is preferable. Untreated tap water is suitable for frogs (but not for tadpoles); it is initially a mild disinfectant.

14. Know what to do when you've breached quarantine.

Restart any intensive quarantine period from the beginning if the cage has been potentially contaminated. If a Chytrid fungus infection is suspected or known in a planted display tank, either increase its temperature uniformly and permanently (air space and water) to 30 - 32°C and add 0.5g salt per litre, or move the frogs to essentially bare quarantine cages and disinfect the display tank with chlorine bleach, discarding the plants after chlorine treatment (wrapped up and into the garbage, not into the garden). Be prepared to drain and remove your frog pond if you find several of your garden frogs dead, or if a captive-raised sample of their metamorphs is dying.

15. Apply prophylactic and curative treatment as recommendations emerge.

To date, few if any authoritative studies of practical use on Chytrid fungus treatment are available. Stay in touch with the FATS Group.

16. Spread the word - not the fungus!

Most frog keepers have not yet heard of the need for frog hygiene or are not convinced that it also applies to them. There are too many Typhoid Marys amongst us!

The Frog and Tadpole
Study Group of NSW Inc
FATS GROUP

PO Box 296
Rockdale NSW 2216



Frogweek 2001

Frogweek is always the first week in November.

There will be free froggy events at Centennial Park

- on Sat. 3.11. and Su. 4.11.
- from 10 am to 4 pm
- at the shelter pavilion near the Duck Pond

Ring us for information on:

- Frog ponds and frog-friendly gardens
- Frog Rescue Service and frog adoptions
- Cane Toad Alert
- Field trips
- The growing plight of frogs
- What you can do to help

9371 9129 or 0419 249 728

Visitors are welcome to our informative and practical meetings. They are held on the first Friday of every even month at 7:30 pm in the Australian Museum in Sydney. Our publications include the bimonthly newsletter *Frogcall* and the *Frogfacts* information sheets.

Major FATS Group activities

Endangered Frog Survey:

A study of the habitats, status and conservation of 25 species of "at risk" frogs in NSW. Partly funded through the National Estate Grant Program

Frogweek:

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

Frogmobile:

A demonstration trailer, sponsored by Osram Aust., to support the FATS Group's environmental exhibitions.

Frogwatch Helpline:

0419 249 728

Cane Toad Alert:

0419 249 728

Frog Rescue Service:

0419 249 728

Web site: www.fats.org.au

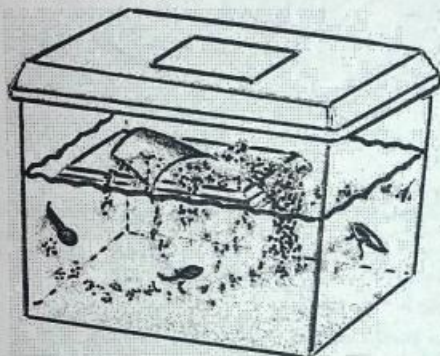


Cage designs

Some cage designs are summarised that are suitable for "new-deal frog keeping", bearing the above principles in mind:

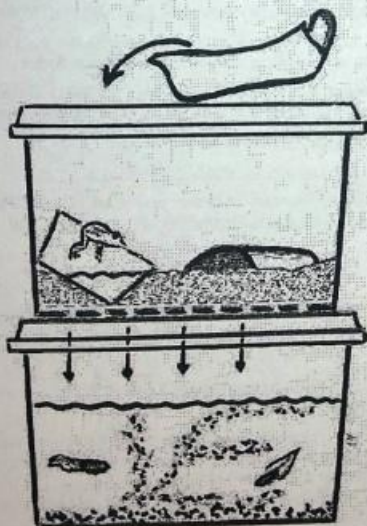
1. For tadpoles and metamorphs:

You need an L-size (33 cm long at mid-height) plastic tank or larger, with ventilated lid. Fill to 2/3 height with tap water, add water conditioner. Add disinfected (1 hour in 1% salt water) fast-growing water plants. Add a spoonful of garden soil (fully dried at room temperature to kill Chytrid spores) to provide useful nitrification bacteria and for the tadpoles to browse through. Add a floating polystyrene island to cover half the water surface. Put hiding places on the island - e.g. sphagnum moss and a piece of dark curved plastic from a flower pot. Add a maximum of 20 tadpoles - acclimatise them to the new water gradually. Change 20% of the water twice weekly; less often if water plant growth is good.



2. For tadpoles and young frogs:

Stack two L-size plastic cages on top of each other. The lower one is for tadpoles (as above, but without the island). With a hot fork, make numerous holes in the base of the top cage. Put a few layers of fly screen into the top cage and then a 5 cm layer of preferably palm peat or otherwise of sphagnum moss.

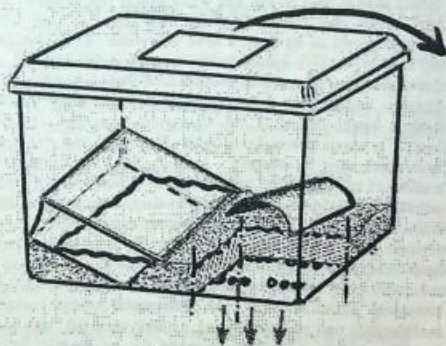


Bury a rectangular plastic takeaway container into the palm peat near one end of the cage, at a slope so that one top edge and the opposite bottom edge of the container are flush with the substrate surface. Fill the container initially with water from the tadpole (bottom) cage. At the other end of the top cage, provide a dark plastic hiding place. Check the bottom cage daily for metamorphs whose arms have emerged and place these into the water container in the top cage. Every day, pour one litre of water through the ventilated lid into the top cage. This will keep the surface of the palm peat clean and will drain into the bottom cage. Twice a week, lift and tilt the top cage to empty the takeaway container. When the bottom cage is full, pour some of its water out through its closed lid, into the toilet. With this set-up, most of the maintenance can be done without inserting your hands into the cages. For feeding, also use a hands-off method, especially if you have more than one cage - see (3) below.

3. For small frogs:

As in (2) above, but without a tadpole tank underneath. Instead, the cage drains into e.g. a tray in which it stands on spacers, into an indoor planter pot. You can also stand several on a large filtered fish aquarium, provided the water from it is properly disposed of; or (for larger-scale quarantine shelves) into a gutter system leading to a chlorinated waste water drum.

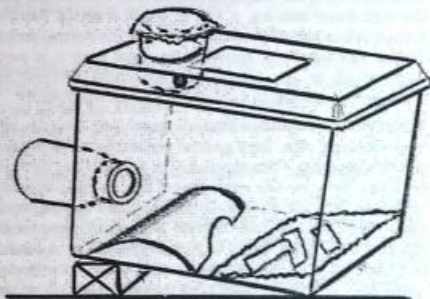
Feeding is achieved by cutting a round hole into the clip-on cage lid (these often have a round perforation to facilitate this) and then inserting a disposable plastic cup halfway through the hole into the cage. The cup contains the live food insects (e.g. fruit flies or small crickets) or the fly pupae and the enriched insect food, and is covered with a piece of paper and two elastic bands. Immediately before inserting, cut a small hole into the cup, near its bottom, through which the insects will crawl into the cage. Take care that the water bowl is not immediately underneath the food cup. This method allows food cups for a number of cages to be quickly swapped against fresh ones without cross-contamination.



4. For frogs in intensive quarantine:

Unless you can use drained cages without spilling, it is safer to use a plastic quarantine cage without holes in the bottom but then without palm peat or any other substrate. Put a spacer under one end of the cage. Add water or medicated water so that 1/3 of the floor is covered and the water is about 2 cm high at the deep end. Make an entry hole into an upturned plastic flowerpot and place it (or better still, wedge it) into the land area. Add a bushy synthetic plant if available. Use a food cup in the lid over the land area as described in (3), but also have pieces of thin polystyrene (cut from a fruit tray) floating on the water as refuge islands for insects. - For medium-sized and larger frogs that are also fed mealworms, take several identical

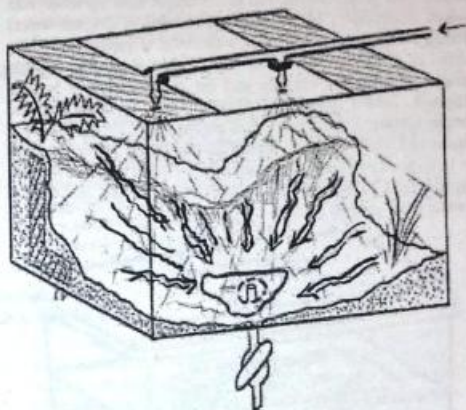
plastic jars, make a hole in the side of the cage with a hot screwdriver and sandpaper - 8 mm less in diameter than a jar lid, cut a hole of the same size into the jar lid, glue the lid onto the outside of the cage, with the lid's wide opening facing outwards, place mealworms (dusted with additive) into one of the jars, together with a cardboard spacer (e.g. slices from toilet roll cores) so that the wet frogs can't smother the mealworms, and screw the jar onto the cage. Clean the jar by replacing it with a sterilised one. - Cleaning the cage is done by carefully pouring waste water out through the closed lid (or through a hole in the bottom of the cage, with a glued-in tap) and rinsing several times. - If heating for a number of cages needs to be improvised, they can be stood on an electric blanket with an upturned polystyrene broccoli box over each cage, with a thermometer penetrating through the styro box and with a spacer under the box for temperature regulation and for some light. A more permanent glass-fronted heating cupboard with a thermostat and electric heating is preferable.



5. For larger frogs:

Other than for intensive quarantine, large Green Tree Frogs should have at least 60 cm, and White-lipped Tree Frogs 90 cm long cages, and preferably extra high ones. A cage with rounded gravel on its floor, a bowl with water that is changed twice a week, with climbing branches and with artificial or disposable plants is easy to keep clean if there are only a few inmates, and to strip down to disinfect. Such tanks can be heated when necessary by thermostat-controlled ceramic heaters or incandescent down-lights from above and - if there is no thick layer of substrate - by heat-mats from below. If a number of tanks are kept, they are easiest to keep clean if spray jets are installed in each lid, using an electronic tap timer, and if the tanks have drain holes at the bottom that are connected to a waste system. The resulting water puddle in the cage should be as small as possible, unless further provisions for cleaning it are made. - An alternative method uses circulating water and biological filtration, with one submerged pump running continuously and perhaps driving a small waterfall, and with the other and larger pump (powered via an electric timer) driving a set of rainbars. Advantages of this method include

less waste water to dispose of, warm circulating water and the ability to use convenient aquarium heater/thermostats and to create attractive aqua-terrariums. There is also no need for a bottom drain, unless a hybrid system is used that would give the advantages of both methods.



Some of the above cage designs will be explained in more detail in other *FrogFacts* publications, together with designs for burrowing frogs and for display paludariums. You will also find information on feeding and food raising in further *FrogFacts*.

Further information

- The postal address of the Frog and Tadpole Study Group of NSW Inc (FATS Group) is: P.O. Box 296, Rockdale NSW 2216. When requesting *FrogFacts*, please send a small donation for photocopying and postage.
- FATS Group meetings: Every first Friday of every even month, 7 pm for a 7:30 start, at the Australian Museum (William St. entrance).
- FATS Group website (with links to other frog groups): www.fats.org.au
- Frogwatch Helpline: 0419 249 728, (02)9599 1161, (02)9371 9129
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- Amphibian Diseases website of James Cook University: www.jcu.edu.au/school/phtm/PHIM/frogs/ampdis.htm

Author: **Lothar Voigt**

Reviewed by:

Ross Wellington (NSW NPWS Threatened Species)
Arthur White (FATS Group)

Illustrations: Lothar Voigt

Editor: Lothar Voigt

Funding grant: NSW Department of Land & Water Conservation / Natural Heritage Trust

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August 2001

THE SCENT OF A FROG

Earlier this year I was lucky enough to go on a VFG Field Trip to East Gippsland. Whilst on that trip I managed to strengthen the Victorian resolve that South Australians are a little odd by asking the question: "Has anyone ever smelt a frog?" After a minutes silence and a few blank stares from Raelene Hobbs and Peter Mantell, who must have thought I was on drugs, or at least, high on euphoria as the Adelaide 36ers had just beaten the Victorian Titans to take the premiership, I told them about my research into frog odour and the observations my Supervisor Mike Tyler had made on frog scents.

This article gives a brief insight into my work on odours in the hope I stimulate you all to go out and smell the flowers frogs and dispel the myth I'm not a crazy South Australian.

As Emplodectes, the Roman scientist and philosopher, stated, "All things have their enamations" — Even frogs. In fact, it was Mike Tyler who first pointed this out to me when he shoved a Green tree frog under my nose and asked me what I thought it smelt like. Ready with the quick reply, "A frog!", I was surprised to be confronted with the odour of freshly roasted cashew nuts. To the amusement of my colleagues, this encounter and the observations of Mike that some frogs smell like curry, others like cut grass, fetid meat and even menthol, has started me on my present line of research, an investigation of frog odour.

Chemical signals are indispensable for the survival of many organisms. Scent communication is used to broadcast information such as sex, breeding condition, social status, relatedness and individual identity. It is on this basis the big perfume companies sell their perfumes and colognes — Sex Appeal!! In addition, alarm signals, territorial marks and scent trails are all functions of the chemical information that an animal presents to the environment (Albone & Natynczuk 1992).

Although we don't know what function scents play in the life of the frog, we became interested in the fact that frogs belonging to defined taxa smell the same. To investigate the scents of frogs we have been looking at the volatile components of their skin secretions. Scattered throughout the outer layer of the skin are circular glands which produce a variety of chemical compounds. For example, there are mucous glands that keep the surface slightly moist for gas exchange and for cooling by evaporation, lipid (fat) glands which provide frogs with a water-proofing agent and granular or 'venom' glands which contain a wide range of biologically active chemicals (Tyler 1995). It is the chemicals produced by the granular glands which are of particular interest to us and appear to be related to the frogs odour. Current focus has centred on chemically identifying these volatiles, and classifying and describing frog odour using psychophysical tests.

One of the biggest problems in analysing volatile compounds given off by frogs has been in sampling them. To overcome this, I have been trying to adapt the methods employed by the wine industry to analyse the bouquet of wines. Basically, this has involved stimulating frogs to secrete using mild electrical stimulation, similar to that used by acupuncturists (see Tyler *et al.* 1992), placing them in glass bottles, and

sampling the headspace (atmosphere) of the bottle using a chemically adsorbent fiber (Figure 1). This is a completely harmless method and after sampling for about twenty minutes, the frogs are removed from the chamber. The advantage of this technique means the same frog can be analysed over time and the variation in their secretions monitored. The principle behind this technique relies on establishing an equilibria between the sample matrix (the frog), the headspace above the sample and a polymer coated fiber. Compounds which stick to the fiber can then be thermally desorbed (released from the fiber using heat) to a gas chromatograph, an instrument which allows us to separate compounds based on their size and polarity. These separated compounds are then analysed using a mass spectrometer. With the risk of sounding too much like a chemist and not the frog biologist that I am, a mass spectrometer is an apparatus which allows us to break up a molecule and take the pieces and use them to try and figure out what the compound was — I know this sounds tricky and for those of you who have ever done any mass spectrometry, you'll know it is, but basically its like taking a whole jig saw puzzle, mixing it up and then trying to piece it back together again. So suffice to say, this area of our research is proving somewhat interesting and challenging.

In addition to this, we are having fun training people in odour recognition and getting them to smell frogs. The ultimate hope being to link peoples odour descriptions with the frogs chemical aroma profile so as to work out the odour relationship between closely related frogs. To do this we are employing multidimensional scaling techniques where we rank how different a frog is to standard odours and other frogs and get them to describe the odour sensation.

I hope in this short review of my research, I've shown you another aspect of frogs you may not have even considered and that yes, there are some of us crazy enough to ask such questions. It is important to remember that frogs are extremely interesting and complex animals and that there are so many questions needing to be answered about their biology. Unfortunately, with the rate of frog decline many of these questions will remain unanswered. Aside from the novelty of frog odour, the reality is that frog skin secretions have enormous potential as a source of compounds of benefit to humanity. Volatile components have been shown to act as insect repellents (current area of research) and bird repellents and there is increasing interest in the use of pheromones to control pests such as the cane toad. Thus, it is no more than pragmatic to capitalise upon any means that will enhance and support funds to be devoted to conservation and management of the worlds declining frog population. So keep up the frogging and if any of you feel compelled to smell a frog please send me your description of its odour and the type of frog.

Ben Smith Department of Environmental Biology
University of Adelaide Adelaide S.A. 50005
E-mail: benjamin.p.smith@student.adelaide.edu.au
with compliments Craig Cleeland

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FROGBITS AND TADPIECES

INTERNATIONAL AMPHIBIAN DAY 2001

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Supporting captive breeding, conservation and ethical commerce of amphibians With the participation of noted breeders, scientists, and hobbyists October 5th - 7th 2001 Holiday Inn Select Baltimore North, Timonium MD USA

Show / Sale, Workshops and Lectures, Benefit auction, and Visit to the National Aquarium in Baltimore. All proceeds benefit the Declining Amphibian Populations Taskforce and the Center for Ecosystem Survival For more information, visit our web site <http://www.intlamphibday.org>

Speakers:

Dr. Wiliam Duellman - The American Tropics: World's Greatest Diversity of Frogs

Ian Heiler - Aquarium of the Americas: "Recent advances and improved techniques in mass production of dart frogs of the *Dendrobates tinctorius* tribe."

John Daly - National Institutes of Health -

Brian Kubicki - Costa Rican Herpetologist: "Taxonomy and Natural History of Costa Rican Centrolenids"

Scott Stahl - DVM: topics on amphibian medical diagnosis and treatment

Ron Gagliardo - horticulturist: Connoisseur Plants for Captive Amphibian Habitats

Don Nichols DVM - staff pathologist, National Zoo: Chytrid infections in frogs: Clinical signs and methods of diagnosis

Sean Stewart - private breeder: Shipping amphibians

Personnel from the National Aquarium In Baltimore, the National Zoo, hobbyists, data managers, and herpetologists, Panel Discussion: Amphibian Studbooks - Applicable to amateurs?

Sandy Barnett - NAIB: Basic terrarium set-up

Scott Stahl DVM: Veterinarian Q&A

Jan Post - World Bank: Photography exhibition: slides from everywhere
Curtis Olson olson_c@mediasoft.net
Michael Shrom shrommj@ptd.net anuran@bb-elec.com



With compliments Bob and Julie Pickworth
John Wycliffe Christian School Blaxland

SNAKES, FROGS, AND DIGESTIVE DISEASE

A previously unknown class of proteins chemically related to snake venom and frog skin secretions may lead to development of new treatments for stubborn digestive disorders, researchers at the University of California, Irvine, College of Medicine have found.

The discovery of the two naturally occurring human proteins, which the researchers name prokineticins, was published in the April issue of *Molecular Pharmacology*. The researchers found that prokineticins controlled movement of muscles in the intestines of guinea pigs. They speculated that their finding could lead to understanding of how digestion is regulated and eventually could result in better treatments for disorders like irritable bowel syndrome, gastric reflux disease, chronic constipation, and digestive complications of diabetes. "We started by looking for proteins similar to proteins in frog skin secretions [which are poisonous in certain species] and in snake venom because they cause intestinal muscle contractions in those animals," said Qun-Yong Zhou, PhD. "We then searched databases for chemicals that were similar in structure and function for mammals. We found what we believe may result in more effective treatments for a number of digestive diseases and could even help reduce vomiting and other gastrointestinal side effects of cancer chemotherapy." Mike Mitka - David C. Deitz, MD, PhD Vice-President, Chief Medical Officer W3Health Corporation 187 Ballardvale Street Wilmington, MA 01887 978-284-0105

IN MEMORIAM JOE SLOWINSKI,

Curator of herpetology at the California Academy of Sciences in San Francisco died on the morning of September 12th, 2001, from the bite of a Krait in the mountains of northern Myanmar (Burma)

.....He was editor-in-chief and co-founder (in 1997) of the first online herpetological journal, *Contemporary Herpetology*, and a member of the editorial board of *Systematic Biology*.

Prior to his death, he was collaborating with Robin Lawson, Director of the Academy's Osher Laboratory, on several studies of the molecular phylogenetics of snakes, incorporating both mitochondrial and nuclear genes. He was conducting a comprehensive survey of the herpetofauna of Myanmar. In addition, Joe was part of a large project involving a number of other Academy scientists and several institutions in Yunnan, China, to survey the biodiversity of the western part of the Yunnan Province, specifically a mountain range known as the Gaoligongshan.

Joe had previously taped two National Geographic specials (during which, he received a dry bite from a monocled cobra and had venom streamed into his eyes by a new species of spitting cobra that he ultimately described). Joe had recently been awarded a two million dollar grant from the National Science Foundation, to extend his work across the Myanmar border, into China. Our young and well established colleague will be missed by all of the herpetological community.

**Wednesday, September 12, 2001: San Francisco,
From: Sean Barry and Travis Taggart**

FROG INFORMATION PROFILE

Scientific Name: *Adelotus brevis*

Common Name: Tusked Frog

With compliments Frank Lemckert

Distribution: This intriguing frog is found through the coast and adjacent ranges between the northern Sydney Basin and south-east Queensland. This frog remains reasonably common throughout its entire range and is still so today in the lowland areas. In the mid to late 1970s however, it disappeared from the New England Tablelands for reasons that are still not clear. It is presumed that land clearing, habitat alteration, loss of water quality, spread of exotic fish species (eg, plague minnow) and disease and all had some part to play in this decline. The only populations recorded on the Tablelands in recent years have been seen in the Nowendoc area, at the very southern end of the Tablelands. For this reason, the New England Tablelands population of this frog has recently been listed as an Endangered Population under the Threatened Species Conservation Act.

Physical Description: This species has the unusual situation where males (50mm) are larger than females (40mm) and the males have noticeably much broader heads than the females. They are an olive green to almost black above and often have some dark flecking, splotching and/or variegations on the back. There are also sometimes warts on this skin and some females from upland areas of northern NSW have a mid-dorsal stripe. Males have a black belly with white spots whereas females have a belly with black and white marbled. The rest of the underside is dark with some white spotting. Both sexes have orange to red patches in the groin, the thighs and even down to the feet. Both males and females have two pseudo-dentary teeth sticking up from the tip of the lower jaw and these tusks give the species its common name. The tusks are somewhat larger in the males and are thought to be used mainly in territorial encounters when looking for or holding on to calling sites. Males in captivity have been observed to "lock jaws" by grabbing each other's mouths.

▼ TUSKED FROG
LENGTH 4.5 cm

Adelotus brevis



Frogs and Reptiles of the Sydney Region
Ken Griffiths

Breeding Biology (including call): The tusked frog has a calling season that usually extends through the warmer months although, from my experience, the majority of calling occurs between September and December. Males usually call from within the water hiding under rocks or accumulated debris, within or under emergent/overhanging vegetation or from within tunnels/burrows in the banks of the water body. They are adaptable too and one male I knew regularly called from under the wheel hub of an old car. The call is a soft "b'look" repeated regularly (described in Martin Robinson's field guide as a "tok" or "chuck"). An important point to note about the call is that it is distinctly, albeit subtly, in two parts (b followed by look). It is this that distinguishes the call of the tusked frog from the quite similar "tok" call of the striped marsh frog (*Limnodynastes peronii*).

The eggs are unpigmented and laid into a foam nest that is concealed underneath vegetation and/or debris. An adult male has been observed dragging eggs on to the egg mass to conceal it, probably a first for this type of parental care in Australian frogs. The eggs hatch after several days and the tadpoles take an average of 2-3 months to reach metamorphosis. The tadpoles are an unremarkable brown colour and grow up to around 30mm in size.

Habitat Requirements: Tusked frogs are found through a broad range of habitats covering open grasslands, large swamps, low woodlands, dry and wet sclerophyll forests and rainforest and appear none too concerned about whether the site is natural or artificial or whether it is pristine or highly disturbed. They will breed in quite a broad range of sites for an Australian frog, being found wherever there is relatively still water. I have seen them calling (rarely) in temporary pools on the sides of roads, in larger flooded depressions, in permanent fire dams and ponds and on the banks of small to quite large streams. In the faster flowing streams the tadpoles probably stick to specific microhabitats to avoid being washed around too much.

Similar Species: This frog is reasonably distinguishable from all other Australian frogs by the combination of the orange or red patches in the groin and on the thigh and the presence of the black and white belly. *Pseudophryne* toadlets have the black and white belly, but not the patches. *Uperoleia* toadlets have the groin and thigh patches, but not the black and white belly.



▲ SMOOTH TOADLET
LENGTH 2.5 cm

Uperoleia laevigata

Many thanks to all
our members who
assist each month with
the newsletter



▲ LEAF GREEN TREE FROG
LENGTH 3.5 cm

Litoria phyllorhina

Figure 1 "Frog in a bottle" — This figure shows a Green Treefrog in the volatile collection chamber. The Black needle inserted in the top of the chamber is the adsorbent fiber.



COMMITTEE CONTACTS

FROGWATCH HELPLINE 0419 249 728
EMAIL fatsgroupnsw@hotmail.com
WEBSITE www.fats.org.au

Arthur White	President	(02) 95991161 (h)	fax 9599 1161 (h)
Barbara Bohdanowicz	Chairperson	(02) 9665 9330 (h)	
Wendy Grimm	Secretary	(02) 9144 5600(h)	email wgrimm@ar.com.au
Karen White	Treasurer	(02) 9599 1161 (h)	fax 95991161 (h)
Steve Weir	Membership Officer	(02) 9792 7675 (h)	prefer to be contacted on 9710 6866 (w)
Martin Reuter	Field Trip Co-ordinator	0245 668376(h) 0429 131111(w)	ozyredeye@access1.com.au
Lothar Voigt	Publicity / Exhib Officer	(02) 9371 9129(h)	for fax, phone home number first
Marion Anstis	Assistant Publicity / Exhib Officer	(02) 9456 1698 (h)	email marion@zeta.org.au
Dominic Borin	Quarantine Officer	(02) 9311 1416 fax 9345-5250	frogman67@optushome.com.au
Monica Wangmann	Editorial Panel	(02) 9797 6543 (h) fax 97970603	email wangmann@tig.com.au
Punia Jeffery	Editorial Panel	(02) 9969 1932	
Vacant	Editorial Panel		

We hold six informative, informal, topical and practical meetings each year at the Australian Museum, Sydney (William Street entrance). Meetings are held on the first Friday of every **even** month (February, April, June, August, October and December) at 6.30 pm for a 7:30pm start. **NO MEETINGS ARE HELD ON GOOD FRIDAY so check newsletter for alternate dates.** 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. All expressions of opinion and information are published on the basis that they are not to be regarded as an official opinion of the Frog and Tadpole Study Group Committee unless expressly so stated.

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