

# FROG CALL



THE FROG AND TADPOLE  
STUDY GROUP OF NSW INC.

NUMBER 44 - November 1999  
PO Box A2405  
Sydney South NSW 1235

THE NEXT MEETING: 7 PM, FRIDAY 3<sup>rd</sup> December 1999  
for a 7.30 pm start at the AUSTRALIAN MUSEUM (WILLIAM ST ENTRANCE)

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 pm start.

NO MEETINGS ARE HELD ON GOOD FRIDAY SO CHECK FROGCALL FOR ALTERNATE DATES.



*Litoria gracilentia*

▲ DAINTY GREEN TREE FROG



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## MEETING FORMAT for 3<sup>rd</sup> December 1999

7.30pm	Guest speaker: Arthur White	Frogs as Bio - indicators
8:15pm	5 favourite frog slides <u>or</u> 5 minutes	
8:40pm	Guessing competition and Auction	
9:00pm	Finish for tea, coffee & biscuits	

At our last meeting Trent Penman spoke of the frog fauna of Booderee National Park. Booderee National Park is a Commonwealth run park located on the southern peninsula of Jervis Bay. Presently the park is in the process of being handed over to the traditional owners. Part of this process is the development of programs for the parks rangers to monitor their endangered species.

Booderee National Park has two endangered frog species, *Heleioporous australiacus* - the giant burrowing frog, and *Litoria aurea* - the green and golden bell frog. These species are quite different in their ecology and distributions within the park resulting in the development of two separate monitoring programs. Both of the monitoring programs are largely based on the unique calls of each species. The conspicuous nature of the green and golden bell frog at night has resulted in a spotlight survey of a number of sites being included in the monitoring program.

Apart from the endangered species the park has an extremely interesting frog fauna. A significant component of the frog fauna are the ground frogs, in particular the small ground frogs. In contrast to many other sites in the state's east coast, the most predominant species is the brown toadlet, *Pseudophyrne bibroni*, rather than the common eastern froglet, *Crinia signifera*. The park also supports a variety of tree frogs. Frogging in the park is highly recommended almost the entire year round. If you visit the park, Trent's recommendation is to include your snorkel and survey for those "marine toads", or just to check out the parks nearshore reefs. This, of course, is only for the time you are not checking out the parks frogs!!!

Thank you is extended to Fernando Ravello from the National Parks and Wildlife Service who took the time to join our meeting and speak to us. We appreciate his involvement and support of the Frog and Tadpole Study group. MW



It's like Old Man River this year - Frogweek's becoming unstoppable, it just keeps rolling along. It seems to have started right at the beginning of October this year, when four of the post offices borrowed our display stuff because of their froggy stamp launch. The Water Festival at the Bicentennial Park was at the other end of October, just in time to get our posters back from the post shops. Now Taronga Zoo had to run their Frogweek a week later than our official one, many of the other zoos then did the same, and they rescheduled The FATS frog talks at the Zoo for the November 13/14 weekend. And Sydney Aquarium is planning to keep their frog posters up for at least three months. Frogweek is spreading across the calendar in leaps and bounds!

At the time of writing this, we are still in the throes of it all. Australia Post is still aglow with goodwill for frogs. Our Water Festival volunteers are still awash with water - it must have been the rainiest froggy event on record, and certainly it was drier inside the cages with the frogs. Some of the media things have come through yet (yesterday it was the Wentworth Courier, there was something on 2UE and Taronga's "What's On" hit the press). The weekend frogtalks at the Zoo are still to happen: On Saturday it's Arthur's turn with "The global frog decline", "Endangered frogs of NSW" and "Frogs as biological indicators". The next day it's me with "Frogging in the house", "Frogging in the garden" and "Frogging in the field". Plus the FATS Frog Explainers at Taronga, doing all the real work.

Apologies to those who were misled by the last Frogcall, where I advertised the Zoo talks for the right weekend instead of for the weekend when they're actually happening. And a reminder please: Would you let Elisabeth (on 9181-3073) know of any of your Frogweek exploits - she collects them.

L.othar Voigt



### SMITHS LAKE FIELD TRIP

Members are advised to book early with Arthur White on 9599 1161 for the very popular mid February 2000 field trip to Smiths Lake Field Station. Relaxed, easy walking, frog identification outings occur each evening. Accommodation is mostly dormitory style with communal kitchen, fridges, hot showers and flush toilets. The Field station is right on Smith Lake. Seal Rocks beach is 20 minutes (or less) drive away. There is a playing field, birdlife and frogs of course! Cost - about \$10 per person per night. MW

## FATS FIELD TRIP YERAMBA LAGOON

On Friday 26th October at approximately 8pm seven intrepid adventurers set off on a walk around Yeramba Lagoon at Picnic Point with the express intention of observing the amphibian inhabitants. The mission members were;

Adam – A veteran of previous field trips, and confirmed fellow kook with a penchant for wandering around suburban bushland at night.

Hugh – An enthusiastic youngster on his first field trip, a self-appointed clearer of spider-web blocked paths.

David – A friend of Hugh's and another first-timer, whose particular speciality was wading around in water deeper than his gumboots.

Chris – The second of Hugh's friends, notable for his bravery (under protest) for following Hugh during his spider-web clearing phase at the risk of physical injury.

Tony – Hugh's father, there primarily for his transportation skills (the only one of the four with a licence) and as a lolly supplier (the only one who kept their hands clean).

Lisa – The token "girlie", who acted as a spider web alarm, shrieking incessantly when one was detected, and doubling as a "waters-edge stability and depth monitor" by falling in twice.

Steve (myself) – The organiser of the foray, a perverse individual who convinces normal people to wander through the bush in the dark. He proved to be a dubious leader and an even poorer navigator.

Yeramba Lagoon is part of the Georges River National Park, located in the south of Sydney along, naturally enough, the Georges River. It can be accessed from several entry points, but the easiest is a carpark just off Henry Lawson Drive. The carpark is not signposted and is easy to miss in the dark. It is located on the northern side of the road, at the bottom of two hills, between Carinya Road in the west and an Electricity Substation in the east. The UBD map reference is Map 291 E11.

The lagoon is freshwater, the influx of tidal saltwater being prevented by a weir on the southern side beside Henry Lawson Drive. It is home to several species of waterbirds such as swamphens, black swans, native and domestic ducks. The lagoon must be reasonably shallow (not so cries Lisa) as a large part of it is covered by water lily pads. Unfortunately *Gambusia* (Plague Minnow) are

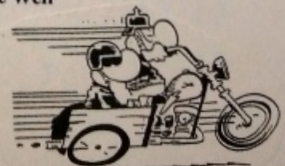
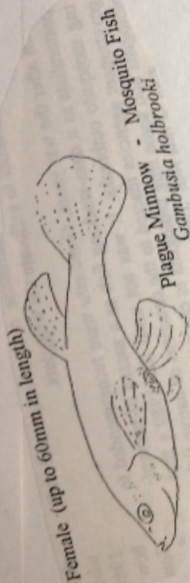
present. Although there are several exotic weed species in abundance around the shoreline, the bush away from the water is in fairly good condition.

As we pulled into the carpark the frogs were in full cry and a cacophony of calls filled the air. At least three different species could be heard. From their calls they were identified as *Litoria fallax* (Eastern Dwarf Tree Frog), *Litoria peronii* (Peron's Tree Frog), and *Litoria tyleri* (Southern Laughing Tree Frog). During the evening two more species were added, *Limnodynastes peronii* (Striped Marsh Frog), and *Crinia signifera* (Common Eastern Froglet). All five species were abundant, although calling individuals often proved very difficult to locate. A *Phyllurus platurus* (Southern Leaf-Tailed Gecko, Broad Tailed Gecko) was also seen in the sandstone ledges on the edges of the track. Frogs reported to be present but not sighted include *Limnodynastes tasmaniensis* (Spotted Marsh Frog), *Pseudophryne bibroni* (Bibron's Toadlet), and a species of *Uperolia*.

The walk has a few short uphill sections with uneven ground and exposed rocks, but overall it is a walk that is reasonably easy, and can be completed without hurrying well within two hours. I would advise that people do the walk during the day before attempting it at night, as there are several dead end tracks along the way. Finding the track that crosses the upper part of the reserve can be difficult, but you should end up passing through a damp area infested with privet. The track back tends to be away from the water, although a less used track does follow the waterline back to the starting point.

Although some of us ended up with wet feet or spider's webs through our hair, a good time was had by all. We had seen and heard many frogs, as well as a gecko, and would probably do it again. I suppose we're just that way inclined. If you also feel you're that way inclined then I encourage you to wander around Yeramba Lagoon in your own time or come along on a field trip with us. The contact details are on the front of the newsletter.

Special thanks go to Tony for driving Hugh, David and Chris halfway across Sydney to join us, for without them it just wouldn't have been the same. Steve Weir



## FROG INFORMATION PROFILE

**Scientific Name:** *Asa darlingtoni*

**Common Name:** Hip-pocket or Pouched Frog

**Distribution:** This frog is found in mountainous areas from around Dorrigo in NSW to SE Queensland. It is most prevalent in areas above 600m, but can be found at elevations as low as 300m (at Terrania Creek - Mick Mahony, pers. comm.).

**Physical Description:** These are very small frogs with females rarely reaching 25mm in length, males only around 20mm. The back is mottled brown, often with a "V" marking between the eyes. Individuals have a white or creamy belly. The males have small "slits" in the skin on both sides of the hip which lead to infoldings of the skin to form pouches. Hence it's common names.

**Breeding Biology (including call):** This species' calls during the day and during the night at any time between September to February and as late as April (December and January appear to be most favoured). The males call from very well concealed positions in the leaf litter or rocks on the floor of enclosed forests. The call is a repeated set of high-pitched squeaks along the lines of "dip dip dip dip". The breeding of this species is unique amongst Australian frogs. The female lays 20 or so eggs in a concealed position on the ground (NB. Not in water). These eggs are protected by a clear jelly mass and are unpigmented. The male watches over the egg mass for several days before the tadpoles begin to hatch out of the eggs. The hatching tadpoles wiggle around and, on seeing this, the male walks into the mass and sits in its centre. The tadpoles become aware of the male and, presumably by a chemical cue, "swim" their way through the jelly to the entrance of the pouch. They then push their noses into the pouch and "corkscrew" their way in. Only half a dozen or so usually make it into each pouch before the male leaves and the rest of the tadpoles are left behind to die (they do not survive outside of a pouch). The tadpoles continue their development in the pouch and metamorphose, emerging back through the slits as little frogs.

### What do frogs eat?

A tadpole feeds mainly on algae, which it grazes with a special "beak" and rasping teeth. It will also devour tiny pond creatures such as rotifers and corpses of larger animals, including fish and even adult frogs. After emerging from the pond and absorbing its tail into its body, a frog becomes entirely carnivorous. It may attempt to catch almost any kind of invertebrate that passes by, the most common items on the menu being slugs, snails, worms, beetles, flies, moths and woodlice.

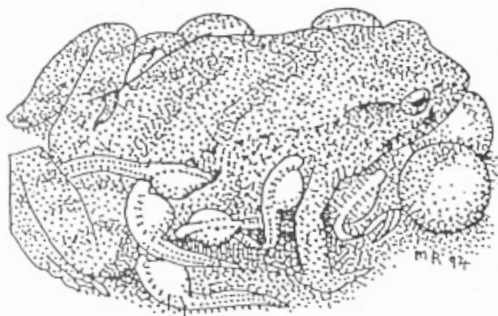


**Habitat Requirements:** This species is found in high rainfall areas amongst wet sclerophyll and rainforests including antarctic beech forest. These forests tend to have a dense canopy to keep the forest floor moist, but little understorey. The forest floor may be mostly covered by small rocks (scree slopes). Little is known of their movements. They may be quite sedentary in nature. Their diet is unknown, but almost certainly consists of small invertebrates.

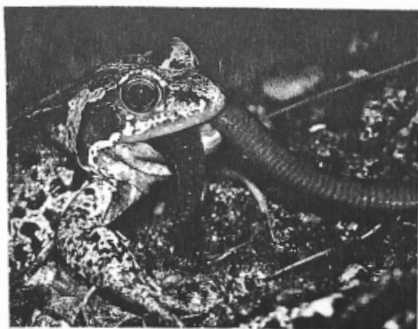
In the northern part of this species' range this frog is found in more open forests and at lower altitudes. In the Dorrigo area this frog is restricted to areas of undisturbed old forest, usually in gullies or on southerly slopes. Presumably the southern populations are at the physiological limit of this species and the chosen sites are the only areas that remain very wet throughout the year. The higher rainfall to the north means that more areas meet their physical requirements.

**Similar Species:** There are no similar species.

With compliments Frank Lemckert



*The Hip-pocket Frog*



◆ Worms for food. Frogs are only attracted to moving prey – but in the breeding season and during hibernation, they fast.

Little girls love turtles, while little boys adore poisonous snakes.

**T**hat gender difference is just one of the preliminary findings of an international survey of students' attitudes towards amphibians and reptiles launched in Victoria by a local researcher. Stan Orchard, chairman of the Canadian Amphibian and Reptile Conservation Network and a research associate of the Royal B.C. Museum, says many adults express a phobia towards snakes, toads, lizards and the like. But it's not clear whether that phobia is innate or culturally produced, and if the latter, at what age.

"We don't really have a good handle on how pervasive this attitude is in society. . . . We just have a general sense that a lot of people don't seem to like (reptiles and amphibians) and it's certainly an obstacle getting funding for research and conservation projects."

That's why Orchard has designed a school survey that he hopes will produce a statistical benchmark on children's and teachers' feelings towards amphibians and reptiles.

These misunderstood creatures play a vital role in the world's ecosystem. It's feared, for example, that a mysterious worldwide decline in the frog population could be a harbinger of environmental degradation that could affect all species.

So far, Orchard has discovered "children have very definite opinions about amphibians and reptiles and their attitudes are generally positive." The greatest enthusiasm for most species is expressed in Grades 1 to 3 and, therefore, education programs should target very young children.

Boys are particularly enthusiastic about species with an element of danger, for example, poisonous snakes, but little girls hate poisonous snakes and much prefer turtles.

Snake phobia in girls is established by Grade 1 and could prove to be innate, Orchard said. Snake phobia in boys starts in Grade 4 and then rises to more than 40 per cent among Grade 12 boys so the fear could prove to be culturally induced. "This (survey) has implications for both education and conservation and even provides some insights into human psychology," Orchard said. "It will be vital for testing the effectiveness of one teaching technique over another. For example, is there an optimum age to start teaching kids about amphibians and reptiles?"

The survey is underway across Canada, in the United States, New Zealand, and is about to begin in the United Kingdom, Australia and Eastern Europe. The multiple choice questionnaire, designed with the help of retired teachers, is fun and easy to do. Oak Bay high school teacher Rod Carmichael, whose science students participated in the survey, said teachers can play a vital role in developing young people's appreciation for other creatures. "If you get them interested in what does this organism like, where does it live and why does it do this, their fears are lessened by just looking at them in a different light." herpetological education in Quebec City next October.

To participate in the survey or to find out more information, call Orchard at 595-7556 (Victoria, British Columbia) 26 April 99 (Stan is currently in Australia)

**A**ddition to endangered species list: *Acris Crepitans* (Northern Cricket Frog) Recommended Status: Endangered.

Previous Status: Threatened

The cricket frog is found in a variety of wetland conditions, including swales, lake margins, springs and ponds.

New York is at the northern limit of the species' east coast range.

Currently there are only six known viable populations of cricket frogs in the state, three in Orange County and three in Ulster County.

Over the long term the species has been lost from Long Island and Staten Island, and at least three populations have been lost from Orange County in the past five years.

Editor: Allen Salzberg HERPDIGEST is a free, electronic weekly collection of herpetological, scientific and conservation news and articles from newspapers, the Internet, government & non-profit press releases.



GREEN AND GOLDEN BELL FROGS

**W**yang councillor, John Axford, recently called a meeting to discuss the fate of a Tuggerah pioneer site that contains green and golden bell frogs. The site on the central coast of New South Wales was a dairy site and now remains unused. Cr Axford was concerned the 319ha owned by Pacific Power would be turned from a valuable ecosystem to a golf course and high-density housing. Cr Axford is also the chairman of the Tuggerah Lakes catchment management committee. Besides the green and golden bell frog, other endangered and vulnerable species including koalas, regent honeyeaters and glossy black cockatoos also inhabit the site said Cr Axford.

More than 200 attended the meeting and they voted unanimously to support the preservation of the historic site.

Cr Axford said there was no reason why the site could not be transferred from Pacific Power (A State Government department) to be "preserved as a nature reserve and regional park". A committee was elected at the public meeting to fight the sale of the site proposal. CS

Green and Golden Bell Frog





## BREEDING & RAISING the HOUSE CRICKET

### *Achetus domesticus*

The house cricket is a staple and nutritious food for many herp species. Obtaining a reliable supply of these insects can be a bother, especially if one requires a constant supply of newly hatched 'pinhead' crickets, to say nothing of the costs of feeding a large collection with pet-shop-bought crickets. The following article outlines a method for cricket raising which has been developed over the past two years in order to provide a collection of frogs with a constant supply of small and large crickets.

There are several things to consider before you decide to raise crickets:

The crickets will make a lot of noise. You must have an area to keep them where this is not a problem.

Escapes will be inevitable! Eventually you might find yourself falling asleep (or not falling asleep) to the trill of a cricket courting in the warmth beneath an appliance in your room. If you live in an apartment your neighbours may find new, unwanted, tenants in the hallways.

Commercial insecticide pellets such as those used to kill earwigs can be placed in the room with your cricket colony to prevent escapes from taking over the house.

Crickets have a definite odour, but if the colony is well maintained and kept clean, most people do not find it offensive. A major source of odour is the cotton wool in the water dishes which can quickly collect droppings so it must be kept clean. In the method described here, the main colony is kept dry (no damp substrate) which reduces the smell considerably.

One of the main problems encountered with most descriptions of cricket breeding is that the eggs hatch in the same container as the adult breeding colony, usually in a substrate placed on the bottom of the breeding enclosure. This requires one to sort the crickets before feeding to various sized animals. The breeding substrate also quickly becomes littered with dead crickets and droppings. It is also difficult to keep moist if egg cartons or other hiding material is placed on top of it.

The method described here provides a removable egg-laying container, separating the eggs and adults, thereby raising yields and providing crickets of various sizes. Depending on the number of crickets desired the system can be set up in the corner of a room or the bottom of a closet - space is not a major consideration. The cost to establish a basic system is about \$30.00 plus the cost of the initial breeding colony of crickets. To start such a colony at least 200 crickets are required, and the colony should not be used for feeding until well established and your first babies are adult-sized. If you plan to use some of the crickets for feeding, a batch of 1000 can be purchased quite inexpensively from a cricket supplier.

The materials required for a basic setup are as follows:

- 2 Large Plastic storage containers - (Breeding containers)
- 3 Medium sweater boxes (Rearing containers)
- 6 - 500 ml ( 1 pint) plastic tubs (Nesting and food containers)
- egg 'flats'
- Heat pad (optional) - medical types available at most drug stores work well
- Water dispenser - small chick waterer available at feed shops or specialty pet shops.
- Several jar lids
- Quilt batting or plastic scouring pads
- Aluminium mosquito screening



### A Description of the Basic Setup

The breeding colony is housed in one of the deep (26" x 14" x 16" deep) plastic storage boxes with egg flats inserted vertically throughout except for about 6 inches at one end where the water dispenser is located. Other containers may be adapted for this use. No substrate of any kind is placed in the bottom of this container. Holes (4" x 4") are cut in opposite ends of the breeding container and covered with metal mosquito screening secured with duct tape, to provide ventilation. (Do not use fibreglass screening, the crickets will soon eat through it and escape! Catching 1000 crickets loose in your apartment is not a task I would recommend, although I have done it, once). The water dispenser is a commercial chick waterer which is essentially a plastic jar inverted over a circular trough which holds the water. Plastic scouring pads or Dacron quilt batting should be cut to fill the trough. They will soak up water, making it available to the crickets while preventing them from drowning. The egg flats should reach to within about 4" of the top of the container. On top of these are placed two plastic tubs, such as sour cream or yoghurt is purchased in. One contains food and the other contains egg laying medium. (See specific sections for descriptions of each). A heat pad is placed on top of the lid of the storage box to provide adequate warmth. Crickets thrive at temperatures higher than the average house temperature. They prefer 80-90 degrees F (26-32 C). If you place them in a warm herp room this should provide them with enough heat. At lower temperatures they will survive and even breed, but yields will be much reduced. They also seem to live longer at lower temperatures, something to keep in mind if you find yourself with an excess which you want to keep alive as long as possible.

Maintenance of the breeding colony comprises of filling the food, keeping the nesting material damp and filling the water when empty. A 1 litre waterer will last 4-5 weeks. Every 2 months or so the entire colony and fixtures should be moved to the second container. The cricket waste and ex-crickets can then be dumped out of the first container and it can be washed. It is best to do this outside, if possible, as escapes are inevitable. Over time, cricket droppings will accumulate on the egg cartons and the cartons will need replacing. The egg cartons are most easily handled if they are glued together in sets of 4 or 5 for easy removal from the container.

## Feeding

Feeding the crickets the right diet is important for two reasons. Firstly the crickets need adequate nutrition to survive and breed. Secondly, the nutrition from the crickets will be passed on to your reptiles or amphibians and so it is important to keep them healthy. Crickets require a high-protein diet. Without, and often with, an adequate diet the crickets will prey on each other.

Commercial cricket foods are available in large and small quantities. The large sacks of cricket chow may not be available everywhere, check with a local feedshop. The smaller jars of cricket food sold at pet shops are very expensive and I have heard mixed results about some brand's quality and acceptability to the crickets. Tropical fish flakes have also been recommended as food but the expense is astronomical if you are raising a large number of crickets.

As an alternative, I use the following recipe. It is inexpensive and several dollars worth will last several months or more, depending on the number of crickets you are producing. The same food is used for all sizes of crickets. The food is based on commercial dried cat food. In addition I provide a supplement of 10 parts skim milk powder (by volume) to 1 part of a good quality calcium supplement intended for reptiles and amphibians. The cat food is shaken in this mixture until coated and then given to the crickets. More supplement can be sprinkled onto the food as the crickets eat it. To provide a balanced diet this is supplemented with alfalfa pellets and, whenever available, raw vegetable scraps. Top up each as they are eaten. The food can be placed in a small plastic container on top of the egg cartons in the breeding container. Crickets can be removed and 'gut-loaded' with higher quality food several days prior to feeding them to your herps if desired. However, this diet has proved sufficient nourishment for the crickets used to feed a number of amphibians.

## Breeding the Crickets

As long as the crickets have food, water and a high temperature they will breed profusely. Their natural nesting material is damp soil and so to duplicate this a 500ml (one pint) plastic tub full of moist nesting material is placed on top of the egg cartons in the breeding container. The nesting material can be damp sand, peat moss or my favourite 'turf'. 'Turf' or 'tuff' (it is similar to coarse bonsai soil) is a landscaping material consisting of small clay based pellets which retain water well. It does not mould as easily as peat moss.

Since the crickets have no other substrate in the cage, the crickets tend to burrow into the nesting medium and disturb the eggs. However, if it is packed gently, the crickets will only disturb the top 1/2" or so and lay their eggs below. Use a container at least 2-3" deep so the crickets can lay their eggs down below, where they will not be disturbed. One or more of these containers can be placed in with the crickets. No matter how many containers of nesting material are placed in the container, the crickets will inevitably lay some eggs around the water dish. These generally will not hatch.

The nesting material requires constant attention. It must be checked every few days and sprayed if dry. Peat will need to be checked far more frequently than 'turf'. The nesting material can dry rapidly due to the heat pad above it. Once a batch of eggs is completely desiccated it is useless.

After 4-7 days the nesting material will be positively packed with oblate white eggs positioned vertically about 1-2" below the soil surface. The nesting dish should then be removed and incubated.

## Incubation of the Eggs

To incubate the eggs, the original lid is placed on the nesting container and it is placed on the heat pad on top of the breeding container. In about 7-10 days it will be swarming with pinhead crickets and should then be moved to a rearing container. At this time, the nesting container in with the breeding colony can be removed and replaced with a new one.

## Rearing the Babies

Once the eggs begin to hatch, the nesting container is moved to a small sweater box (16" x 8" x 4"). The lid of this should have holes drilled into it about 1" apart. There is little chance that the baby crickets will escape en masse through the holes, the boxes are usually too slippery for them to climb and they have little interest in leaving the food and warmth at the bottom of the container. If there is concern about escapees, a strip of wide cello-tape or packing tape can be fastened around the entire inside rim of the container. This is so slippery that the crickets will never climb it. A few small pieces of egg carton, a jar lid full of food and a jar lid with cotton wool and water are also placed in the container.

The nesting material must be kept damp and warm while the batch of crickets hatches - which can take up to a week. Snap the lid off the nesting container before placing it in the rearing box, but set it loosely back on top, with spaces for the baby crickets to get out. Without a cover, the nesting material will dry out and the water will condense inside the rearing container, drowning the baby crickets. If this is a problem, even with a covering on the nesting container, place the lid loosely on the rearing container with a gap to allow the water to evaporate. Put the nesting container at one end or the rearing container and place it on top of the heat pad to keep it warm.

Thus it is possible to heat the breeding colony, incubate several batches of eggs, and raise a batch of eggs, all on the same heating pad, within a small area. The rearing containers require more attention than the breeding colony, and the water dish must be kept damp with a spraying at least every two days. There is no doubt room for improvement in this stage of the described process.

Once the eggs have all hatched, the nesting dish is removed, the nesting material is discarded and the container recycled. Recycling the nesting material can cause problems with mould and small, mite-like insects infesting it.

The batch of hatching crickets can be raised in the sweater box until about 1/2" long. The end result is a batch of several hundred to possibly thousands of small crickets, all of similar size, and all contained within their individual rearing container. Successive batches of crickets, each of a different size are then available to feed to your collection. The number of batches will depend on the desired output and size. Additional heating pads can be used to warm stacks of growing crickets. Once the crickets have reached 1/4", about 50-75 should be returned to the breeding container. This is extremely important. The adults live for only a few weeks and if the breeding colony is not replenished regularly it will die out or contain only small crickets, unable to breed yet.

## Feeding the Crickets to Your Animals

The rearing containers will contain small pieces of egg crate, and the breeding container should also, if you plan to feed adult crickets to your herps. A 4 litre ( 1 gallon) square water jug works well as a cricket collector. Remove the bottom from this, and keep the screw lid on to create a large funnel. (Cover any handle holes within the jug with duct tape to prevent the crickets from hiding in them ). Remove one of the small pieces of egg crate from the cricket containers and shake it within this funnel. Hold the whole apparatus over the colony as you do this to prevent escapes. Sprinkle in calcium supplements and vitamins as required, shake gently, and tip the funnel into the herp cage.

Although these instructions for breeding crickets may sound extensive, an established colony as described can be

maintained with only a few minutes of attention every few days. It must be stressed that constant care and attention is required. If you have only a few animals it may be better to purchase half-sized crickets in bulk and keep and feed them as outlined here. (Purchasing large numbers of mature crickets is not recommended unless you can use them in 3-4 weeks - their average life span). The set up as described has been found to be more than adequate to supply several hundred small (pinhead to 1/8") crickets and a few dozen adult crickets weekly.

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## Development at Wyong threatens rare frog



Rare Green Thighed Frog

*Litoria brevipalmata*



A beautiful, elusive but endangered frog is set to become even more endangered with a decision by Wyong Council at Chittaway.

An imminent decision to clear bushland habitat of the Green Thighed Frog *Litoria brevipalmata* will risk-erase the most southerly population of this vulnerable species. Amazingly senior management of Council consider this of no significance.

Frog experts, conservationists and the community are outraged at the cavalier attitude of Council and some have even suggested that normal development procedures have been subverted.

The saga began with expert consultants assessing the site and informing Council that virtually any proposal would eliminate the species from the area and so a species impact statement was commenced. The NSW National Parks and Wildlife Service were contacted and agreed with Council that an SIS should be done but also told Council that the SIS report was poor and failed to deal with several important issues. Despite this Council have now decided to wipe out the population in favour of development.

Noted frog expert Dr Mahoney of Newcastle University said "there is no way you can allow this population to be wiped out and say there is no adverse effect on the species"

A spokesperson from NEWS said "the population at Chittaway is very important because of its location and special clauses in the threatened species and planning laws increased the value of species at the site and any losses there would reduce the states biodiversity. They are not conserved in any National Parks." he added.

Council staff were reluctant to talk to the media. Council environment officer Louise Manney declined to comment "in fear of losing her job but admitted having worked on the proposal and that "senior management were now handling the matter".

Local environment groups including Ourimbah Creek Landcare were angered over the decision and one member, who requested not to be named, stated "doesn't Council realise that the Ourimbah area is the most frog rich area in Australia, there are frog signs put up everywhere in the Shire then Council lets someone wipe out one of the rarest ones" she said.

National Parks Association delegate Ron Holden said that his organisation would have to look into getting negotiations reopened about the dedication of Ourimbah State Forest as a National Park if this population is destroyed. The group has already tried earlier but failed in its attempt to get Palm Grove nature reserve dedicated for the Green Thighed Frog.

The CCEN were disappointed for the frog but the timing of yet another poor Council decision could not be better this close to Local Government elections. "This will give us the opportunity to get community attention focused on the corrupt decisions of this Council maybe now we can get the right Council members elected and give this Council's senior management the long overdue shakeup that's needed".

Several disgruntled community members were yesterday considering their options including getting the Environmental Defenders Office to take Council to task and have the decision overturned in the land and environment court and possibly requesting ICAC to investigate allegations of high level collusion by the General Manager John Dawson.

Peter Andrews of Andrews Neil Architects the consultant for Landcom, owners of the site, declined to comment when contacted about the matter.

Peter Scott





## A LOOK INTO CHYTRID TREATMENT

In a hot, hot jungle deep in the middle of Central America lies a deadly killer. It waits in the soil and awaits its next unlucky victim: a frog. A bright green flash hops by; all of a sudden the pathogen clings to the legs of its newest victim. The frog (*Dendrobates auratus*) just unknowingly contracted a newly named fungus, *Batrachochytridium dendrobatidis*. The fungus, which attaches itself (in most cases) to the underside of an amphibian's upper thighs, has now been deemed one of the reasons for the mass declines of amphibians. The fungus is most abundant in soils, but also is present in ponds and lakes. Some members of this fungal family can withstand extremely dry conditions and can survive in dry sands and soils.

The pathogenic fungus has been a huge problem in areas of rich amphibian diversity, as well as in private collections and in several zoos. This past science fair season, I began work with two fungi very similar to the *B. dendrobatidis* (unnamed, but referred to by Joyce Longcore as #142 and #151) in hope of finding a safe means to rid amphibians of this fungal infection. The intent of this research was to find a way to inhibit the growth, or even kill the Chytrids with which I was working. It is anticipated that the data for these other taxa may then be applied to *D. dendrobatidis* due to the very similar cell structures, and growth conditions. During this time (nearly two months) a total of 13 anti fungal preparations and UV lighting were tested. The antifungals commonly used in veterinary medicine to treat ringworm were fairly disappointing. A further study of the method by which the fungi (*B. dendrobatidis*) attacks the frog's skin led me to suspect that this fungus attacks in the same way as the common athlete's foot fungus (*Tinea pedis*). With this new suspicion and through consultation with other experts a new list of antifungals was compiled.

The first round of tests began with Miconazol, Fungoid Tincture, Lopox, Spectazole, Oxistat, Lotisone, Lamisil, and UV lighting. Of these only two showed signs of inhibition (meaning they were able to kill the fungus). These two were **Spectazole and Oxistat**. Interestingly, both are available in topical ointments, which could easily be applied to a live amphibian.

The second round of testing tested Griseofulvin, Amphotericin B, Nizoral, Naftin, and Nystatin. Among these antifungals were also two that showed distinct signs of inhibition. They were **Naftin and Nizoral**, once again both topical creams. The implications of the results of this research are very significant, as there are now several possible medications to help stop the spread of the fungus in captive collections. This may also shed some light on a method to control the fungus in the wild. New ways may be found in which to spray the medicine as opposed to applying it topically. This could then be implemented as a practice in which to shower the "frog farms" with medication on a regular basis to prevent the spreading of the fungus. Skeptics may ask why this research was done in the first place, why do the

questions is just the simple fact of the Dart Frog hobby. Annually tens of thousands of dollars are spent of Poison Dart Frogs. With all these frogs, a good amount is wild caught, which presents the possibility of infecting captive populations. In the past year alone, there was a great increase of frogs imported (mostly *D. auratus* and *D. pumilio*, but also a few *D. ventrimaculatus*, *reticulatus*, *granuliferus*, and *histrionicus*) that are coming from such regions as Panama and Nicaragua which are "hot spots" for outbreaks of *B. dendrobatidis*. Treatment of the frogs before importation will drastically reduce the unnecessary risks of spreading this infection further in the amphibian populations. Another reason this project is significant is also the native populations of more than a handful of countries are in jeopardy. Australia is one of these countries. Outbreaks of nearly epidemic proportions are occurring there. All in all, this fungus is causing a serious problem worldwide, and needs to be stopped. My research has not even come close to ending. I plan on vastly expanding my research this year to include DNA testing of cultures of #142 and 151 comparing them to *B. dendrobatidis*, and then to the athlete's foot fungus, and hopefully begin live animal testing soon in the near future. Justin Yeager yeager2@ptd.net American Dendrobatid Group



## FROGS RUBBING THEIR NOSES

You might want to consider Furan-2. It is a fish medication (I believe it is furabendazole). I have had problems with tree frogs consistently rubbing their noses almost to the bone when I first bring them home. It is a bactericidal and has had a lot of good results from it. It is also specifically for the bacteria that causes red leg (aeromonas). Just mix it up per the directions (you have to take about a tenth of a capsule to a gallon of water) and drop it on their noses. Hope this helps! Sean Myers AMyers1@redrose.net emailing frognet@bb-elec.com

## VETERINARY NOTES

### What do I do with my new frog(s)?

I have been asked this question several times, most often by people who have lost new frogs once and don't want to lose any ever again. It is a good question, as the problems related to the shipping or receiving of frogs (wild-caught or captive-bred) which is probably the greatest cause of death in a newly acquired amphibians. In response to the many questions I have received on this topic, I have written down a few ideas for people to use as a guide in the treatment of newly acquired anurans. Note that these points could apply to almost any newly acquired animal.

1. Quarantine is probably the most important thing a hobbyist can do for his frogs. ALL new frogs should be placed in quarantine for a period of 4 - 8 weeks, regardless of their appearance. At the very worst, a quarantine period will only keep healthy frogs from the general collection for this time. At the very best, you may save yourself and your frogs a great deal of unnecessary loss.

Quarantine should be best carried out in a separate room from the general collection. Quarantine facilities should consist of a relatively simple set-up. A 10 gallon aquarium with a small plastic "Honeymoon Hut" and dead sphagnum moss or artificial floor covering. The aquarium and all of its contents should be sterilized before and after each use, preferably with a solution of 10% Bleach in water. Let the tank and its contents air dry in the sun before storing or using. All utensils used for the quarantine tank must not be used for any other tank. This means buying a separate spray bottle at the very least.

Also, work with the quarantine tank AFTER you have worked with all other frogs. This way, you will prevent the spread of potential disease from your hands. It should go without saying that you should ALWAYS WASH YOUR HANDS BETWEEN TANKS.

2. New frogs are stressed (often severely) and are often diseased. Some degree of medical treatment is indicated for newly acquired frogs, be they wild caught imports or captive bred animals from a friend down the street. In addition to potential parasite, bacterial, and protozoal infections, many frogs are also dehydrated and/or malnourished. Medical treatment always includes quarantine, and potentially rehydration, deworming, antibiotic therapy, close observation, exam by a veterinarian, and TLC.

I would suggest that after being shipped all frogs are at least dehydrated. The basic treatment for rehydration includes soaking a frog in an electrolyte solution, like unflavored Pedialyte®, or simply soaking it in dechlorinated tap water. In most cases this should suffice. In addition, a period of quiet, warmth, and dark may also help a frog recover from a rough shipping period. (Also see VETERINARY NOTES (Parasites) by Brian Monk).

3. Parasites can be extremely devastating to a stressed frog. The basic treatment for parasite infections include antiparasitics like fenbendazole (Panacur®) or Ivermectin (Ivomec®) or levamisole or pyrantel pamoate. I use 50-100 mg/kg fenbendazole orally or 50-100 ug/kg ivermectin orally or transdermally. These treatments are done for 1-3 days and repeated 1-3 weeks later. Ivermectin can produce neurologic side-effects, and should be discontinued if these are seen. Fecal exams can be done at home, and typically require a 10-50 power microscope. Direct smear and fecal flotation should be performed. Fecal floats are done as follows: mix feces and Zinc Sulfate in a small container (test tubes are good), fill to brim with Zinc Sulfate, rest a slide or coverslip on top and let sit for at least 10 minutes. Read under microscope. Direct smears are done with normal (0.9%) saline. It is important to note that interpretation of this test is what counts, and this should be done by a veterinarian until you know exactly what to look for.

4. Protozoal infections are typically NOT infections. Many protozoans have been shown to be present in normal frog GI tracts, and this suggests they are commensal organisms, if not beneficial to the frogs. Treatment should be avoided unless populations of protozoa are extremely large, or all other causes for a frog's illness have been ruled out. Metronidazole at 50 mg/kg once per day orally for 1-3 days and repeated in 1-3 weeks is appropriate, although many people will give metronidazole as a one time dose of 50 mg/kg. Metronidazole can have severe neurologic side effects, so used it carefully and discontinued if neurologic signs are seen.

5. Bacterial infections can be particularly devastating to frogs, as the are very susceptible to septicemia (bacteria living and reproducing in blood), and can quickly succumb and die from even minor infections. Infections typically occur via wounds, and may present as dark or red blotches, ulcers, or general depression and ADR (Ain't Doin' Right). Normally gram negative pathogens are involved, and treatment with appropriate antibiotics of the correct dosage is indicated. Enrofloxacin (Baytril®) is my personal favorite, but it is alcohol based and not suitable for transdermal or topical application. Better drugs for topical application are ophthalmic preparations which are meant to be applied to sensitive areas and are properly formulated.

6. Fungal infections can and do occur, particularly on the eyes and skin. These may be primary or secondary, and can be diagnosed by microscopically examining skin scrapings for fungal elements. Appropriate therapy with topical or systemic antifungal medications is indicated.



7. Severely emaciated frogs may have to be force fed before they will recover enough to eat on their own. The technique varies with the size of the frog, but in general a good force-fed diet includes all of the necessary nutrients, often in a concentrated form to decrease the volume of food to be force-fed. Several commercial force-fed diets are available. A simple diet can be made by making a paste of fruit-flies, crickets (without the legs or wings), vitamin/mineral powder (VERY LITTLE), and a few drops of water. A mortar and pestle can be used to grind these ingredients together, and a small syringe and catheter can be used to feed the mixture. Most frogs (thankfully) will eat on their own providing other problems and diseases are taken care of.

8. Get a veterinarian. Pick a veterinarian who is willing to listen and work with you. Most vets don't know much about frogs, but they know a lot about the art and science of medicine. Give them a chance, and they will provide you with plenty of knowledge and help. You will pay for their services, but most vets have gone to school for years and are in debt from student loans. You pay a veterinarian for his/her knowledge, and not just the drugs they give you.

A frog owner should not simply go to the pet store and buy some fish medication and treat his frogs. Granted, some will have some luck with this method. But the greater majority of the time this technique will be ineffective at best, and harmful (potentially fatal) at worst. A frog owner should work in conjunction with his/her veterinarian, even if this means visiting the vet only one time to explain your problems and situation.

9. If anyone has a sick frog and they want to send me a picture of it or present it for further work up, I would love to hear from you. Hobbyists are invaluable in expanding the base of knowledge we veterinarians have concerning amphibian medicine. Not much is known specifically about amphibian disease. Particularly now, in this time of drastic declines in world amphibian populations, knowledge of amphibian disease is very important. The salvation of species may depend on what we know. You, as collectors and hobbyists, have a much greater daily exposure to these animals, and you can help the veterinary community by telling us what you have found. **Brian Monk** Published in the **American Dendrobatid Group Newsletter 1997** and is copied here with the permission of the AGD.



Frog Photo by Mary Woodward

Two local men were seriously injured when their pick-up truck left the road and struck a tree near Cotton Patch on State Highway 38 early Monday morning. Woodruff County deputy Dovey Snyder reported the accident shortly after midnight Monday. Thurston Poole, 33, of Des Arc and Billy Ray Wallis, 38, of Little Rock are listed in serious condition at Baptist Medical Center. The accident occurred as the two men were returning to Des Arc after a frog giggering trip. On an overcast Sunday night, Poole's pick-up truck headlights malfunctioned. The two men concluded that the headlight fuse on the older model truck had burned out. As a replacement fuse was not available, Wallis noticed that the .22 caliber bullet from his pistol fit perfectly into the fuse box next to the steering wheel column. Upon inserting the bullet, the headlights again began to operate properly and the two men proceeded on eastbound toward the White River bridge. After traveling approximately twenty miles and just before crossing the river, the bullet apparently overheated, discharged and struck Poole in the right testicle. The vehicle swerved sharply to the right exiting the pavement and striking a tree. Poole suffered only minor cuts and abrasions from the accident, but will require surgery to repair the other wound. Wallis sustained a broken clavicle and was treated and released. "Thank God we weren't on that bridge when Thurston shot his balls off or we might both be dead" stated Wallis. "I've been a trooper for ten years in this part of the world, but this is a first for me. I can't believe that those two would admit how this accident happened," said Snyder. Upon being notified of the wreck, Lavinia, Poole's wife asked how many frogs the boys had caught and did anyone get them from the truck.

Arkansas Democrat Gazette, forwarded to Frogcall by Mark Avery



## FROGBITS AND TADPIECES

**M**ore Frog Explainers needed for Sunday, 5th November. It's Ocean Care Day on the Manly Corso, one of our evergreen soap boxes. Ring Elisabeth on 9181-3073 if interested.

The Year 2000 bug: It might be prudent to stash a few cubic metres of water away in the dying days of the old millennium, just in case the new one starts with a dry tap and a touch of panic all around. Dig a hole somewhere, liner in, water in. After the crisis, tadpoles in.

Following the two frog pond workshops in Mosman and Woolloomooloo, there's one more coming up at Bondi Junction. Saturday, 4th December, 10 am - 4 pm. Ring Lothar on 9371 9129. L.V.

### MONITOR - JOURNAL OF THE VICTORIAN HERP. SOCIETY....

**F**or those who subscribe you can expect to get the current issue in the post in the next three weeks. It is this huge 140 page thing and the best so far. For those who don't subscribe and want the current issue go to the Vic. herp. society website at [www.smuggled.com/vhs1.htm](http://www.smuggled.com/vhs1.htm)  
Raymond Hoser [adder@smuggled.com](mailto:adder@smuggled.com)

## POLLIWOG

**P**olliwog also pollywog (POL-ee-wog) noun

The limbless aquatic larva of a frog or toad, having gills and a long flat tail. As the polliwog approaches the adult stage, legs and lungs develop, and the tail gradually disappears. Also called tadpole.

[Variant of polliwig, from Middle English polwige : pol, head + wiglen, to wiggle.]

"Some of my own metamorphosis, like the pollywogs', is obvious. Just as the polliwog loses its tail, I've been losing my hair. And my overall appearance has been changing in other ways as well. My skin is growing more coarse, my neck has become wrinkled and the lines on my face are becoming more deeply etched. I've changed from a young boy to an old man." Flynn, Edward, Measuring the value of a life, National Wildlife, 16 Jun 1997.

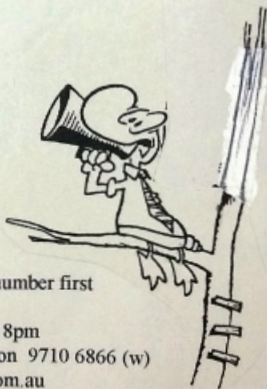
Wordsmith, [wsmith@wordsmith.org](mailto:wsmith@wordsmith.org)  
To: [linguaphile@wordsmith.org](mailto:linguaphile@wordsmith.org)  
with compliments Anthony Nicholson



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Vacant	Editorial Panel		



### Thank You to all those who contributed to this newsletter

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 7 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.