FROG CALL

NEWSLETTER No. 105
February 2010

THE FROG AND TADPOLE STUDY GROUP OF NSW INC
Email fatsgroupnsw@hotmail.com
PO Box 296 Rockdale NSW 2216
Website www.fats.org.au
ABN 34 282 154 794

Photo from George Madani *Litoria rheocola* Common Mist Frog

Join us at our meeting.
Arrive 6.30pm for a 7pm start

Friday 5TH February 2010

Park at the first security gate on the right hand side of Jamieson St. (about 300m off Holker St),
Follow the signs to Building 22
(a 3 minute stroll from the security gate)
Homebush Bay, Sydney Olympic Park.
Accessible by bus or train.
Call or email us for details.

FATS MEMBERS MUST BRING YOUR FROG LICENCE TO THE MEETING IF YOU WISH TO ADOPT A FROG

MEETING FORMAT for Friday 5th February 2010

6.30 pm	Lost frogs needing homes. Please bring your FATS membership card, $$ donation and **NSW NPWS amphibian licence**.
7.00 pm	Welcome, and announcements.
7.45 pm	The main speaker, Lauren Harrison will talk about modelling the distribution of frogs in the Central West Catchment, with a special focus on the NSW Macquarie Marshes. Field trip reports and five favourite images. Tell us about your recent frogging trips or experiences. If you have images or other images, bring them along as well.
9.30 pm	Evenings end with our regular guessing competition, light refreshments and a chance to chat with other members and frog experts.

CONTENTS

LAST FATS MEETING 4th DECEMBER 2009

Punia Jeffery our chairperson opened the meeting and welcomed those attending. As usual, frog items such as FATS T-shirts of various sizes were for sale. Upcoming, not to be missed, field trips were announced. Grant Webster led the next field trip to Scheyville National Park on 12/12, followed by Aaron Payne at Darkes Forest on 30/1.

Punia introduced Marion Anstis, our FATS Vice President and main speaker for the night. Marion is well know to anyone who likes amphibians. She wrote the wonderful field guide, Tadpoles of South-eastern Australia published in 2002 and she is still working with tadpoles and frogs for her PhD at Newcastle University.

Marion Anstis talked to us about frogging adventures in far north Queensland. She spoke and showed images, mainly around Cape York and the Wet Tropics of North Queensland. In previous years she travelled there in January during the rainy season. During the wet season tadpoles tend to get washed downstream in the flooded streams, and if they don't, the waters are so muddy, you can't see them anyway. So this year she went in October which is a better time of year to target stream dwelling tadpoles and anything else she could find in the drier Spring season. It took six months to negotiate permission to access one area of indigenous lands now owned by the Kulla people. The trade off was that Marion taught the local primary school aboriginal children about the frogs in their country. The lower primary children were just gorgeous. Every time she did a frog call from the back of the room when she was showing slides, the little ones would turn around in surprise to watch her make the sounds. The upper primary children were really interested, listened well and were very attentive. The experience was fun and they all had a good time.

Marion had to hire a land cruiser and an experienced, good driver, who was prepared to take her to the tadpole sites. It took three hours to do thirty kilometres, bumping along the track, all the way and over difficult creek crossings. She was concerned about how to get the targeted live tadpoles out alive, with all the unavoidable vehicle jostling on the rough track. The shaking of the bags of tadpoles and frogs can really upset them. Amazingly she got all the species targeted.

The following descriptions included many wonderful slides shown by Marion on the night. Terrific termite mounds everywhere, stunning grass trees (blackboys) with strange fruiting bodies on them, or a fungus, fast little dragon *Diporiphora* possibly *australis* and *Araucaria cunninghamii* Hoop Pines were seen on the way. The drivable track ended two kilometres from the stream, so they walked in with back-packs and gear to where they would set up camp. Sharp-snouted Frogs *Litoria longirostris* were seen all long the creeks. The (Northern) Green Eyed Tree Frog *Litoria eucnemis* (similar to *L. serrata* previously named *L. genimaculata)* are all individual and differently patterned, with lovely green on top of the eye.

One frog, only found in this region lays and guards the most amazing whitish green eggs, which are laid out of the water on tree stumps or leaves of palms above a stream pool. Males sit above the egg mass after swimming in the stream. The water runs off their bodies and keeps the eggs moist. Marion had many finely detailed shots to show us of developing frog spawn.

To top off the excitement of finding a rare mycrohylid, a Green Tree Python was found right in the middle of the track, hanging on a branch at about 30 cm from the ground, and seemingly unconcerned at being photographed. Cluster figs and wonderful fungi were seen along this track and the marvellous Ant plants with their great succulent tubers that provide a home to colonies of a particular species of ant in a symbiotic relationship, as the ants feed on caterpillars that attack the leaves of the plant. The sharp snouted, long jumping, Australian Wood Frogs *Hylarana* (previously *Rana*) *daemeli* were common along the streams.

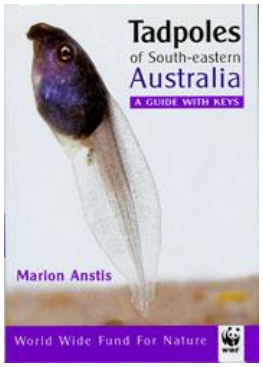
The next part of trip was a long journey by rough roads to Cape Melville National Park. Here the terrain was difficult to walk into, with vine forests and massive granite boulders. *Litoria andiirrmalin*, the recently described Cape Melville Tree Frogs with stunning eyes, was found, but it was too early for their tadpoles, and you can't get in to the site by road when the frogs breed in the wet season. *Cophixalus zweifeli*, the Cape Melville Boulderfrogs or Zweifel's Frog were also sighted.

A local herpetologist, Tim Hawkes, who has a talent for finding microhylids, spent many hours helping Marion find eggs and tadpoles in difficult places of many species she needed.

Greater bower bird nests were photographed, showing their collection of white things**.** But one of the most exciting moments was to be able to get to see *Litoria lorica* sitting near and under waterfalls on granite rock faces above the rushing water. Previously thought to be extinct as a result of chytrid fungus, but recently rediscovered and now known from only one locality, where it is highly vulnerable to future extinction. They are closely related to *Litoria nannotis* the Waterfall Frog, but generally smaller with different patterns on the back.

During a jump from one boulder to another Marion slipped and caught her little toe under a boulder in the stream. The speed and strength of rushing water should have forced her over the boulder and into a waterfall, however her jammed toe kept her in place until she could lunge for the next boulder and pull herself free. The toe got a fracture right through it, so walking the three kilometre out of the site was a challenge afterwards, but she was happier to have a broken toe than a trip over a waterfall into a situation she would not have returned from! We're glad we didn't lose you Marion!

Several other local frog species were photographed, and overall the trip was a great success. Marion would especially like to thank her field assistant Tim Hawkes for all his support in the field and the Queensland Parks and Wildlife for providing the permits to undertake this study. At the end of the presentation a video of the stream-dwelling tadpoles feeding with their amazing sucker mouths was fascinating to watch. **MW (and MA)**



Left
Marion Anstis' book Tadpoles of South-eastern Australia is available at FATS meetings (discounted for members until sold out), the Australian Museum and bookshops. New Holland publishers Australia 2002. Over 260 photographs, 84 species and 300 line drawings.

Right *Pseudophryne corroboree* tadpole from the book.

FATS meeting continued

Arthur White spoke about the World Heritage Riversleigh site at Boodjamulla (Lawn Hill) National Park and fossil frogs. Riversleigh is the best known fossil site in Australia. It is close to the gulf country, in far North Western Queensland, near the Northern Territory border and Mount Isa. Arthur was there looking for frog bones. Some are really tiny and it's usually not until the stone is dissolved that the fossil can be seen. Rarely, the rock has been weathered enough to expose the fossil bones.

To date their have been over 300,000 catalogued fossils from this productive site. The area probably covers the widest known range of fossil events on the planet. The oldest finds being the late Oligocene around 32 million years ago, with continual fossilization up around 8 million years old and the Pliocene period. Then there's a big jump until 4 million years ago when there was another short period of fossilization, then another gap to 50 thousand years ago with continuing fossilization up to the present day. It's a very strange, fossil rich site. And because there is continual fossil history, you can actually look at the changes of animals through time. See http://www.heritage.gov.au/cgi-bin/ahpi/record.pl?RNE14728

Massive rivers, that are alive with wildlife, run continuously through the area, flooding in the wet season. There are dry, cracking soil plains. The fossil areas are extensive, heavily eroded, limestone plateaus with basal rocks being Cambrian, 600 million year old marine limestone, 200 square kilometres in size, not all having been explored yet. In between those two limestone layers are the Oligocene and Miocene fresh water limestone sections 32 Million years old. The freshwater periods have all these fossils, which are everywhere. There is a 500 million year gap in the rock sequence. Either there was no deposition or it was eroded away.

One method of extracting the fossils is called plug and feathering. They drill a series of holes around the fossil they are interested in. Slide in tapered, hardened steel, metal feathers, which get wider, the farther they go down into the boulder and then a spike is driven down the centre of them. Then you just gently tap them, setting a pressure line through the rock. It's because the rock is highly crystalline that the rock can be split as required. Alternatively light explosives are used to get nice clean boulder faces without splintering the rock. Sometimes they find a whole animal and a truck is brought in wherever possible. All the samples such as those of bandicoots, are sent back to the University of NSW to dissolve the surrounding rock and restore the fossil.

Research is finding that some species of animals have decreased in size whilst others have grown over the periods. Sometimes you get things out there that nobody has seen before and that are not associated with any known group. That beast is put into a new family. One of the examples shown was a marsupial of some sort, with unique teeth structure, two recumbent, piercing teeth at the front and a gummy back part of the jaw. It possibly ate eggs or beetles and was named Yalkaparidon. By using detailed reconstruction you can build an understanding of a whole eco system.

Most funding is available is directed at mammal fossil research. Amphibian studies are mostly an offshoot of that.

The frog anatomy is tiny, with bones that are held together with connecting tissue. When the rocks are dissolved the individual frog bones separate but the fossils are retrieved from the sludge in the bottom of the university rock dissolving tanks. The bones do not dissolve during the process.

A lot of the skeleton of frogs is soft material, such as cartilage, soft material that often doesn't fossilise. The bits that are bone are those that come under most pressure during movement. These are more likely to be preserved ie the rear part of the skull, the first couple of vertebra in the neck and the section around the hip. One of the things that was noticed over time in frogs was the reduction of the vertical column, systematic loss of the vertebrae and concurrently the development of the ilia (hip bones) and back legs ie hopping came later – at first they crawled. Frogs species are identifiable from their distinct hip bones. In the Riversleigh material, 95% of the frog fossil material is *Lechriodus intergerivus*. In modern times, unlike the past, one species of rainforest frog does not dominate. We don't know why one dominated in the past. In addition 7 species of tree frogs have been found, one having an ilia nearly 4 cm long. The frog was likely to be 25 cm long. There were only 2 species of ground frogs, *Crinia* mud dwellers and a burrowing frog. Even more evidence that the area was rainforest.

Thank you Marion and Arthur for your insightful, descriptive talks and numerous images presented. FATS members are very lucky to have two such accomplished scientists willing to regularly share their experiences with us. **MW**

Meeting and Frog-o-graphic competition continued p11

CANE TOADS FOR DINNER?

Tasty? The cane toad's poison is highly prized in Chinese medicine and the meat is also eaten in some parts of the country They are ugly, poisonous, and kill untold numbers of native animals every year. But Australia's most notorious pest animal could soon end up on dinner plates in Asia.

South-west Queensland meat processor John Burey is travelling to China next month to negotiate a deal to start exporting cane toads for human consumption. Mr Burey says the hated toad's poison is highly prized in Chinese medicine and the meat is also eaten in some parts of the country. "[We] really have to nail down the export requirements that China's going to place upon us - and also what we have to do within Australia," he said. "Because if we start handling cane toads, you're talking about a venom that's considered a class one drug in Australia - so there's licensing that has to be there."

Mr Burey says if the deal goes ahead it could be a solution to Queensland's biggest pest problem. "Initial thoughts are a bit like collecting aluminium cans - anyone can go out and collect them and lob them off at our collecting points and we would come around in our trucks and pick them up after that," he said. "But instead of sausage sizzles and charity drives, pie drives that sort of stuff - they could do a toad drive." **By Fidelis Rego sent to Frogcall by Andrew Nelson http://www.abc.net.au:80/news/stories/2010/01/26/2801241.htm?section=justin**

Photo George Madani *Cyclorana australis* - Giant Frog

STOWAWAY CANE TOAD HOT-FOOTS IT TO NZ

Cunning: A cane toad hid in a hiking boot to hitch a lift to New Zealand. A cane toad hiding in a pair of hiking boots made its way from Queensland and past quarantine inspectors into New Zealand.

The cane toad hitched a ride across the Tasman with a woman from Cairns, who flew to Queenstown last week to walk the picturesque Milford Track. While she was getting a briefing inside a hiking shop, the creature jumped out of her bag. "It wasn't doing much moving," shop owner Noel Saxon said. "I think it was probably in a bit of shock. Flying from Australia to New Zealand in a cargo hold isn't probably that good for you."

Staff caught the toad and phoned New Zealand's Ministry of Agriculture and were told to put the toad in a plastic bag and throw it in the freezer. The cane toad had been inside the woman's hiking boots. She had declared the boots at Queenstown Airport and they were checked over and scrubbed with detergent. But the woman had stuffed socks inside the boots, giving the toad a comfortable hiding place.

New Zealand authorities say cane toads could not cope with the south island's cold climate and even if it had escaped, it would not have survived in the wild **By N Z correspondent Kerri Ritchie 26/11/2009 Sent to Frogcall by Andrew Nelson.**

Photo Monica Wangmann *Limnodynastes interioris*

PROJECTED CLIMATE IMPACTS FOR THE AMPHIBIANS OF THE WESTERN HEMISPHERE

Abstract: Given their physiological requirements, limited dispersal abilities, and hydrologically sensitive habitats, amphibians are likely to be highly sensitive to future climatic changes. **Joshua J. Lawler*, Sarah L. Shafer, And Andrew R. Blaustein *College of Forest Resources, University of Washington, Seattle, WA 98105, U.S.A., jlawler@u.washington.edu U.S. Geological Survey, Betsy A. Bancroft, College of Forest Resources, University of Washington, Seattle, WA 98105, U.S.A. Department of Zoology, Oregon State University, Corvallis, OR 97331, U.S.A.** **Conservation BiologyVolume 24 Issue 1, (February 2010) Pages 38 – 50 HERPDIGEST 20 JAN 2010**

FROG CENSUS GIVES HOPE ON LOWER MURRAY

Census boosts hopes for endangered frog (kids.mdbc.gov.au)

Researchers have been heartened by their census of the threatened southern bell frog in the lower lakes region at the mouth of the Murray in South Australia. For three months, the researchers working for the Murray-Darling Basin authority have listened in the darkness for the frog's calls. Researcher Pip Taylor was among them. "We'd record on a hand-held digital recorder for five minutes any of the frogs that were calling," she said. The frogs were heard at Clayton Bay, the upper Finniss River and Mundoo Island. Ms Taylor says researchers had expected little success because of the ongoing drought's effect on the habitat. But she says water regulators on the lower Murray may be boosting the health of some areas. The researchers will now check for tadpoles in the lower lakes region to work out if the frogs have been breeding. **15 / 1 / 2010 http://www.abc.net.au:80/news/stories/2010/01/15/2792990.htm?section=justin sent to Frogcall by Andrew Nelson**

WORLD WETLAND DAY IN 6TH FEB

Sydney Olympic Park is a great place for leisure, sport, education and business. To find out what's going on at the Park and be part of their great offers and competitions visit http://www.sydneyolympicpark.com.au/register. Confirm if places are still available for the free walks and talk on World Wetland Day. Participate in Parramatta River Wetlands bird counts: 13 Feb 2010 and other dates TBA **Contact Judy Harrington, Park Ranger, Sydney Olympic Park Authority Email judy.harrington@sopa.nsw.gov.au or mobile 0403 026 660**

Tara Arduinn 12 yo

INFLATABLE TOAD SHRUGS OFF WIMPY SUITORS

Failed romance: By inflating sacs in her body, the female is able to loosen the suitor's grip The female cane toad can pump herself up to mega-size to throw off smaller males striving to mate with her, Australian biologists said.

The unusual tactic suggests that female anurans, as frogs and toads are called, may have far more power to select their sex partner than thought, according to their study in the British journal, Biology Letters.

Female cane toads (*Bufo marinus*) are typically choosier than males when it comes to reproduction. They discriminate among potential mates by approaching the toad with the best call. But as they head to a rendezvous with the hunk with the mightiest ribbit, they also have to run the gauntlet of excited rival males. An unwanted suitor will seek to climb on the female's back, grasping her tightly in the armpit or groin, waiting until she starts laying her eggs in order to fertilise them.

This is where the pneumatic trick comes in, say the scientists, led by Benjamin Phillips of the University of Sydney. By inflating sacs in her body, the female is able to loosen the grip and the luckless male slides off her body, defeated. As a result, the female is able to choose the size of her mate, a factor that is important to the species, says the team.

Fertilisation among cane toads is most successful when males and females are similar in size. Mr Phillips and his two colleagues worked on the small-to-XXXL hunch after noting that the cane toad puffs itself up in the presence of a predator to make itself look scarier. Female toads likewise inflate at copulation time, but until now this was presumed to be a reflex to being pushed, kicked and occasionally flipped over as panting males wrestled for amorous contact. **AFP 6/1/2010 9 http://www.abc.net.au:80/news/stories/2010/01/06/2786944.htm?section=justin Sent to Frogcall by Andrew Nelson**

Photo George Madani *Litoria wilcoxii*

HERPDIGEST ARTICLES

PITT OPERATES A RURAL RESEARCH TREASURE - BULK OF THE RESEARCH REVOLVES AROUND AMPHIBIANS AND MAN-MADE CHEMICALS.

In rural Crawford County, 100 miles north of Pittsburgh, a gray barn sits amid farmland and forest. It would blend perfectly into the quiet countryside -- if it weren't for the hundreds of plastic wading pools surrounding it in seemingly haphazard rows and groupings.

"Welcome to the Farm," says Rick Relyea, director of the Pymatuning Laboratory of Ecology, Linesville, as he hops from a white university-issued van and pulls the cover off of one of the wading pools. Inside, dozens of gray tree frog tadpoles squirm in the shallow water, waiting their turn to help make science-history and change public policy through a slew of experiments inside the barn-like laboratory.

This summer marks the 60th year of the University of Pittsburgh field station and its experiments that test the effects of pesticides, invasive species, habitat changes and emerging diseases. "It's a real treasure," says Graham Hatfull, chair of Pitt's Department of Biological Sciences. "It is a rare asset for a department in a university to have a field station of such caliber."

Summer camp-like setting

Spread out on chunks of property that ring Pymatuning Lake, this Pitt outpost is not considered a satellite campus. "It's geographically separated, but it is really a part of the Biological Sciences Department on the main campus," Relyea says. "The reason we're here is because the things we do really can't be done in Oakland. We need land, we need space, we need wild plants and animals to work with."

Laboratory-grade equipment, high-powered microscopes and scientific software let scientists watch for minute mutations in amphibians that can indicate dramatic environmental changes at the Farm -- so named because it was built on 134 acres of old farmland.

Inside the cabins at the Sanctuary Lake Site -- the original location of the expanded lab -- are administrative offices, lecture halls, computer rooms and a scientific supply room stocked with, among other things, 43 pairs of waders ranging from size 4 women's to 14 men's.

The housing site is reminiscent of a summer camp, complete with a large dinner bell, pit for evening campfires, and canoes to paddle around the lily pad-choked lake. The natural laboratory was first conceived in 1926 at Presque Isle on the shores of Lake Erie. But the creation of Presque Isle State Park crowded out the modest field station.

In 1949, Pitt leased a 13-acre wooded peninsula from the state and established the Pymatuning Laboratory of Ecology. By the mid-1990s, Pitt reached a crossroads with the field station. The buildings had been falling into disrepair for years and Pitt needed to invest in upgrading Pymatuning Laboratory of Ecology, or shut it down. "There aren't too many environmental areas in the country that are similar to what Pymatuning offers, and clearly none within Allegheny County," says Dick Howe, associate dean for administration and planning in Pitt's College of Arts and Sciences. "To have a comprehensive department of biological sciences, we needed to have a strong subdiscipline of ecology and evolution," Howe says. "Thus the decision was made that we needed Pymatuning Laboratory to continue."

Over the past decade, research has picked up as the university increased investment in the field station, not only building the barn/laboratory, but updating living and administrative quarters to make them more attractive to students and scientists at Pitt and nationwide.

Life on The Farm

At the Farm, the bulk of the research revolves around amphibians and man-made chemicals. "We work with species often from Western Pennsylvania, but the implications for things like toxicity of pesticides really has reached all around the world," Relyea says. Several years ago, he and his team made headlines with the discovery that the common weed-killer Roundup, made by St. Louis-based Monsanto Co., was also killing tadpoles.

In concentrations consistent with run-off into ponds, Roundup wiped out 40 percent of the tadpoles in wading pools designed to mimic the seasonal ponds where frogs lay eggs. "The work that we've done with Roundup ... has had implications to the drug war in Columbia and South America. This is a very lethal herbicide and we're spraying Roundup to kill coca and poppy plantations," Relyea says. "The over-spraying down there from

airplanes has stopped because of the work we've done in Western Pennsylvania."

Relyea and his dozen-or-so graduate, post-doctoral and undergraduate students are now looking to answer the broader question of why amphibian species are on a sharp global decline. AmphibiaWeb, a database created to examine the decline of amphibians and based out of the University of California, Berkeley, found that more than 40 percent of amphibian species worldwide have populations that are declining.

"Every pesticide in the United States -- virtually every one -- does not have to be tested on amphibians," Relyea says. Federal testing on fish is extrapolated to amphibians, even though they are different classes of animals. But pesticides alone are probably not the sole culprit. Predators, a fungus that attacks immune systems and changes in forest composition likely all combine until the stress is more than amphibians can bear.

To test this hypothesis, the Farm scientists examine various combinations. Graduate student Maya Groner is preparing to send "froglets" -- the stage between tadpole and frog -- to Oregon for inoculation with a fungus that was discovered in 1998. The fungus has been associated with global frog declines. In separate aquariums, Groner raises healthy tadpoles and tadpoles frightened by dragonfly larvae that eat their brethren. The hypothesis is that frightened tadpoles have weaker immune systems and are more likely to die when infected with the fungus. "The froglets are more susceptible to infection because when a frog goes through metamorphosis their body changes so much," says Groner, 27. "That turns out to be when you see a lot of mortality as a result of disease."

Outside, Jessica Hua tends to wading pools with different levels of endosulfan, an insecticide used to control cabbage worms, potato beetles and aphids. "Look at this tank," Hua says, pulling the cover off of a wading pool thick with algae and comparing it to a much cleaner pool where tadpoles flit about. Tadpoles eat algae, so lots of algae means no tadpoles. "They have the same animals, the same everything, all I did was put in a few drops of insecticide," she says. "Endosulfan, all by itself, killed about 83 percent of leopard frogs at an incredibly low dose." It is as lethal as Roundup at 1/1,000th the concentration, Relyea says. How deadly it could be in combination with the fungus is a future experiment.

Hua, 22, came back to the laboratory after a summer stint at the field station as an undergraduate from the University of Texas. She's now a graduate student at the University of Pittsburgh. "During the school year, we're down in Pittsburgh in classes, but during the summer that's the season when the frogs breed and all the animals are out," she says. "It works out perfectly because we do all our experiments during the summer and then bring all our stuff back and analyze it on campus during the school year."

Cooperative education

Kris Chapman will bring his research back to class too -- but not at the University of Pittsburgh.Chapman, a biology teacher at Greenville High School in Mercer County, is enrolled in the "Research Experience for Teachers" program. The goal is to teach the teacher so the lesson reaches hundreds of students. "Being a teacher, you get away from the research a bit," Chapman says. "So being able to do real science on the cutting-edge and being able to take that back to the classroom is a great opportunity for me."

Education for the sake of education, not necessarily to make scientific discoveries, is one of the major missions of the Pymatuning Laboratory of Ecology. Through partnerships with Clarion, Edinboro, Indiana and Slippery Rock universities, undergraduates can come to the field station and complete a semester-long course in a matter of weeks. "The field station is able to train more people this way," Relyea says. "And it keeps us networked with the regional universities -- this isn't just the University of Pittsburgh field station. Certainly we own it, but it has an impact on many other universities."

Among those are Duke University and the University of Miami. Scientists from both schools were at the field station this spring for continuing research on a well-documented population of song sparrows. With a Tupperware container of mealworms, Bill Searcy, professor of ornithology at Miami, treks through a half mile of grassy field edged by forest and wetlands to a small wooden platform with several circular indents drilled into it. Into a few of those indents he places the worms and then covers them with yellow lids. The empty ones get blue lids. "We're trying to measure learning ability in song sparrows and we're relating that to their song," he says. "So we get them to learn this foraging task where they remove little plastic lids to find food. The ones that pick up the color association faster are the smarter ones." Birds that are better at the color association seem to have a wider song repertoire, a learned trait. Since bird song plays a role in mating, the findings could have implications for survival.

Photo b y George Madani *Litoria phyllochroa*

Warty Water-holding Frog

Photo by George Madani Nyngan *Cyclorana verrucosa*

A natural selection continued from page 7

Because habitat is crucial for the survival of so many species -- from birds to bugs -- studying where they live is yet another base the field station covers. In the same wading pools used as mock-frog ponds, Aaron Stoler drops leaves from Western Pennsylvania trees. "Trees lose leaves because it is a burden in the winter," says Stoler, a graduate student. "As an undergraduate I studied what leaves did when they fell into streams. Now I'm wondering, well, what happens when they fall into ponds."

As forests are logged or invasive insects invade, their composition changes. Stoler found that when black willow leaves dominate a pond, fewer tadpoles thrive than in a pond with rapidly decaying tulip poplar leaves. "The forest service manages for certain kinds of trees, but they're not looking at what it does to the wetlands in the forest," Relyea says. "I think this work is going to be really getting a lot of attention -- it's got great ecology, great applications to forest management."

For a decade, Pitt biologist Walt Carson has had an ongoing experiment to look at the effect of the invasive purple loosestrife, a tall flowering plant native to Europe and Asia, in simulated marshes. He's putting the invasive loosestrife up against the native cattail -- and then throwing a loosestrife-killing bug into the mix. "If you have loosestrife and cattail, do they compete?" Relyea says. "And does that competition between the two change when you put the bug on?"

Results are pending, though the loosestrife seems to be gaining ground on the cattail. The combination of invasive plants, pesticides, predators and more make seemingly simple pond life incredibly complex -- and inviting to even nonscientific types. "It's the kind of retirement job that everybody dreams of," says Walt Mullen, a retired English teacher-turned-site manager. "It is a great place to live, great people to work with and when you get a little stressed, you walk out on the lawn and watch the eagles fish and it heals your soul. "I would have to pay for all the knowledge I've learned, and now I just walk out and ask a scientist: 'Hey, can you tell me why...' " **By Allison M. Heinrichs, TRIBUNE-REVIEW 2 August , 2009 republished by HerpDigest Volume # 9 Issue #35 - 8/11/09 Publisher/Editor- Allen Salzberg**

DISEASE THREAT MAY CHANGE HOW FROGS MATE

Dr Amber Teacher, studying a post-doctorate at Royal Holloway, University of London, has discovered evidence that a disease may be causing a behavioural change in frogs. The research, published in the August edition of 'Molecular Ecology', has unearthed a surprising fact about our long-tongued friends: wild frogs in the UK may be changing their mating behaviour.

Dr Teacher conducted her research with colleagues from the Institute of Zoology and Queen Mary, University of London. The research followed concerns over the survival of wild frog populations in the UK. Ranavirus, which had its first reported case in England in the early 1980s, is one of many pathogens ravaging the amphibian community.

Dr Teacher's pioneering new research looks at the genetic make-up of populations, and indicates that wild frog populations that have been infected with this virus may be choosing mates differently to those in healthy populations.

As Ranavirus is typically associated with heavy death tolls in infected populations, there are often few frogs left alive to mate. This frequently leads to inbreeding, which causes an increase in relatedness in the population. However, Dr Teacher has uncovered startling results; finding that despite inbreeding there has been no subsequent increase in relatedness in these populations.

Dr Teacher's conclusion is that this lack of relatedness has been caused by a change in the frogs' mating strategy. With diseased frogs struggling to mate, healthy frogs are likely to be mating more often with other healthy frogs, leaving diseased frogs to mate with each other. These frogs could also be selecting mates based on their Major Histocompatibility Complex (MHC) type; a group of genes directly involved with the animal's immune system. As the common frog is generally thought to mate randomly, this is a major shift in the frogs' mating behaviour.

Active mate choice based on MHC type is not uncommon in other species, with research indicating that a number of vertebrates, including humans, may use it to choose prospective mates, and improve their immunity to diseases.

'The situation requires directed behavioural research', says Dr Teacher. This discovery could re-shape the way we look at disease management in animals. If such behavioural effects from diseases are widespread, it is likely they have been overlooked in the past, meaning we may be forced to reconsider how such diseases impact on animals. Whilst Ranavirus has been researched in specific relation to population dynamics, Dr Teacher has exposed previously unknown effects that require further investigation.

Dr Teacher believes the next step is to observe these wild frogs over the coming years. 'The world of wildlife disease research would benefit greatly from

such long-term investigations, allowing us to see how the host and the pathogen respond to each other over time', 'It would also shed further light on whether Ranavirus does indeed cause observable behavioural changes', she explains. Further research may also bring us closer to knowing if this new mating strategy could lead to wild frogs in the UK developing immunity to Ranavirus. **ScienceDaily 31Aug. 2009 - Journal reference: 1. Teacher et al. Population genetic patterns suggest a behavioural change in wild common frogs (Rana temporaria) following disease outbreaks (Ranavirus). Molecular Ecology, 2009; DOI: 10.1111/j.1365-294X.2009.04263.x Adapted from materials provided by Wiley - Blackwell, via AlphaGalileo. Published in HerpDigest.org: Volume # 9 Issue #41- 09/19/09 Publisher/Editor- Allen Salzberg**

HABITAT SPLIT AS A CAUSE OF LOCAL POPULATION DECLINES OF AMPHIBIANS WITH AQUATIC LARVAE

Abstract Most amphibian species have biphasic life histories and undergo an ontogenetic shift from aquatic to terrestrial habitats. In deforested landscapes, streams and forest fragments are frequently disjunct, jeopardizing the life cycle of forest-associated amphibians with aquatic larvae.

We tested the impact of habitat split-defined as human-induced disconnection between habitats used by different life-history stages of a species-on four forest-associated amphibian species in a severely fragmented landscape of the Brazilian Atlantic Forest. We surveyed amphibians in forest fragments with and without streams (referred to as wet and dry fragments, respectively), including the adjacent grass-field matrix. Our comparison of capture rates in dry fragments and nearby streams in the matrix allowed us to evaluate the number of individuals that engaged in high-risk migrations through nonforested habitats.

Adult amphibians moved from dry fragments to matrix streams at the beginning of the rainy season, reproduced, and returned at the end of the breeding period. Juveniles of the year moved to dry fragments along with adults. These risky reproductive migrations through nonforested habitats that expose individuals to dehydration, predation, and other hazards may cause population declines in dry fragments. Indeed, capture rates were significantly lower in dry fragments compared with wet fragments. Declining amphibians would strongly benefit from investments in the conservation and restoration of riparian vegetation and corridors linking breeding and nonbreeding areas. **C. Guilherme Becker*, Carlos R. Fonseca, Célio F. B. Haddad§, And Paulo I. Prado Department of Ecology and Evolutionary Biology, Cornell University, 14853 Ithaca NY, U.S.A., email cgb58@cornell.edu Programa de Pós-graduação em Ecologia, Instituto de Biologia, Universidade Estadual de Campinas, 13083-970 Campinas SP, Brazil Departamento de Botânica, Ecologia e Zoologia, Universidade Federal do Rio Grande do Norte, 59072-970 Natal RN, Brazil §Departamento de Zoologia, Universidade Estadual Paulista Júlio de Mesquita Filho, 13506-900 Rio Claro SP, Brazil **Departamento de Ecologia, Universidade de São Paulo, 05508-900 São Paulo SP, Brazil** **Conservation Biology Volume 24 Issue 1, February 2010 Pages 287 – 294**

Photo by George Madani at Nyngan *Litoria Rubella* calling

TWO NEW BOOKS AVAILABLE AT HERPDIGST

FOLLOWING THE WATER: A HYDROMANCER'S NOTEBOOK

New Book by MacArthur Genius Award winner David M. Caroll, author Of the now classics, "The Year of the Turtles," Self-Portrait with Turtles, and Swampwalker's Journal Only $24.00 plus &7.50 for S&H within the U.S.

THE FROGS AND TOADS OF NTH AMERICA" is an amazing book. It contains: A CD of all 101 species found in US & Canada./Almost 400 great colour photos 101 colour location maps /In just 344 pages. Books this comprehensive usually go for at least $50.00.to &75.00. Or just $19.95 for the CD. But the publisher is offering it JUST FOR $19.95 Plus 7.50 S&H. (USA)

HerpDigest Inc. is a non-profit corporation that publishes the electronic weekly newsletter called HerpDigest, website www.herpdigest.org HerpDigest.org now has its own Facebook page. So if you are on Facebook. Ask to befriend "Herp Digest"(Herp as in first name, Digest as in second hence the space between the two.) If you already are a "friend" of Herp Digest on Facebook please suggest to your help friends to check it out and befriend us. Hey 2,400 and growing "friends" can't be wrong.HerpDigest.org: The Only Free Weekly Electronic Newsletter That Reports on The Latest News on Herpetological Conservation and Science

Photo by George Madani *Litoria fallax*

FROGWATCH HELPLINE 0419 249 728

FATS CONTACTS		phone	email
Arthur White	President	ph/fax (02) 9599 1161 h	1arthur@tpg.com.au
Marion Anstis	Vice President	(02) 9456 1698 h	frogpole@tpg.com.au
Wendy Grimm	Secretary	(02) 9144 5600 h	wagrimm@tpg.com.au
vacant	Assistant secretary		
Punia Jeffery	Chairperson	(02) 9969 1932 h	puniajeffery@yahoo.com.au
Karen White	Treasurer	ph/fax (02) 9599 1161 h	1arthur@tpg.com.au
Andrew Nelson	Membership Officer	(02) 9411 6068 h	awnelson@optushome.com.au
Robert Wall	Field Trips Coordinator	(02) 9681 5308 h	rjw2008@live.com.au
Brad McCaffery	Field trip assistant	(02) 9876-1976 h	froggydarb@exemail.com.au
Matthew McCaffery	Field trip assistant	(02) 9876-1976 h	
Grant Webster	Field trip assistant	(02) 9876 5807 h mob. 0411 741 869	tnarg_w@hotmail.com
vacant	Publicity / Exhibition Officer		
vacant	Assistant Publicity Officer		
Alistair MacDougall	Web Master	0411 277 070 mob.	al@alphoto.com.au
David Nelson	Assistant Web Master	(02) 9411 6068 h	davidavid@optushome.com.au
Phillip Grimm	Committee Member	(02) 9144 5600 h	phigrimm@tpg.com.au
Lothar Voigt	Committee Member	(02) 9371 9129 h	lothar@virginbroadband.com.au
Andre Rank	Committee Member		wylee_ec@hotmail.com

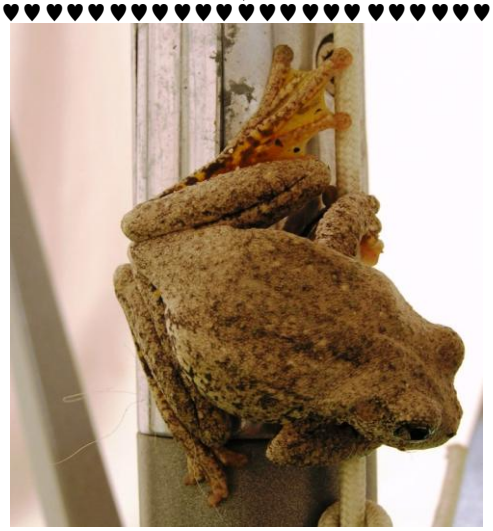
Editorial Assistants (2): vacant

Monica Wangmann Editor sendarticlesto 38Albert Pde Ashfield NSW2131 9797 6543 0418 992 766 wangmann@tig.com.au

INSURANCE DISCLAIMER FATS has public liability insurance for its various public functions. Members should be aware that this insurance does not cover FATS members, it covers the public and indemnifies FATS. We are currently checking with insurance firms to see whether a realistic group policy can be organised to cover FATS volunteers and people who attend field trips. FATS MEETINGS commence at about 6.30 pm, end about 10pm and are usually held on the **first Friday of every EVEN month February, April, June, August, October and December**. Building 22, RANAD, turn into Jamieson St from Holker St and park at the first security gate (about 300m from Holker) on the right hand side, Sydney Olympic Park, Homebush Bay. The meeting is in building 22, a three minute stroll from the security gate. The path is signed. Accessible by car or bus. Call us the day before for a lift from the train station. We hold 6 informative, informal, topical and practical meetings each year. Visitors are welcome. We are actively involved in monitoring frog populations, other field studies, 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. Material from FROGCALL MAY NOT BE REPRODUCED without the prior consent of the Editor or President of FATS. Permission from FATS and/or author/s must be obtained prior to any commercial use of material. The author/s and sources must be fully acknowledged.

Thank you to the many FrogCall contributors. Your articles, photos, media clippings, webpage uploads, membership administration, mail-out inserts and envelope preparation, is greatly appreciated. Special thanks to regular newsletter supporters, including Lothar Voigt, Steve Weir, Robert Wall, George Madani Karen and Arthur White, Wendy and Phillip Grimm, Matthew Kemplay-Hill, Brad and Matt McCaffery, Grant Webster, Marion Anstis, Punia Jeffery, Fiorella, Andrew & David Nelson and Al MacDougall..

Stuttering Barred Frog – photo by Chloe Newman



Rachael & Stella's Peron's Tree Frog Wyong, under garden umbrella

Photo by George Madani *Cophixialus saxatilis* male Black Mountain Frog

The FATS meeting, continued from page 3

The Frog-o-graphic competition results were announced including the Peoples' Choice award winner, chosen on the night, John Pumpurs, Three White-lipped Tree Frogs. We had about 80 entries this time. Get thinking about your entries for our next Frog-o-graphic competition commencing August 2010. What about a sculpture? The winning entries below appear on our web site and in the 2010 FATS calendar, which is available for sale at the February meeting for $15.

The best junior art work entry was a drawing of a *Pseudophryne corroboree* by Isabell Moon. The most interesting frog images were won by John Pumpurs, *Adelotus brevis* fighting and David Nelson's *Litoria xanthomera* with bi-colour eyes. The best junior photo was by Tara Arduin Green Tree Frog on a wall.

Senior best frog images were won by Aaron Payne, a pair of *Litoria xanthomera*, Kim McCaffery *Litoria phyllochroa* montage and Rob Burns *Litoria xanthomera* profile. Senior artwork winner was Malin Flick *Litoria chloris* painting. Highly commended were Jennifer Brereton's *Litoria chloris* strumming, David Nelson's *Litoria serrata* and *Lt. subglandulosa* and Kim McCaffery's *Mixophyes iteratus* iris.

Thank you to all those who entered the competition. The quality of entries was really high. And to the winners, congratulations, well done! The end of the night included awarding prizes, our usual guessing competition. There was wine, a chance to chat and lots of cheer at the end of the Christmas meeting. **MW**

HERPETOLOGICAL ASSOCIATION OF AFRICA

You may now Join the Herpetological Association of Africa through Bibliomania.

Members receive the African Journal of Herpetology and African Herp News. Bibliomania and search for "Herpetological Association of Africa" Bibliography - African Journal of Herpetology 58(1) Herpetological Association of Africa F. L. Farquharson, Secretary/Treasurer P.O. Box 20142 Durban North 4016 South Africa Email: haasec@freemail.absa.co.za
Herpdigest HerpDigest.org: The Only Free Weekly Electronic Newsletter That Reports on The Latest News on Herpetological Conservation and Science Volume # 9 Issue #36 - 8/12/09 Publisher/Editor- Allen Salzberg

CURRENT ILLEGAL ASIAN WILDLIFE TRADE

It's featured on-line at http://ngm.nationalgeographic.com/2010/01/asian-wildlife/christy-text Article talks about how zoos are used as fronts, bribery to get permits, things going on now. PLEASE DISTRIBUTE URL to any animal, conservation group etc.. **by Bryan Christy author of "The Lizard King" A must read. In January 2010 National Geographic. HERPDIGEST 8 JAN 2010**

THE AMPHIBIAN ARK TEAM

Is Pleased To Announce The Latest Edition Of Our E-Newsletter, Which Is Available Free here: This edition features specific projects of many of our AArk partners worldwide along with updates on AArk programs and activities. **www.amphibianark.org/Newsletters/pdf_newsletters/Amphibian%20Ark%20Newsletter%20No%209.pdf** . Amphibian Ark Members receive this automatically, so please consider joining us (it's 100% free) at www.amphbianark.org/membership.htm . In this edition: Meet the Amphibian Ark's Steering Committee! (Part 2) -Sri Lankan Amphibian Conservation Needs Assessment workshop - Amphibian husbandry training in Brazil -Amphibian Ark Husbandry Essentials workshop, Panama -Sri Lankan capacity-building extravaganza -Amphibian Conservation Research Guide -The FrogMatters internet blog - Posts from the Amphibian Ark - GoodSearch.org - Supporting the Amphibian Ark has never been easier! -Chytrid fungus: new developments in our understanding -Amphibians in the news -Darwin's frog conservation efforts in Chile -New breed and rear for release program commenced for Geocrinia alba -2009 northern corroboree frog breeding results -Regional updates on biobanking activities -AMACZOOA report -An update from the Association of Zoos & Aquariums (AZA) -Amphibian awareness education programs during India's Wildlife Week 2009 -Year of the Frog funding supports projects in Zoo and Aquarium Association (Australasia) institutions

Vern and Renee's *Litoria peronii* Perons Tree Frog at Rooty Hill Frogs not seen there for 29 years. We have also just discovered a colony of large dragonflies in our backyard, living in our flowering mandarin tree. We must have a good eco system going.

FIELD TRIPS

***Please book your place on field-trips*. Due to strong demand, numbers are limited (ph. 9681-5308).**
Be sure to leave a contact number. Regardless of prevailing weather conditions, we will continue to schedule and advertise all monthly field-trips as planned. It is <u>YOUR</u> responsibility to re-confirm, in the final days, whether the field-trip is proceeding or has been cancelled. Phone Robert on ph. 9681-5308.

30 January. 8-30p.m. Darkes Forest. Leader : Aaron Payne.

Take the Princess Hwy south, then take the Darkes Forest Rd turn-off. Meet 200 metres from the corner. The early French explorers and naturalists contributed much to the understanding of Australian natural history. Amongst other things, they discovered and described many species of frog. Today, many frogs retain a scientific epithet (i.e. name) honouring these French naturalists. Many frogs bear common names such as *Peron's Frog, Lesueur's Frog* and *Bibron's Toadlet* to name a few. Tonight we will look at some of our frogs in an historical context and we will examine some of those species first discovered by, or named in honour of, the French. We will also discuss the importance and enlightened scientific role of early French exploration in Australia. Aaron is well- known to members for his consistently stunning photographic work. Few realise that he is one of our more intrepid fieldworkers, his latest and most recent expedition including frog work in the Northern Territory.

12 -17 February. 6-Day Coach/Camping Tour : "The Dorrigo and Washpool Rainforests". Leader: Arthur White.

This is our very first coach/camping tour! There are only a couple of seats left. Over millennia, Australian rainforests have repeatedly expanded and contracted largely according to fluctuating climates. At all times, these ancient rainforests have retained a rich and unique legacy of wildlife. More than ever, these rainforests act as vital refugia for many of our most threatened species. During this week we will not only look at some of the astonishing frogs and reptiles of these magnificent rainforests, but we will also spend our days exploring the luxuriance and grandeur of these areas. Mountain ranges, waterfalls, spectacular scenery and lots of wildlife ! From his extensive work with the palaeofauna (*'palaeo'- old, ancient or prehistoric*) of the famous Riversleigh fossil site to his current fieldwork with present-day frogs, Arthur is a consummate encyclopaedia of rainforest fauna. As with all FATS events, this will be a relaxed, casual and fun week. All camping gear and food is supplied. Ring for any information regarding fares and bookings. Rob ph. 9681-5308.

This concludes our 2009/2010 Spring / Summer Fieldtrips Programme. We have however, decided to re-visit our popular Smiths Lake venue again in April. See details below.

16 – 18 April. Smiths Lake Camp-Out. Leaders: Arthur and Karen White.

Research shows that "*….all roads, even minor service trails, have a disproportionate and negative impact upon aquatic environments and adjoining bushland*". Problems of silting, re-routing of water-flows, increased access for both native and feral predators and the inadvertent introduction of pollutants, weeds and disease all become evident. Roads can be responsible for the significant fragmentation of habitat. Subtle changes in the micro-climate may also occur. Often, frogs are amongst the first to suffer. While incidences of roadkill are more obvious to the public, tonight we will consider some of the more insidious and far-reaching impacts of roads upon our bushland and wetland environments. Arthur spends much of his professional life recommending ways in which man-made environmental damage may be mitigated. He has an intimate knowledge of the impact these sorts of disturbances have on our bushland. He and Karen have a wonderful working knowledge of the Smiths Lake area and always make this an enjoyable week-end.
A non-refundable fee of $14-00 p.p per night applies. Dormitory-style cabins or campsites available. Hot showers. There is a commercial kitchen and all crockery and cutlery supplied. Phone Arthur and Karen directly on 9599-1161 for bookings and further details.

In the event of uncertain frogging conditions (e.g. prolonged / severe drought, hazardous and/or torrential rain, bushfires etc.), please phone 9681-5308. Remember ! - rain is generally ideal for frogging ! Children must be accompanied by an adult. Bring enclosed shoes that can get wet (gumboots are preferable), torch, warm clothing and raincoat. Please be judicious with the use of insect repellent - frogs are very sensitive to chemicals ! Please observe all directions that the leader may give. Children are welcome, however please remember that young children especially can become very excited and boisterous at their first frogging experience – parents are asked to help ensure that the leader is able to conduct the trip to everyone's satisfaction. All field trips are strictly for members only - newcomers are however, welcome to take out membership before the commencement of the field-trip. All participants accept that there is some inherent risk associated with outdoor fieldtrips and by attending agree to; a release of all claims, a waiver of liability and an assumption of risk.

3 photos by George Madani
***Litoria rubella* Desert Tree Frog, Nyngan**

Green Tree Frog *Litoria caerulea* in pandanus

Giant Burrowing Frog
Heleioporus australiacus