



The Croaker

Newsletter of the Tablelands Frog Club



Frog of the month
Eastern Snapping Frog
Cyclorana novaehollandiae

February 2007



Tablelands Frog Club

Executive Committee 2007-2008

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DISCLAIMER:

Opinions expressed in this Newsletter are not necessarily that of Tablelands Frog Club.

PUBLIC INFORMATION:

The Croaker is the Newsletter of the Tablelands Frog Club Incorporated. This Newsletter is produced by the voluntary efforts of members. We gratefully accept all contributions, however limited space may mean that contributions are not included immediately, and all are subject to editorial discretion. The TFC newsletter is published bimonthly (i.e. February, April, June, August, October, & December). Newsletter submissions are due on the 15th of the preceding month. Please direct all contributions to The Editor c/o Tablelands Frog Club, at the addresses listed above.

TFC meetings/nights and field trips/outings are held monthly. See schedule for dates, speakers and locations. Annual membership fees are:

- \$15.00 Adults
- \$15.00 Family
- \$ 5.00 Junior/Associate

The Croaker is now available as a PDF to members that have access to email. The PDF version of *The Croaker* is in full colour, and contains more information than mail-out photocopied versions. Email costs less to send out, and doesn't waste paper and other resources, making it good for the Tablelands Frog Club and the environment. To take advantage of this service, contact the Tablelands Frog Club with your email details. You will need Adobe Acrobat Reader to open PDF files. The latest version of Adobe Acrobat Reader is available as a free download from:



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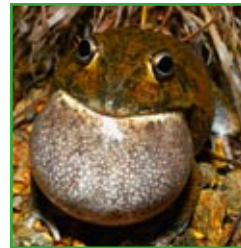
<http://www.tablelandfrogclub.com>

Editorial bullrush!

Hi everyone and welcome to 2008 the international year of the frog. Frogs are an important part of our ecosystem and, I feel, we all should know immediate first aid so that we can get any sick or injured frogs safely to a wildlife rehabilitator. Frogs are being kept in increasing numbers as pets and in zoological and research collections. As we learn more about the diseases that affect these animals, our knowledge of emergency medicine has grown. When faced with an amphibian emergency, the rapid collection of a history, appropriate selection and execution of diagnostics, and immediate administration of critical care will increase the likelihood of a successful outcome. Manual restraint is sufficient to examine most amphibians, however, physical restraint should be kept to a minimum, as it may be poorly tolerated in the critically ill patient. Moistened, powder-free gloves should be used to protect the amphibian's skin from trauma and the handler from secretions. Well-ventilated ice cream, or other plastic containers are good for transporting frogs. You can place damp paper towel in the bottom to reduce dehydration. Then get the animal to an experienced rehabilitator (such as Far North Queensland Wildlife Rescue). Don't forget to write a story for *The Croaker*.

Sorry no Kids Corner in this issue. Unless someone submits something, it will continue to be left out.

Hoppy reading.
Darren Green



Front Cover

Eastern Snapping Frog by Michael Anthony. See Page 4 for this story.

Our Story

The Tablelands Frog Club was formed in January 1995 in Yungaburra by a group of people who were aware of diminishing numbers of frogs in all areas and who were keen to learn more about the species in general. From the outset guidance was available from experts in the field. Since that time public interest has been constant and the Club has grown rapidly. Frog enthusiasts have joined from as far afield as Adelaide in the south to Weipa in the north. The pooling of Club members' expertise in various related fields has helped the Club to become established and recognised within the community. Membership numbers reached 94 within the first year and are still increasing. On November 17, 1995, the Club became incorporated under the Queensland Associations Incorporation Act 1981. The Club now operates under appropriate rules.

What can I do as a member?

The Club needs all the support and enthusiasm you can provide to help us to achieve a better understanding of these much overlooked animals. Some of the rare species are facing extinction at this very moment. We need assistance to address the many problems which threaten the livelihood of these vulnerable creatures by improving our knowledge of their habits and habitat, by enhancing their environment and by educating our children and the public at large on these issues.

Education: The Club offers many opportunities for you to learn about frogs and in turn to educate others.

Research: Grant applications are made by the Club as an incorporated body and research is led by social scientists who provide you with the opportunity to participate in this work. The Club maintains an information database on frog distribution and invites your input.

Protection of frog environment and breeding: The Club provides guidance and knowledge on how to protect and create friendly frog environments and how to set up a breeding programme for common species in your garden.

Our Aims

To study frogs: The Club meets once a month with professional guest speakers and relevant videos. Members are encouraged to participate in general discussion and to introduce items of interest. A mobile library of scientific and general information on frogs is available at these meetings. Members recordings of frog distribution and animal husbandry are collated on a database for research purposes. The Club conducts workshops and field trips with professional guidance. The Croaker, the Club's newsletter, contains scientific information, contributions from both adult and junior members and general business matters of the Club.

To conserve and encourage the preservation of frogs: The Club has a Code of Conduct and abides by the Nature Conservation Act 1992, runs public awareness campaigns through the media, displays static educational material, encourages a 'Frog Friendly' environment and guides members on breeding programmes of common species in gardens and urban parks.

To encourage children's interest in frogs: The Club holds workshops suitable for junior members, runs a section called 'Kid's Corner' in the newsletter aimed at the younger group and conducts various competitions with appropriate educational prizes. The Club also guides children in frog breeding programmes and encourages them, under parental guidance, to participate in suitable field trips.

From the president's lily pad

The wet season is now in full swing, despite some rather dry season-like days of late. As I write there is very heavy rain outside and very few frogs calling – frogs aren't necessarily active when it is actually raining. However when it stops raining look out! The Orange-thighed Tree Frogs (*Litoria xanthomera*) are very common and can be very noisy when they feel like it! Coupled with the Dainty Green Tree Frogs (*Litoria gracilentia*) it can be incredibly raucous out there! I was once asked to go to a large resort to explain to guests that the noise that was keeping them awake at night was actually frogs, not some sound being blasted over loudspeakers throughout the resort in the middle of the night. The staff at the resort were receiving numerous calls in the night being asked to turn the sound down!

Our last meeting, held in Cairns, was very successful with about thirty people attending. Many thanks to Chris Tsilemanis for his efforts in advertising the event, and of course to Marion Anstis, who treated us to a most entertaining presentation on the many interesting and varied frogs and tadpoles to be found over northern Australia. I was stunned by some of the amazing colours and patterns of some of our tadpoles.

We have undertaken some enjoyable field work over the past few weekends with Marion, in her quest to photograph a number of FNQ frog species.

The first weekend we went looking for a nest of the Common Nursery Frog *Cophixalus ornatus*. Adult males and eggs had been previously observed at a site near Innisfail, and while we didn't find these, we did find a pair of Palmerston Buzzing Frogs (*Cophixalus infacetus*). Unfortunately the female hopped away but the male was successfully photographed. We then went up to the Ravenshoe area to look for the Magnificent Broodfrog (*Pseudophyrne covacevichae*). (See field trip report).

The next weekend we visited Nandroya Falls in Wooroonooran National Park, a long-time haunt of the frog club. (see field trip report).

The third weekend we were lucky enough to get to Mt Lewis and despite the conditions not being ideal for microhylids we did manage to find two very interesting specimens (see field trip report).

The next trip, to the Mareeba Wetlands, should once again reveal many frog species, hopefully including our frog of the month, the Eastern Snapping Frog (*Cyclorana novaehollandiae*).

The club has been steadily gaining new members, and we hope that all our regular members are enjoying the club activities, newsletters and the website. Our Annual General Meeting is coming up at the end of March, which means that it is time for membership renewals and also time for everyone to think about getting more involved with the club. While we have a successful newsletter and website, there are still many activities that the frog club can be involved in, such as the frog festival, market stalls at events and educational projects, that need extra help from club members. The committee is there to guide the club along; to achieve any more we need more ideas for projects and more particularly volunteers to carry them out. We hope to continue building on the successes of the past, so the club can continue on into the future.

This will be the last full newsletter from the present committee for this tenure, however there will be a notice for the AGM coming out in March. So thanks to all the committee and members for their support over the past year.

See you all at the next field trip or meeting!
Michael Anthony.



<http://www.tablelandfrogclub.com>

Schedule of events...

Dates, times & localities will be confirmed in the newsletter prior to meetings and field trips.

Meetings...

Friday 15 February 2008 TBA
To be announced.

Friday 28 March 2008 Yungaburra
Annual General Meeting.

April "in the spotlight"
focuses on the

Ornate Burrowing Frog
(*Lyndodynastes ornatus*)

Events...

Field trips...

Saturday 9 February 2008

Mareeba Wetlands - there are 18 species of frog recorded from the Wetlands. We will meet on the corner of the Mareeba/Chillagoe Road and Spring Rd not far out of Mareeba, at 4.30 pm. Walk will start at dusk from the Fasio Rd entrance to the Wetlands.



In the spotlight

Eastern Snapping Frog (*Cyclorana novaehollandiae*)

Details...

Family: Hylidae

Common name: Eastern Snapping Frog; New Holland Frog

Scientific name: *Cyclorana novaehollandiae*

Description: This frog is pale grey, brown or yellowish on its back with darker brown fleck and blotches. Juveniles are often bright green or have green blotches. A dark streak runs from the snout, through the eye and the tympanum (tight membrane covering the entrance to the ear), and down the side of the body. A skin fold runs above this dark streak. A dark bar is usually present below the eye and may extend to the mouth. The backs of the thighs are grey or blue-tinged. The belly is finely granular and white. The skin on the back is smooth or has many tubercles (lumps). The toes are one third webbed.

Size: 100 mm

Habitat: This burrowing frog lives in coastal floodplains, woodlands, forests and savannahs. It usually only emerges after heavy rains.

Call: A deep "waah" or "honk" sound.

Breeding: Males call after heavy rains during spring and autumn, from beside pools of water.

Eggs: Large non-foamy clumps of approximately 1000 eggs are laid in shallow water.

Tadpoles: Are large and dark brown to gold-brown in colour. Tadpoles of this species develop quickly in warm water.

Similar species: This frog can be distinguished from other species of *Cyclorana* by its size and colouration. *Cyclorana novaehollandiae* is suspected to hybridize with *Cyclorana australis* where the ranges of both species meet in northern Queensland.

Conservation Information...

Suspected threatening processes: Direct human impact/urbanisation/tourism; Inappropriate catchment management, including degraded water quality; and Habitat modification (e.g. vegetation clearing, invasive weeds).

Population size: An estimate of the total number of adults present in the species entire range is >50000 individuals. Factors affecting population size and distribution are unknown or unsubstantiated.

Population trend in Australia over the past 50 years: Population trend unknown; no information on habitat changes.

Knowledge of population trend in Australia: Not currently monitored.

Population concentration: Not known to concentrate or exist in discrete locations. (e.g. the number of sites in which individuals group together either seasonally, such as breeding sites, or they may occupy discrete habitat patches within the broader landscape, such as discrete water bodies or drainage units).

Ongoing management activities in Australia: None directed primarily at the taxon.

Reproductive potential for recovery: The average number of eggs deposited per adult female per year is 201-1000 eggs/female/year. Minimum age at which females are known or

suspected to first reproduce is <2 years.

Range size in Australia: The size of the geographic area over which the taxon is distributed: > 1,000,000 km.

Distribution trend: Decline, if any, unknown. (This is an estimate of change in the portion of the total range that is occupied or utilised; it may not equal the change in total range).

Knowledge of distribution in Australia: Broad range limits or habitat associations are known, but local occurrence cannot be predicted accurately.



Source...

Frogs Australia Network.

Map: Global Amphibian Assessment <http://www.globalamphibians.org>

Frogs Australia
NETWORK 

<http://frogsaustralia.net.au/>

Eastern Snapping Frog *Cyclorana novaehollandiae*. Also known as New Holland Frog, Northern Water-holding Frog, and North-eastern Water Holding Frog.

This is the most conspicuous frog of our drier, more open habitats. It is one of the frogs you are most likely to see on the road once you leave the moist coastal and highland forest (the others are the Common Tree Frog *Litoria caerulea* and the Ornate Burrowing Frog *Limnodynastes ornatus*). Unfortunately for many of these frogs, they look like Cane Toads from a distance and I suspect many would be run over on the highway.



Figure 1. Plain *C.novaehollandiae* from Mareeba Wetlands.



Figure 2. Mottled *C. novaehollandiae* from Petford.



In the spotlight

Eastern Snapping Frog (*Cyclorana novaehollandiae*)

Specimens are often found under ground debris alongside cane toads. It is not known whether they prey on smaller Cane Toads.

So you are wondering why it is called the Eastern Snapping Frog? Well so was I until one day I found one and asked this question of the group that was accompanying me. As I was asking the question I put my finger near it and it promptly bit my finger! Question answered!

Eastern Snapping Frogs are a squat, solid frog, growing to approximately 10 cm in length with a wide head & large mouth. See Figure 1.

These frogs are highly variable in colour and pattern. They are usually some shade of brown above, from very pale to chocolate brown to yellowish or greenish and may be plain or mottled. Sub-adult specimens may be bright green. See Figures 2 & 3.

They are at their most active after heavy rains, however they persist on the roads for a long time after the wet season, probably remaining active until it is either too dry or their food source runs low.

When this happens snapping frogs burrow down into the soil and remain dormant, utilising the fat reserves they have built up during their period of activity, and the large supply of water they have ingested prior to going 'down below.' Their moulted skin forms a cocoon around them, leaving the only contact with the outside the nares (nostrils) to enable the frog to breathe while reducing water loss. This behaviour along with the ability to drastically slow their metabolism, allows the frog to survive considerable periods, until enough rain has fallen to allow the frog to once again return to the surface to breed and feed up again.

Male frogs appear to start calling as soon as there is enough water to breed in (see cover photo and Figure 1 for calling). When enough rain falls to filter down to the depth where the frog has burrowed is the signal that there has been enough rain for the formation of the temporary pools and streams in which it breeds. They only breed once, at the start of the wet season – the rest of their stay above ground is spent feeding, to build up the fat reserves that will see it through to the next wet season. See Figure 4 for a pair in amplexus.

Males call from right at the edge of the water. All the other frogs which utilise temporary pools & streams to breed keep their distance from snapping frogs as they are extremely voracious, eating virtually anything that moves including other species of frog. Captive specimens are known to eat mice.

They can occur in large numbers; the sound of large numbers of these frogs calling can be heard for very long distances.

Females lay up to 1000 eggs in slow moving or still waters. The eggs and tadpole can survive in rather warm water, which also speeds up their development. This is important as many of the temporary waterbodies in which they breed may also dry up very quickly. Large numbers of tadpoles can sometimes be found. One shallow lagoon contained many thousands of tadpoles swimming around the shallows. Many of these were feeding upon termites from submerged broken mounds (probably stepped on by cattle). Also amongst these tadpoles was a very pale, almost albinistic individual (see Figure 5). Metamorphlings from Karumba are shown in Figure 6.

AUTHOR: Michael Anthony.

PHOTOS: Michael Anthony.



Figure 3. Green sub-adult specimen from Mareeba Wetlands.



Figure 5. Pale tadpole from Goose Lagoon west of Croydon.



Figure 4. Amplexing pair from Mt Carbine area.



Figure 6. Metamorphlings from Karumba.



TFC January Meeting

The Tablelands Frog Club January 2008 meeting was held in Cairns. The meeting was widely advertised and as a result attendance was good. Of course the guest speaker alone attracted many from far and wide. Marion Anstis presented the Frogs & Tadpoles of Northern Australia. Marion is an incredibly knowledgeable and dedicated frog expert, and author of two great books – the *Frogs & Tadpoles of South-Eastern Australia* and the children's book *Frogs & Tadpoles of Australia*. Marion is currently visiting north Queensland to look at our amazing frog fauna, and kindly took time out to give a talk to Tablelands Frog Club members and guests. Marion's presentation was informative with plenty of fantastic photos of frogs and tadpoles. While many frogs are familiar to us all, some of her photos included new and undescribed species. Furthermore, tadpoles are something we don't always get to see, and I was pleasantly surprised to see the variety of patterns and colours. For those TFC members that missed this incredible night, here are some brief notes taken from the night...

Marion Anstis presented the Frogs & Tadpoles of Northern Australia, giving an insight into some of the common and not so familiar frogs and tadpoles of our region. She spoke of frog and tadpole biology, taxonomy, ecology, and functions and forms of tadpoles. Tadpole identification comes down to a combination of examining mouth parts, including size and shape, eye locations, tail shape, and colour patterns. From these features we can also determine where the tadpole prefers to dwell, be it shallow pools or fast flowing riffles, as well as suggesting if they are bottom or surface feeders. The colour and patterning also aids in camouflage from predators.

Marion began the evening with the burrowing frogs in the *Cyclorana* genus. The colour morphs of these species are quite variable between individuals, and also as they change from juvenile to adult. They are large frogs with fat tadpoles. In this genus tadpoles are hard to distinguish, and features of the mouth, particularly the lower jaw, help recognize each species. Many of these frogs have beautiful patterns, as shown in Marion's photos. The Eastern Snapping Frog, with its large mouth is a predator of other frogs. This is true of tadpoles as well. As there is often a short growing season during the wet, they need to grow and develop quickly. Hence, they consume protein rich meals, like insects or other tadpoles, or scavenge the waterways for dead animals.

True ground frogs have the greatest variety of reproduction in Australia. They lay eggs in a wide range of environments, for example under leaves or rocks, around vegetation, or in frothy clumps. The true ground frogs include the tiny *Crinia*, the barred *Mixophyes*, the *Taudactylus*, and the largest group, the *Limnodynastes*. The latter group have darkly coloured tadpoles, but are distinguished from Cane Toads by their larger size. According to Marion, Cane Toad tadpoles have black bellies, large nostrils when compared to our native species, and are often seen in large schools.

Notaden are a spectacular, yet unusual frog. They feast upon ants, hence their eyes are located close to the snout to enable them to see the ant trails at close range. Marion suspects they can hear, or pick up vibrations from the ants as the frogs come out of their burrows when ants are above. These frogs live in rocky escarpments, possibly in crevices as suggested by their tough skin, and breed in rock pools. The tadpoles are plump and can survive extreme temperatures above 40 degrees Celsius.

Uperoleia frogs include such species as the Montane Froglet from the Tablelands, as well as the Stonemason Froglet. Others are possibly extinct, and maybe never to be seen again. This may be a project for TFC members, or at least a future field trip.

The second part of the meeting Marion devoted to the tree frogs. She divided the tree frogs into two types – those that climb trees, and those that are ground dwelling. The tree and ground dwelling habits are reflected in the toe discs, with tree dwelling species having larger discs. The tree dwelling frogs include the familiar Green Tree Frog, Northern Sedge Frog and the Cave Tree Frog, amongst many others. Of interest was the way Marion described how these frogs call, and the way the throat sac amplifies the sound.

Marion also acknowledged tree frogs that she described as stream-dwellers, notably the Waterfall Frog, Common Mist Frog, Australian Lace-cid, and the new species called the Kimberly Rock Frog. The tadpoles of these frogs are adapted to the fast flowing water, being streamlined in shape with large mouth parts that are used for holding on to rocks in swift currents.

The final part of Marion's presentation included the *Microhylids*, those cryptic frogs notable to northern Queensland. The Ornate Nursery Frog, and others like it, don't have free swimming tadpoles, but rather the tadpole stage occurs in a jelly-like egg. Males generally stay with the eggs, and it is believed that secretions from the adult prevent fungus occurring in the eggs. Here Marion relied upon museum egg specimens to photograph, and would like to here from anyone that has live specimens. You can contact her via Michael Anthony. The close-up photography showed developing frogs, what can I add here but to say amazing! The *Microhylids* also include the Tapping Nursery Frog and Beautiful Nursery Frog, both of which are found on Thornton's Peak. I feel another need for a field trip here.

After the presentation, we had the opportunity to pick Marion's brains and many questions were fired from all directions. I was expecting her to run for cover, but like the professional she is, answered all to everyone's satisfaction... indeed perhaps more than to our satisfaction. After supper certificates of attendance were signed and handed out and the evening ended with a spotlighting trip at Centenary Lakes. A big thanks to Marion Anstis from all those that attended.

AUTHOR: Darren Green.



Biker frog

Oui the frog sits on a miniature motorcycle in the eastern beach town of Pattaya January 10, 2008. Oui's owner says Oui loves playing with human toys and posing for photographs. REUTERS/Sukree Sukplang (Thailand)

REUTERS



Amphibian news...

2008 declared Year of Frog to save amphibians

LONDON, Aug 31 (Reuters) - Conservationists from around the world have declared 2008 the Year of the Frog to highlight their new campaign to save threatened amphibians from extinction. The World Association of Zoos and Aquariums (WAZA) said on Friday that up to half of amphibian species could be wiped out in coming years through habitat loss and climate change -- the biggest mass extinction since dinosaurs disappeared.



"It's imperative that the world zoo and aquarium community plays an active role in working to save the planet's critically endangered amphibian species," said WAZA president Karen Sausman following the decision at a meeting in Budapest.

As part of the campaign, which needs to raise up to \$60 million in funding, WAZA also set up a petition calling on all governments to take action to beat the amphibian crisis and agreed to an Amphibian Ark captive breeding programme. "It's both our obligation and our privilege to help these glorious animals. We invite all people around the world to help amphibians survive by signing our global petition and contributing to fund this initiative," Sausman added. The programme will bring priority amphibian species into dedicated facilities at zoos, aquariums, and other institutions around the world for safekeeping and breeding. The creatures will be released back into the wild when the original threats have been controlled.

WAZA, founded in 1946, is the umbrella organisation for 237 major zoos and aquariums as well as 24 regional or national federations representing a further 1,100 zoos and aquariums. IUCN, the World Conservation Union, which is taking part in the Amphibian Ark programme, said 1,856 of the 5,743 known amphibian species were threatened with extinction. WAZA, which hopes its petition will be signed by the millions of people who visit zoos and aquariums each year, appointed world renowned British naturalist David Attenborough as patron of the Year of the Frog. "Without an immediate and sustained conservation effort to support captive management, hundreds of species of these wonderful creatures could become extinct in our own lifetime," he said. "But implementation calls for financial and political support from all parts of the world."

AUTHOR: Jeremy Lovell

SOURCE: Reuters, 31 August 2007.

Chemicals linked to lost frogs

AGRICULTURAL chemicals have been linked to the collapse of frog populations, which experts have previously attributed to a combination of climate change and a deadly fungus. Brisbane environmental consultant Glen Ingram, who has studied some of the eight Queensland frog species that have become extinct since the late 1970s, said: "There is a growing view that pesticides have a role in the extinctions of these frogs. "People had assumed it was a fungus, probably being spread by global warming. Now, we're not at all sure."



Scientists have previously highlighted the extinctions of dozens of frog species worldwide as a dramatic indication of the consequences of climate change arising from increased greenhouse emissions. Many frogs have been killed

by the chytrid fungus, which infects their skin, impairing their breathing and nervous systems. However, the fungus can be harmless to frogs and some experts claim it has become deadly because of climate change. They suggest that increases in cloud cover, temperature or ultraviolet radiation have spread the fungus. However, several recent studies in California implicated chemicals in frog population declines. California has experienced similar collapses in frog populations to Australia. Four pesticides and herbicides identified in the studies are used widely in Australia. Californian biologist Gary Fellers, of the Western Ecological

Research Centre, who has participated in some of the studies, said pesticides could be a more significant factor in frog declines than the chytrid fungus. "The role of the fungus is not well understood in many areas, including some of the places where scientists have declared it to be the primary or only factor causing amphibian declines," Dr Fellers told The Weekend Australian. "The fungus might not be the whole story." Queensland's wave of frog extinctions began in the late 1970s, at the same time as organochlorine chemicals such as DDT were being phased out. The organochlorines were replaced by organophosphorus and other chemicals. The Californian studies have implicated three organophosphorus pesticides and the herbicide atrazine in frog population declines. All four chemicals are used widely in Australia. Limited sampling in Australian rainforest streams in the early 1990s where frogs became extinct failed to find evidence of chemicals. However, one of the scientists who collected samples, Ross Alford of James Cook University, said chemicals would not necessarily have been detected.

"Chemicals with potentially strong effects could be there at levels we wouldn't have detected," Dr Alford said. "The studies we need haven't been done." In California, chemicals were found to have drifted long distances from agricultural areas to pristine mountain frog habitats. "It is plausible that this has happened here," Dr Alford said. "There have been huge increases in the quantities of plastic PCBs, pesticides and all sorts of chemicals being generated."



Griffith University researcher Jean-Marc Hero, who has conducted several studies into chytrid fungus in Australian frogs, said he was convinced the fungus was not acting alone. "Whether it's agricultural chemicals or climate, there is a good possibility that something else is going on," Dr Hero said.

AUTHOR: Greg Roberts

SOURCE: The Australian, 5 January 2008.

PHOTO: Griffith University's Jean-Marc Hero says chemicals may have wiped out frog species in Queensland (photo by Lyndon Mechielsen).

Scientist finds billion-dollar frog

KISSING this frog won't produce a prince, but experiments into the way it defends itself could produce a princely sum. Mike Tyler discovered the unusual abilities of the notaden frog - also known as the holy cross frog or crucifix frog - by accident. He found that the "big, fat and lumbering" creature - commonly found in Australia's driest areas -- secretes a fast-drying "frog-glue" when under attack. Ants are its biggest enemy and when the insects bite it the sticky fluid sticks the ants to its skin.

The frog can then shed its own skin, ants and all. The substance is non toxic and could revolutionise the way human wounds heal. "I was collecting these frogs and they excreted this material over my fingers" Professor Tyler, from Adelaide, said yesterday. After numerous attempts to wash the sticky substance off his fingers, Mr Tyler eventually had to scrape it off with a knife.

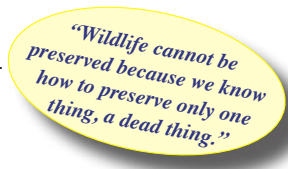


It inspired him to examine the glue further. He took a few samples to the University of Adelaide and found it was non-toxic, set rapidly and adhered to a range of materials including flesh, cartilage, wood, plastic, glass and even beer cans.

Scientists hope to create a synthetic version of the glue. The CSIRO estimated the market potential for use in wound closure was more than \$1 billion, and for hemostats (agents that stop bleeding), more than \$3 billion.

AUTHOR: Dajana Dijic

SOURCE: <http://www.news.com.au>, 12 July 2005.



Reuters Quickcut: Frog wedding

In a video available from Reuters, superstitious villagers in northern India arrange frogs' marriages to invoke heavenly bodies for rain. Drought-stricken villagers in India's northern state of Uttar Pradesh on conducted frog- marriages, hoping to appease the heavenly bodies to end a three-year long dry spell. It is a prevalent belief in Sonbhadra, like other tribal villages in Uttar Pradesh, that marriage of frogs pleases the Rain Gods, and brings good rains and good crops. Reuters QuickCut is a video snapshot of the most compelling and quirky images from around the world. The video is available at <http://www.reuters.com/news/video?videoid=37124>





Amphibian news...

Freddo Frog inventor dead

A FREDDO Frog flag will be draped over the coffin of the man who invented the Australian chocolate icon more than 70 years ago. Harry Melbourne, who thought up the idea of the chocolate frog named Freddo when he was an 18-year-old, has died aged 94. He was working for confectionary maker MacRobertson Chocolates in 1930 when he told his boss a frog shaped chocolate would be a better seller than one that looked like a mouse. "I told Macpherson Robertson (the owner of MacRobertson Chocolates) that women and children were afraid of mice, and it wouldn't sell," Mr Melbourne said in 2000. "He wanted to start making a new penny chocolate, and I overheard him say: 'I'm thinking of a mouse'," he said. "I was never backward in coming forward and I just piped up.

"Sir Macpherson just looked at me - this 18-year-old moulder - and I thought I'd lost my job.



"But he said: 'I'd like to see one - make one up and bring it over to my office'.

"I did, and three days later the marketing manager said I had backed a winner."

More than 70 years later his great granddaughter Tamika Melbourne, aged three, also declared the chocolate frog "very good".

Harry Melbourne junior said he, too, was a fan of his father's invention and they always had Freddos at home. "We always had lollies, we always had chocolates and it was amazing, we were never short of them," Harry Melbourne jnr told the Ten Network.

While daughter Leone Wandin remembers being popular at school because they were never short of chocolate frogs. "We had the best mates at school ... we had lots of friends, it was unreal," Mrs Wandin said. Despite inventing the Freddo Frog, Mr Melbourne never earned a cent from it. "They sell 98 million Freddo Frogs a year in Australia alone," he said. "Even with a cent a frog I would have been a multi-millionaire, but that's not the point. "Freddo was created out of love for the firm ... we were just one big happy family at MacRobertson's."

Today Freddo Frogs, which are now made by Cadbury, come in several flavours, including the original milk chocolate, strawberry and peppermint. Mr Melbourne passed away last Wednesday in a Melbourne nursing home. And when he's farewelled at a funeral on Tuesday, his coffin will be covered with a Freddo Frog flag.

AUTHOR: Shelley Markham

SOURCE: <http://www.news.com.au>, AAP, 28 January 2007.

Frozen frog thawed back to life

A TREE frog has miraculously survived after being frozen rock solid. The tiny frog was found covered in a layer of ice in a walk-in freezer - set at -18C - at a Darwin cafeteria. When put out to defrost it fully recovered and started breathing. "I couldn't believe it," Sue Hoddinott, who found the amphibian, said. "He was completely frozen rock solid. When I found him I thought 'Poor little thing', and I went to put it in the bin. But a friend said not to, as she had seen on TV that they can come back to life when defrosted. I told her she had been watching too many movies, but I did it anyway. She ran her finger over his back to wipe the ice off and he started breathing again -- it was amazing."

Ms Hoddinott, 47, of Karama, is a chef at Charles Darwin University. The frog was thawed back to life on Monday morning but its frost-bitten toes and feet are not functioning. FrogWatch NT co-ordinator Graeme Sawyer said it was an unusual story. But he did not rule out the possibility of a frog being revived after it was frozen. "I've never heard of it happening with Australian species but there are American frogs that can be defrosted and come back to life," he said. Mr Sawyer said the tree frog looked like the *litoria rothii* species. "(But) it may be an import from Queensland or somewhere," he said. "If it was in a freezer it may have come in the same way the 'banana box frogs' turn up at markets around Australia."

SOURCE: <http://www.news.com.au>, 8 December 2006.

Six-legged frog is star attraction

A Chinese restaurant has found a six-legged frog - and is keeping it to attract diners. The frog is on display in a glass tank at the restaurant in Quanzhou city, reports People's Daily. "I bought more than 5 kilos of frogs from the market the other day, and upon coming back found that one of them has six legs," says chef Xiao Song. The frog has two extra legs on the front left side which, according to waiters, means that it has a lopsided hop. Experts at the local forestry department say the extra legs were most likely caused by genetic mutation.

SOURCE: http://www.ananova.com/news/story/sm_2595330.html



Shoppers mad over frog dissection kit

ON the first day of Christmas my true love gave to me...a frog dissection kit? Shoppers at upscale US menswear and accessory store Jack Spade in Manhattan's trendy SoHo district were hopping mad to see frog dissection kits selling alongside \$775 (\$A1005) leather file cases and \$145 (\$A188) Italian calfskin passport holders. The \$40 (\$A51) kit came in a cloth bag complete with a vacuum-sealed formaldehyde-treated frog, scissors, magnifying glass, forceps, probing sticks, ruler, instruction booklet on how to explore the animal's innards, and a moist towelette.

After a barrage of complaints from shoppers and animal activists, the store said on that it had cleared its shelves of the kits and would no longer offer them. "We're going to issue an apology," company spokesman Mordechai Rubinstein said. "The intent was to celebrate science and biology, present something educational for children and adults," he said. "Jack Spade doesn't support the unethical treatment of animals."

Animal campaign group People for the Ethical Treatment of Animals said it wrote to the company last week after receiving complaints about the product. "We were shocked to discover that the dissection kit contains the carcass of a real frog," spokesman Michael McGraw said. The Jack Spade store said it only sold a handful of the kits before ditching the idea.

SOURCE: <http://www.news.com.au>, Reuters, 22 November 2006.

Remember 2008 is the international "Year of the Frog." Go to <http://www.aark.org> for more information.



Amphibian news...

2008 Year of the Frog Frog (after all it is a Leap Year.)

Ten Very Good Reasons To Get Involved !

- Amphibian species are becoming extinct at a pace faster than anything we have experienced.
- Nearly one third of all amphibian species are threatened.
- Many people do not know that amphibians are declining and how threatened they are.
- Amphibians are indicators of environmental health, important components of ecosystems.
- Amphibians are contributors to human health they provide vital biomedicines, including compounds that are being refined for analgesics and antibiotics.
- Amphibians are suitable for captive breeding programs and if every zoo in the world rescues one species, the goal can be achieved.
- This is a unique challenge to prove that zoos and aquariums and botanical gardens are valid conservation partners. Zoos in particular play an important role in providing ex-situ breeding grounds for immediate conservation action
- The amphibian extinction crisis provides an opportunity to engage your local community.
- Success at this global collaboration lays the groundwork for other global collaborations for conservation.
- The WAZA members have a unique opportunity to join a global conservation Campaign.

The main goals for the 2008 YOTF Campaign are:

- To engage the public in amphibian conservation and gain financial support for AArk activities.
- To create partnerships among Zoos, Aquariums, Botanical Gardens, private and public institutions (universities, etc) around the world to ensure the global survival of amphibians.
- To raise funds for implementing the ex situ aspects of the ACAP (Amphibian Conservation Action Plan).
- To highlight ways in which the public can make positive contributions to conservation through activities in their daily lives.
- To draw the attention of zoos towards the importance of amphibian ex situ conservation.
- To stimulate a sustained and long-term interest in amphibian conservation and related interactions with the wider environment.
- To raise increased awareness about the protection of biodiversity through the conservation of amphibians.
- To strengthen zoo communities as fund raisers and global promoters of conservation.
- Possibilities for long-term relationships and partnerships

2008 YOTF Campaign participants are invited to commit themselves to ex-situ conservation programs also after the campaign year. The organizers set high hopes on the success of this scheme. Please consider a longer-term participation and join!

HerpDigest Editor - And though no one at AARK wants to recognize it I think February 29 should be "Leap Frog Day.") Schedule events, tell your local media telling them you thought it was an fitting day, even though you will have many more frog events all year. And have a list ready.) HerpDigest is trying to develop a special set of magnets of rare frogs to raise money. Suggestions of what frogs should included are still open. Frogs already gone, frogs really close to extinction, frogs in ex-situ or in-situ programs. Please include information. And if possible photos for the artist to base his his drawings on. Send it all to asalzberg@herpdigest.org

Go to <http://www.aark.com> for more information. See what you can do. What your local zoo, aquarium or nature center is doing.

SOURCE: HerpDigest.

Frog closes forest area

Tiny Amphibian Barely Surviving (Mountain Yellow-Legged Frogs, One of the Rarest Frogs in the U.S.), by Elise Kleeman, Staff Writer-Pasadena Star News (01/06/2008).

High in the San Gabriel Mountains above Azusa, a tiny population of mountain yellow-legged frogs cling to existence. Less than 3.5 inches long with speckled olive brown backs and buttercup yellow undersides, they are one of about eight small groups of the frogs scattered in isolated mountain streams throughout Southern California. Biologists estimate fewer than 100 of these endangered amphibians exist in the wild.

"In the case of a population of animals like the frog, the interest is in protecting the individual animals one by one. If even one is threatened, that's a problem," said John Capell, district ranger for the Santa Clara/Mojave Rivers District of the Angeles National Forest. But for this group of frogs, protecting them is easier said than done. Their home stream is crossed by the Pacific Crest hiking trail and abuts Williamson Rock - a once wildly popular rock-climbing destination. For now, though, Williamson Rock stands quiet, and that stretch of the Pacific Crest Trail is empty.

While the U.S. Forest Service searches for a way to accommodate both man and beast, they have announced the closure of 1,000 acres of forest surrounding the creek for the third year in a row. "It's a challenge ... to both protect the frog and its habitat as well as providing the outdoor recreating activities that the owners of the national forest are seeking - and by owners, I mean the people of the United States," Capell said. "I feel confident that there is a solution in there. We just have to find it."

The Forest Service, working with the U.S. Fish and Wildlife Service, is now in the midst of an environmental analysis of the frogs' habitat and of alternatives to the 1,000-acre closure. But the lengthy process has begun to wear on climbers. Some have banded together to form the nonprofit Friends of Williamson Rock to work toward a solution. "The climbing community is pretty frustrated," said Troy Mayr, the group's president. "Even within the Friends of Williamson group, people want to know what's going on. They want to know if we're just being strung along or if we're going to get the crag back open."

On busy summer weekends, the outcrop's mild weather, close proximity to Angeles Crest Highway and approximately 300 established climbing routes once drew hundreds of climbers, Mayr said. "It's the single most popular climbing area in Southern California in the summer months. It even attracts international visitors," he said. But to reach the steep rock faces, climbers must cross the amphibians' home, Little Rock Creek. Some popular climbing routes overhang the seasonal stream. Mayr argues that even those routes do not disturb the frogs. "The frogs are quite a ways upstream, more than a quarter of a mile, and significantly downstream as well, more than half a mile," he said. "We are sympathetic to the little creature. We'd like to see it make a strong comeback. But at the same time we don't feel like we have any effect on it."

Nobody's quite sure what brought about the decline of the frog population and that of their close cousins, a species of mountain yellow-legged frog living in the Sierra Nevada. In all, mountain yellow-legged frogs are now gone from more than 90 percent of their habitat, said Ronald Knapp, a biologist at UC Santa Barbara's Sierra Nevada Aquatic Research Lab. Though "probably the most common vertebrate in all the Sierra Nevadas" at the turn of the 20th century, Knapp said, the species' decline even during the 12 years he has monitored it has been "mind boggling."

Scientists now know that the introduction of predatory trout into the frogs' home streams and lakes have decimated some populations. "Until about six or seven years ago, we thought that fish were the primary cause of decline, but it's increasingly obvious that there's something else going on," said. It was then that the presence of chytrid was discovered. This "incredibly lethal" fungus attacks the thin, permeable skin of amphibians, Knapp said, impairing their ability to breathe. The wave of chytrid is still marching through the frog populations in the Sierra Nevada, unleashing a wave of disease and death. "I'm talking about hundreds of frogs dying, carcasses all over the place," he said. "It's just such a virulent disease, the likes of which we've never seen in the human population."

Because the fungus is ubiquitous, Knapp said, "eliminating it is completely out of the question, in my mind. Our only hope is resistance developing." In Southern California, the biological destruction is compounded by habitat alteration, he said. For those trying to save the last remaining frogs, it is an uphill battle on many fronts.

Remember 2008 is the international "Year of the Frog," not to be confused with the Chinese year of the rat.



Amphibian news...

EDGE Amphibians: world's weirdest creatures just got weirder

ScienceDaily — A gigantic, ancient relative of the newt, a drawing-pin sized frog, a limbless, tentacled amphibian and a blind see-through salamander have all made it onto a list of the world's weirdest and most endangered creatures. ZSL EDGE programme is highlighting some of the world's most extraordinary creatures currently threatened with extinction. This year ZSL scientists have assessed all amphibian species according to how Evolutionarily Distinct and Globally Endangered (EDGE) they are. "The EDGE amphibians are amongst the most remarkable and unusual species on the planet and yet an alarming 85% of the top 100 are receiving little or no conservation attention and will become extinct if action is not taken now." Helen Meredith, EDGE Amphibians coordinator, commented. "These animals may not be cute and cuddly, but hopefully their weird looks and bizarre behaviours will inspire people to support their conservation." ZSL has identified and is starting work to protect ten of the most unusual and threatened EDGE amphibian species this year, including:

Chinese giant salamander

(salamander that can grow up to 1.8m in length and evolved independently from all other amphibians over one hundred million years before Tyrannosaurus rex).

Sagalla caecilian (limbless amphibian with sensory tentacles on the sides of its head).

Purple frog (purple-pigmented frog that was only discovered in 2003 because it spends most of the year buried up to 4m underground).

Ghost frogs of South Africa (one species is found only in the traditional human burial grounds of Skeleton Gorge in Table Mountain, South Africa).

Olm (blind salamander with transparent skin that lives underground, hunts for its prey by smell and electrosensitivity and can survive without food for 10 years).

Lungless salamanders of Mexico (highly endangered salamanders that do not have lungs but instead breathe through their skin and mouth lining).

Malagasy rainbow frog (highly-decorated frog that inflates itself when under threat and can climb vertical rock surfaces).

Chile Darwin's frog (a frog where fathers protect the young in their mouths, this species has not been officially seen since around 1980 and may now be extinct).

Betic midwife toad (toads that evolved from all others over 150million years ago – the males carry the fertilised eggs wrapped around their hind legs).

Dr Jonathan Baillie, Head of the EDGE programme, commented, "Tragically, amphibians tend to be the overlooked members of the animal kingdom, even though one in every three amphibian species is currently threatened with extinction, a far higher proportion than that of bird or mammal species. These species are the "canaries in the coalmine" – they are highly sensitive to factors such as climate change and pollution, which lead to extinction, and are a stark warning of things to come. If we lose them,

other species will inevitably follow. The EDGE programme strives to protect the world's forgotten species and ensure that the weirdest species survive the current extinction crisis and astound future generations with their extraordinary uniqueness."



PHOTO: The Chinese giant salamander can grow up to 1.8m in length and evolved independently from all other amphibians over one hundred million years before Tyrannosaurus rex (Credit: Image courtesy of Zoological Society of London).

EDGE (Evolutionarily Distinct and Globally Endangered) animals are those with few close relatives and are highly distinct genetically. These animals are also extremely endangered and desperately in need of immediate action to save them from becoming extinct. By mathematically combining a measure of each species' unique evolutionary history with its threat of extinction, the scientists are able to give species an EDGE value and rank them accordingly. In January 2007, the EDGE team assessed all mammal species and released the list of the top 100 EDGE mammal species. The scientists have now done the same for all amphibian species (frogs, salamanders and caecilians) and have found that 85 of the top 100 are receiving little or no conservation attention. Amphibians are declining as a result of a range threats including habitat destruction, pollution, climate change and disease. Scientists at the Zoological Society of London (ZSL) are currently researching the diseases affecting amphibians, with

particular focus on the chytrid fungus, which is implicated in mass mortality events globally.

SOURCE: Zoological Society of London, ScienceDaily 25 January 2008.

AVAILABLE: <http://www.sciencedaily.com/releases/2008/01/080124132336.htm>

Tools for Amphibian and Reptile Conservation

Registration for the 2008 SEPARC Annual Meeting is now open!

February 21-24, 2008/The University of Georgia/Athens, GA.

The Warnell School of Forestry and Natural Resources is proud to host the 2008 SEPARC Annual Meeting. Events for the 2008 meeting are organized around the theme "tools for amphibian and reptile conservation", and will include an organized symposium covering land use and management, habitat protection, coastal conservation, relocations and headstarting, emerging infectious diseases, tools for monitoring and inventory, and outreach. The 2008 meeting will also offer a range of workshops on land acquisition and management for conservation, web tools for inventory and monitoring, detection and diagnosis of diseases, estimating species detection for assessing and planning wildlife inventories and research, and how to be effective at outreach. To continue to promote the importance of research and participation by graduate students and other professionals, there will be a poster presentation and social. All participants are encouraged to submit abstracts and present their work at the meeting. The 2008 meeting will also feature Sunday field trips to The Jones Center at Ichauway, Savannah River Ecology Lab, Pigeon Mountain, and Ft. Stewart. Finally, no trip to the classic city is complete without some soul food, so all 2008 meeting registrations will include a ticket to the SEPARC Soul Food Banquet. For more information, registration costs, deadlines, etc go the separc website page <http://www.separc.uga.edu>
SOURCE: Unknown.



Amphibian news...

Amphibian skin agent may battle multi-drug resistant bacteria

Researchers from Italy found that a naturally occurring agent in frog skin may inhibit multi-drug resistant bacterial strains associated with hospital-acquired infections. Resistance to current antibiotic therapies is on the rise in both hospital and community settings. With some bacterial strains now resistant to every available drug, a return to the preantibiotic era in regard to such infections is cause for great concern. Researchers have identified antimicrobial peptides (AMPs) as one of the most promising candidates for future therapeutic use and they have found amphibian skin to be one of the richest sources of such AMPs.

Nosocomial infections are linked to various drug-resistant bacterial strains and are commonly acquired in a hospital setting as a secondary illness. In the study researchers tested five AMPs (temporins A, B, and G, esculentin 1b, and bombinin H2) from three different frog and toad species (*Rana temporaria*, *Rana esculenta*, and *Bombina variegata*) for antibacterial activity against multi-drug resistant strains often associated with human nosocomial infections. Initial results showed that all the peptides



acted as antibacterial agents against the species tested. Further studies found that the temporins were more active against gram-positive bacteria; esculentin 1b produced an antibacterial response within 2 to 20 minutes of exposure, and bombinin H2 displayed similar activity toward all bacterial isolates.

"This peptide is an attractive molecule for use in the development of new compounds for the treatment of infectious diseases," say the researchers.

REFERENCE: Mangoni, M.L., Maisetta, G., Luca, M.D., Gaddi, L.M.H., Esin, S., Florio, W., Brancatisano, F.L., Barra, D., Campa, M. & Batoni, G. (2008) Comparative analysis of the bactericidal activities of amphibian peptide analogues against multi-drug-resistant nosocomial bacterial strains, *Antimicrobial Agents & Chemotherapy* 52(1): 85-91.

SOURCE: ScienceDaily 23 January 2008.

AVAILABLE: <http://www.sciencedaily.com/releases/2008/01/080122102502.htm>

Off-the-shelf disinfectants kill devastating frog fungus

James Cook University scientists have discovered that a commercially available disinfectant can kill the deadly chytrid fungus, which has wiped out several Australian frog species. Chytrid fungus (*Batrachochytrium dendrobatidis*) causes chytridiomycosis, a highly infectious amphibian disease that results in increased skin shedding and death. It was first discovered in dead and dying frogs in Queensland in 1993, and researchers have been racing to find ways of containing it.

Dr Lee Skerratt from James Cook University says the fungus had led to the extinction of up to 122 frog species, including eight in Australia. "Some of the species that have been lost were unique," says Dr Skerratt. For example, the remarkable gastric brooding frogs, that swallowed their eggs which then developed into young in their stomach before hatching out the adult's mouth, have gone.

The university's scientists have been testing a range of commercially available disinfectants for their effectiveness in killing the fungus. So far 'TriGene' and 'F10' are more effective than two previously recommended DDAC (didecyl dimethyl ammonium chloride) products because they are active at much lower concentrations and appear to have no record of environmental toxicity. The disinfectants effectively clean equipment for handling amphibians or that has been in contact with contaminated water bodies.

The team is also investigating how chytrid fungus causes frog deaths, as well as mortality rates, transmission rates, differences in species susceptibility, and the spread and origin of fungal strains.

SOURCE: *ECOS* April-May 2007:6.

PHOTO: A great barred frog infected by the killer fungus (CSIRO Science image).



After Drought, Diversity Dries Up And Ponds All Look The Same

Jonathan M. Chase, WUSTL associate professor of biology in Arts & Sciences, and director of the university's Tyson Research Center, created 20 artificial ponds out of tanks that hold 300 gallons of water. He made each pond community exactly the same in their environmental conditions, but varied the timing in which he added many species to the community—lots of species, especially dragonflies, water-bugs, frogs, and even algae, happily colonized the ponds on their own accord.

As the communities thrived, most of the ponds diverged from each other—some had only between 10 and 20 percent of species in common with other ponds. This factor was due to stochasticity, or randomness—a plant introduced by a seed dropped from a duck, a frog having a lucky day, for instance. But then Chase, having played beneficent god, played pernicious god, adding drought, normally random in nature, to one-half of the pond environments. "After the drought, the communities converged, and every community looked similar to each other," said Chase, who studies community assembly, among other areas of ecology. "It's understandable that only certain kinds of species can stand the drought. When it comes to drought, there are wimpy species and hardy species. Several types of zooplankton, many water-bugs, and some frogs are the hardy ones. A wimpy species, perhaps surprisingly, is the bullfrog. Their tadpoles require two years to grow, so they often don't rebound very well from drought."

Some of the zooplankton have resting eggs that are deposited in mud. They rebound well when the ponds refill. Some frogs leave the pond when it dries up. Lots of different types of algae and one or two species of plant make it through, including one annual plant that makes lots of seeds, so when the pond refills again, it's ready to flourish. These tough species are incumbents, which gives them an advantage when the ponds refill. They can rebuff some of the new colonists. Niches get filled in the pond and colonists trying to join the club either go elsewhere or die. "Drought homogenizes the variance among communities," Chase said. "It takes all these communities that used to be very different from each other and makes them very similar to each other. That's a very much underappreciated part of biodiversity."

Chase's findings are important to the study of biodiversity because he analyzed ponds both locally and regionally. A local analysis measures alpha diversity, which is the analysis of all the species in one pond. Chase, on the other hand, measured beta diversity, which measures the difference among ponds. If before the drought each pond had 10 species but only shared five in common, that difference is beta diversity. "I found drought had less than a 10 percent reduction on local diversity, but a nearly 50 percent reduction on regional diversity. This is important because if you just count the number of species in any given pond you might say that drought had little effect on species diversity. But if you take exact data and you ask: Did drought affect regional diversity? I found it had a huge effect on regional diversity."

Most diversity studies only have looked at local communities, which in many cases rebound very quickly following disturbances. Thus, ecologists trying to restore wetlands, prairies, or forests, could get the impression that all that is needed is to "build it and they will come." But Chase's findings show that community assembly can sometimes be much more random than that. Chase's results have implications for wetland mitigation projects, which are often required by law. If a hundred acres of wetlands have been taken out by agriculture or a mall development, those one hundred wetland acres have to be created some place else. Ecologists are not sure exactly how to build functioning wetlands in the same way as the previous one, which had been assembled thousands of years ago. His findings give researchers better clues of how to go about restorations to restore biodiversity at both local and regional scales. "I would argue that this has important implications for how to go about restoring and creating wetlands, and that in particular, we need to think about the role of stochasticity, leading to beta diversity among otherwise similar habitats, when we restore habitats." Chase's research was published in the Oct. 15 issue of *Proceedings of the National Academy of Sciences*. The National Science Foundation funds his work.

SOURCE: Unknown, Washington U in St Louis, 17 October 2007.



Amphibian news...

Fungus breakthrough!

Frog killer fungus 'breakthrough' for amphibians (Chytridiomycosis) but the Zoological Society of London (ZSL) expressed caution at the news. Wildlife epidemiologist Dr Trent Garner said there would be reluctance to take up chloramphenicol as a solution, certainly in Europe and North America, because of the chemical's link to harmful side-effects in humans. New Zealand scientists have found what appears to be a cure for the disease that is responsible for wiping out many of the world's frog populations. Chloramphenicol, currently used as an eye ointment for humans, may be a lifesaver for the amphibians, they say. Researchers found frogs bathed in the solution became resistant to the killer disease, chytridiomycosis. The fungal disease has been blamed for the extinction of one-third of the 120 species lost since 1980. Fearful that chytridiomycosis might wipe out New Zealand's critically endangered Arcey's frog (*Leiopelma arceyi*), the researchers have been hunting for a compound that would kill off the disease's trigger, the fungus *Batrachochytrium dendrobatidis*. We are losing an awful lot of these creatures now and if we don't do something intelligent, then we're going to lose an awful lot more Professor Russell Poulter, Researcher.

They tested the chloramphenicol candidate on two species introduced to New Zealand from Australia: the brown tree frog (*Litoria ewingii*) and the southern bell frog (*L. raniformis*). "We found that we could cure them completely of chytrids," said Phil Bishop from the University of Otago. "And even when they were really sick in the control group, we managed to bring them back almost from the dead."

"You could put them on their back and they just wouldn't right themselves, they would just lie there. You could then treat them with chloramphenicol and they would come right," Dr Bishop explained. But the Zoological Society of London (ZSL) expressed caution at the news. Wildlife epidemiologist Dr Trent Garner said there would be reluctance to take up chloramphenicol as a solution, certainly in Europe and North America, because of the chemical's link to harmful side-effects in humans. The NZ researchers tried using chloramphenicol as both an ointment, applied to the frogs' backs, and as a solution. They found that placing the animals in the solution delivered the best results. The team has admitted it was surprised by the outcome. "You don't usually expect antibiotics to do anything to fungi at all. And it does. We don't understand why it does, but it does," said Russell Poulter. Professor Poulter, the molecular biologist who hunted down chloramphenicol, added: "It's also got the great advantage that it's incredibly cheap."

The scientists are now making their research widely known ahead of formal publication in a science journal because of the pressing need for a safe and effective treatment for the chytrid disease. The blow that chytrid has dealt to the frog population is already immense. The disease has probably accounted for one-third of all the losses in amphibian species to date, says Professor Rick Speare, an expert in amphibian diseases who works with the University of Otago's frog research group. These losses are huge - and this is in addition to other threats such as habitat destruction, climate change, pollution and hunting. Since 1980, more than 120 amphibian species have disappeared; and according to the World Association of Zoos and Aquariums, in the near future many more species are in danger of vanishing. "We are losing an awful lot of these creatures now and if we don't do something intelligent, then we're going to lose an awful lot more," said Professor Poulter.

But a hopeful finding is that the introduced frogs that have been infected with chytrids are now more resistant to further infections. "We haven't quite understood how that could happen," said Dr Bishop. "It might be a natural thing; if a frog survives a chytrid infection then it is resistant when it gets attacked again." The researchers believe that zoos now will have more options, either to be able to control an outbreak or to rescue infected frogs from the wild, knowing that they can be cured. The next challenge the research team has set itself is to find a treatment that will work in the wild. "I would really feel quite satisfied if we could say, 10 years from now, that you have to be careful walking around [Australia's] Kosciuszko National Park or you might tread on a corroboree frog because they're all over the place," said Professor Poulter. "I would take real satisfaction from that."

However, just how widely chloramphenicol might be adopted is open to debate. EU and US authorities are concerned the drug may cause aplastic anaemia in humans. "It is a banned substance; in particular, it is controlled where it comes into contact with food sources," commented Dr Garner from ZSL. "There are other anti-fungals that are being piloted

and some are looking promising. Treating infection in amphibians is possible, but determining if there are any side-effects takes time. Also, how you apply an antifungal at the individual, the population and the species level is a whole set of questions which needs to be addressed." (Editor - While this sounds great. I see a lot of problems that have to be solved before anything is used in the wild. Mainly in terms of application (do we crop-dust the frogs every year? And inheritance. If the frogs do become resistant to the fungus, how many generations will it take? Will the resistance be inherited?).

AUTHOR: Kim Griggs, BBC, Science reporter, Wellington.

SOURCE: Unknown.

April "in the spotlight" focuses on the

Ornate Burrowing Frog (*Lyndodynestes ornatus*)



TFC Members...



- | | |
|------------------------------|-----------------------|
| Wai Awarau | Atherton |
| Mandy Lindsay | Atherton |
| Bevan Pritchard | Atherton |
| Dr Stacey Gelis | Beerwah |
| Dr Amber Gillett | Beerwah |
| Dr Che Phillips | Beerwah |
| Robyn King | Broadbeach |
| Dominic Chaplin | Bungalow |
| Val Bonner | Burrows Oxley |
| Bonnie Arbon | Caboolture |
| Judy Catchpole | Chambers Flat |
| Keith Martin | Clifton Beach |
| Cindy Harkness | Edge Hill |
| Jo Loader | Glass House Mountains |
| Kia Bailey | Glass House Mountains |
| John Booy | Gordonvale |
| Grant Turner | Innisfail |
| Val Speedie | Innot Hot Springs |
| Kent Jozefowski | Kallangur |
| Clarissa Morris | Landsborough |
| Sue Morris | Landsborough |
| Beryl Davidson | Malanda |
| Inga Lorenz | Malanda |
| Merv Robson | Malanda |
| J & M Sweetzer | Malanda |
| Marney Fichera | Mooroolbool |
| Michael & Sharon Williams | Newport VIC |
| Cheryl Lammeretz | Peachester |
| Tricia Schilling | Reesville |
| Ian Wilesmith | Redbank Plains |
| Murray Wellington | Speewah |
| Darren & Jo Green | Trinity Beach |
| Michael Anthony | Whitfield |
| Shaun Cook | Whitfield |
| Maria Destro | Whitfield |
| Eleanor Duignan | Whitfield |
| Alan Gillanders | Yungaburra |
| Murray Powdren | Yorkeys Knob |
| Margret Egger | Yungaburra |
| Sian Moore & Scott Radcliffe | Yungaburra |
| Neville Simpson | Yungaburra |
| Claudine Grandjean | Yungaburra |
| Chris Tsilemanis | Yungaburra |

Froggy jokes

A man was crossing a road one day when a frog called out to him and said, "If you kiss me, I'll turn into a beautiful princess."
He bent over, picked up the frog, and put it in his pocket.
The frog spoke up again and said, "If you kiss me and turn me back into a beautiful princess, I will tell everyone how smart and brave you are and how you are my hero."
The man took the frog out of his pocket, smiled at it, and returned it to his pocket. The frog spoke up again and said, "If you kiss me and turn me back into a beautiful princess, I will be your loving companion for an entire week."
The man took the frog out of his pocket, smiled at it, and returned it to his pocket. The frog then cried out, "If you kiss me and turn me back into a princess, I'll stay with you for a year and do ANYTHING you want."
Again the man took the frog out, smiled at it, and put it back into his pocket. Finally, the frog asked, "What is the matter? I've told you I'm a beautiful princess, that I'll stay with you for a year and do anything you want. Why won't you kiss me?"
The man said, "Look, I'm a computer programmer. I don't have time for a girlfriend, but a talking frog is cool."

One day a man walks into a doctor's office with a frog on his head.
The doctor in amazement jumps up and says "Good grief, how on earth did you get that great ugly thing!"
The frog looks down and replies "I dunno Doc, it started out as a little wart on my bottom!"

A scientist was interested in studying how far bullfrogs can jump. He brought a bullfrog into his laboratory, set it down, and commanded, "Jump, frog, jump!"
The frog jumped across the room.
The scientist measured the distance, then noted in his journal, "Frog with four legs - jumped eight feet."
Then he cut the frog's front legs off. Again he ordered, "Jump, frog, jump!"
The frog struggled a moment, then jumped a few feet.
After measuring the distance, the scientist noted in his journal, "Frog with two legs - jumped three feet."
Next, the scientist cut off the frog's back legs. Once more, he shouted, "Jump, frog, jump!"
The frog just lay there.
"Jump, frog, jump!" the scientist repeated.
Nothing.
The scientist noted in his journal, "Frog with no legs - lost its hearing."

Q. How come the frog didn't get to be the Easter Bunny?
A. Slippery hands...they were afraid he'd drop the eggs!

Q. Why did the frog make so many mistakes?
A. It jumped to the wrong conclusions.

Q. What do frogs play at recess?
A. Jumping jacks and leapfrog.

SOURCE: Various websites.



FROGLOG is the bi-monthly newsletter of the Amphibian Specialist Group (ASG). Volume 84 December 2007 issue is now available from their website (<http://www.amphibians.org>).

The Amphibian Specialist Group strives to conserve biological diversity by stimulating, developing, and executing practical programs to conserve amphibians and their habitats around the world. This will be achieved by supporting a global web of partners to develop funding, capacity and technology transfer to achieve shared, strategic amphibian conservation goals.

The ASG is rising to the challenge posed by the amphibian crisis by engaging all sectors of the wider conservation community to harness the global intellectual and institutional capacity necessary to transcend the current paradigms of conservation biology. The Conservation Division promotes and supports the conservation of threatened amphibian species in all parts of the world. By strengthening partnerships among developed country and developing country institutions and forging links with groups such as IUCN's other Specialist Groups, the ASG is building capacity in important regions and ensuring that amphibians are incorporated into conservation plans where they have previously been neglected.

The Research Division of the ASG works closely with research partners from the global network of national and regional working groups to apply a more strategic and coordinated approach to research into the causes of global amphibian declines and to disseminating the results worldwide. The Research Division works to narrow knowledge gaps through targeted research agendas for poorly known regions and groups and strives to bridge the gap between science and conservation.

The Assessment Division regularly assesses the conservation status of every amphibian species in the world through the Global Amphibian Assessment (GAA) and feed this information into the setting of conservation and targeted research priorities worldwide. Emphasis will be given to discriminating between real and apparent declines. Periodic analyses of the database will be undertaken and the findings communicated to the global network. Findings will also be printed on CDs and distributed to those regions where internet access is problematic. Information will be disseminated in paper form where applicable via working groups through workshops and meetings.





Field reports...

Ravenshoe Field Trip by Michael Anthony

We went to the Ravenshoe area to look for the Magnificent Broodfrog (*Pseudophryne covacevichae*). Once again we were unsuccessful with our prime target, however we were lucky enough to observe a number of other species at the site. The highlight was finding numerous Northern Pobblebonks (*Limnodynastes terrareginae*), males calling from the ground about a metre or so from the waters edge.

Figure 1. Northern Pobblebonk (*Limnodynastes terrareginae*) male specimen from Ravenshoe area.

Figure 2. Colourful groin of *L. terrareginae*.

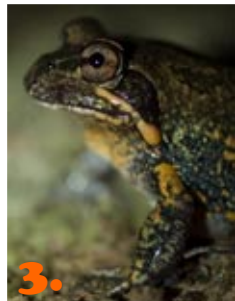
This frog is rarely found in the far north; it appears restricted to high altitude areas. It is the northern representative of a large group of frogs ('pobblebonks') that are common in south-eastern Australia.

Figure 3. *L. terrareginae* in profile.

Along this small watercourse we also found a number of other species of frog, including the Tableland Gungan (*Uperolia altissima*) (Figure 4) calling from low grass cover near the watercourse, Striped Marsh Frogs (*Limnodynastes peronii*) calling from secluded positions at the edge of the water, Bumpy rocket Frogs (*Litoria inermis*) calling on the ground amongst vegetation near the watercourse and Little Red Tree Frogs (*Litoria rubella*) calling from low vegetation near water.

Figure 5. Little Red Tree Frog (*Litoria rubella*)

We were also lucky to observe foam egg masses of the Northern Pobblebonk laid under the bank of the watercourse. These had been laid sometime previous to our visit and were in the process of breaking up.



Nandroya Field Trip by Michael Anthony

We observed numerous species of frog, although once again we didn't find our main objective, the microhylid frogs, as it had been dry for a number of days.

Microhylid frogs are most active when it has been raining; Palmerston Buzzing Frogs (*Cophixalus infacetus*) are almost always heard calling in the late afternoon on the track down to Nandroya, although this time only a very few were heard. They are not usually heard after dark unless it is raining, when this and three other species of microhylid can be heard along the track. We did hear the occasional Common Nursery Frog (*Cophixalus ornatus*) however.

The highlight of the night was finding 8 Australian Lacelids (*Nyctimystes dayi*) along our 100 metre survey site below Nandroya Falls. This is the largest count by far of this species, which was rarely found at this site in the 1990s but is now regularly found.

Figure 1. Australian Lacelid (*Nyctimystes dayi*) from near Nandroya Falls.

Also we found numerous Northern Stony Creek Frogs (*Litoria jungguy*) including a gravid female (Figure 2); one male Green-eyed Treefrog (*Litoria genimaculata*), 9 Common Mistfrogs (*Litoria rheocola*), and 2 Waterfall Frogs (*Litoria nannotis*) - an adult female which appeared to have just laid eggs, and a juvenile specimen.

More Waterfall Frogs, Common Mistfrogs and Green-eyed Treefrogs were either seen or heard at Silver Falls.

As usual we found some other interesting rainforest animals along the track.

Near Silver Falls we found 2 large stick insects, only a few metres away from each other. Initially it was thought that it might be a male and female of the same species, but we have since been informed that they were 2 different species, an *Onchestus rentzi* (Figure 3) and a large specimen of *Acrophylla weulfingi* (Figure 4), measuring 22cm in length.

Just near the end of the track we found a beautiful Jungle Carpet Python (*Morelia spilota cheynei*) (Figure 5).





Field reports...

Mount Lewis Field Trip by Michael Anthony

On any quest for Australian microhylid frogs, Mt Lewis would be the ultimate destination. There are 8 species to be found here, of which most can be heard calling on a good night. These tiny frogs are hard enough to find – for instance it took me over 10 years to find my first Palmerston Buzzing Frog at Nandroya despite hearing their calls almost every time I went there and searching for the frogs numerous times. Of the 8 species on the Carbine Tableland, of which Mt Lewis is (or was) the most accessible part, I had found about 10 frogs in total despite hearing hundreds calling. To find eggs of microhylid frogs in a rainforest then, is like finding a needle in a giant haystack. But that was what we set out to do.



Although conditions on the mountain did not look promising – hot, dry day, clear skies - we were still hopeful as, firstly, conditions on top of Mt Lewis are infinitely variable and secondly there had been solid rain up there the previous night.

As the highest diversity of microhylids was at high altitude, we headed straight for the second weather station which is at about 100 metres. It is near here where we had previously found *Cophixalus hosmeri*. A number of specimens were found under rocks at the side of the road on previous trips, so this is what we targeted. However, due to the considerable roadworks undertaken on the Mt Lewis road since Cyclone Larry, most of the rocks had been disturbed and there were very few that might harbour microhylids. The road works had also loosened much of the soil near the road so there was also considerable sediment in the creeks and drains connected with the road and we were concerned that very few specimens might still be found in this particular roadside habitat.

Also we were confronted by a very large tree trunk which had fallen across the road about 5km short of the top, so we had no alternative but to walk for a while at about 1100 metres altitude, far short of prime microhylid habitat. A few suitable rocks and logs were investigated, mostly revealing scorpions, beetles, grubs and worms.

The first vertebrate to be found was a Prickly Forest Skink (*Gnypetoscincus queenslandiae*) an endemic rainforest lizard living in rotten logs, only coming out to forage around dusk or on cloudy days. Gravid females may occasionally be found basking, which assists with the development of their eggs. The next vertebrate was a young Common Black Snake (*Pseudochis porphyriacus*), which disappeared into a rotted log.

As dark fell, the only frogs heard were the occasional Fry's Whistle Frog (*Austrochaperina fryi*), and eventually a large gravid female of this species was found under a large rock near the road side. This gave us fresh motivation and we continued along the road after taking a few photos. We continued on, but as we started going uphill again the conditions in the forest became drier and we decided to turn back. Figure 1. Fry's Whistle Frog or Cricket Chirper (*Austrochaperina fryi*), Mt Lewis.

Back down in the gully we heard calls of the Northern Barred Frog, which has recently been split up into 3 separate species in the Wet Tropics. We were excited about this one because we were in the right area for one of the new species *Mixophyes carbinensis*, the species occurring at high altitude on the Carbine and Windsor Tablelands. This species is notable for the very large tadpoles, which grow to over 15cm and take two years to develop into frogs in the cold highland streams.



We stopped and listened to the calls hoping to pinpoint the location of the frogs. One sounded like it was calling from the forest floor just in from the road, so two of us started to search intensively through the ground litter; meanwhile we heard a yell from another in our group who had discovered a frog in the middle of the road! Then another was found on the road back the other way. The lesson is that frogs are generally not where you think they are when first hearing the call, but persistence, or just plain luck, generally locates them.

Figure 2. Male *Mixophyes carbinensis*. To differentiate between the 3 species in the wet tropics, one needs to look at the spots on the thigh of the animal. *M. carbinensis* has more than 9 spots on its inner thigh – this one had well in excess of this, plus was found in the right location - definitely *M. carbinensis*. Figure 3. Inner thighs of *Mixophyes carbinensis*.

After another photo session we headed back to the cars, buoyed by the observation of a recently described species of frog (although we had found plenty before, at the time we weren't aware that it was a different species – moral of the story is, you should always count the spots on a frogs inner thigh!).

As we reached the cars, a little bit disappointed overall, we heard a microhylid call from the thick rainforest in the steep gully below the fallen tree. Then another. Okay lets go down there. Very slippery and unstable due to the earthmoving activities related to the (seemingly excessive) roadworks. Two of us went down, in two different directions toward two different frogs calling. The one I approached stopped calling before I was anywhere near it. I waited for it to call again. Just a short few calls, enough to get a slightly better fix on where it was but nowhere near close enough to find it amongst the leaf litter, fallen branches, rotted logs, tree trunks, lily's, tree trunks, vines. I waited for a number of minutes, mosquitoes biting, trying not to move, trying not to scratch. The frog wouldn't call again so I had a rummage through some likely microhabitats but didn't find anything then scrambled back up the slope, getting bitten for the second time that night by a large nasty-looking ant.

Tim Hawkes was still down there. The rest of us had a listen to Dave Stewart's frog call CD while we waited, positively identifying the call as a Pipping Nursery Frog (*Cophixalus hosmeri*). No sound from down the gully until crack! The sound of a branch snapping. Then "I found some eggs!"



Marion – "What sort of eggs?"
"I don't know there's a snail near it."
"Probably snail eggs then."
"I've got them, on a palm frond."
"OK bring it up lets have a look".
Tim passed it up the slope. Scrambled up.
Tim – "Look – there's the eggs."
Marion – "there's the frog!"
"Where?"
"Look, there!"

Yes, the eggs were there, adhered to a broken palm frond that had snapped off. The frond had been carried through the thick rainforest

and passed up a slippery unstable slope, not only with the eggs still on it, but, incredible as it may seem, also a tiny little frog, a male *Cophixalus hosmeri*, the smallest of the microhylid frogs amongst the moist humus sticking to it.

Figure 4. *Cophixalus hosmeri* with eggs.

Finding a needle in a haystack blindfolded! This discovery was a combination of circumstances, a mixture of luck, persistence and teamwork all of which are often necessary to find rare animals.





Dangers of frogging

Getting organised for a night's frogging is quite a task in itself. Ensuring you have batteries fully charged and spares for your spotlight, cap light, torches and camera equipment is priority (we'll need the macro lens with slave lighting tonight, and I'll also include the macro tripod in case...). The last thing you want is to be left standing in the dark on the edge of a rocky creek not knowing where to put your foot next. Don't forget to include some tissues in a dry pocket to quickly wipe your glasses or camera lens just at the crucial moment when a little critter has just sat still for that perfect photo.



Figure 1: Fry's Whistle Frog or Cricket Chirper (*Austrochaperina fryi*).

Think ahead and make sure you have it all together (you've experienced all the awkward situations at least once) so as well as the First Aid Kit and Snake bandages you even have extra bandaids and some tiny

packages of salt deep in one of your pockets for those horrible leeches that are part and parcel of getting down and dirty for that photo – the one that proves you actually have one of the rarer species calling right in front of you.

No matter how hard you try there is always something you are quite unprepared for. We thought we had all the dangers covered. However, we were not prepared for what happened this night...

After a delicious evening meal in good company we chatted contentedly while biding away the time till after dark, then casually loaded the vehicle with all the gear to go frogging at Wrights Creek, a short distance from Lake Eacham. We pulled into the small clearing near the track's entrance and immediately heard Dainty Green Tree Frogs (*Litoria gracilentia*), Northern Stony Creek Frogs (*Litoria jungguy*), Northern Barred Frog (*Mixophyes schevilli*), Fry's Whistle Frog (*Austrochaperina fryi*) (see Figure 1) and Common Nursery Frogs (*Cophixalus ornatus*) calling clearly, which assured us we were in for a great night.

We walked the short distance from the carpark to the track's entrance then continued along the walking track to the little bridge. The biggest ant I've ever seen, a 36mm Giant Bulldog Ant (*Myrmecia brevinoda*) (Figure 2) was on the handrail and gave me a chance for a photo even though it was moving quickly. Just a few meters past the bridge my light picked up *Litoria jungguy* (see Figure 3) sitting on a bare frond of wait-a-while. A lovely classic pose that was irresistible. I pushed past a few branches (mindful of ticks and leeches) and aligned my frog for the photograph of the year. Oh no! battery dead. Never mind... next time. Jan calls... "Ms Ele, I'll get the shot" and proceeds to go past me into the



Figure 2: Giant Bulldog Ant (*Myrmecia brevinoda*) can deliver a painful sting.

little clearing. All this commotion and of course our little specimen takes fright and leaps into the undergrowth, but not so far as to escape Jan's mighty lens. Not so, another great leap puts it out of range. Jan leans back from her kneeling position not amused to feel something biting her behind and unthinkingly uses her left hand to brush whatever it is away. Immediate scream, Jan has brushed away the leaves of the Stinging Tree (*Dendrocnide moroides*) (see Figure 4).

We immediately run for the car...thank goodness we're only three kilometers from the house. I recall from somewhere in the back of my mind that the fine hairs penetrating the skin can be removed with sticky tape. Thankfully we have duct tape and brown packing tape at the house. Within seconds, Jan is in sheer agony. The pain is excruciating. It puts me in mind of someone having been stung by a Box Jellyfish. Applying the sticky tape and ripping it off



Figure 3. Northern Stony Creek Frog (*Litoria jungguy*).

does not seem to be making any difference. We've heard that Body Wax for hair removal is a good remedy but who has body wax in the medicine chest? After an hour's treatment of tape application we decided to take a run to Atherton Hospital. Unfortunately, they were unable to locate the wax they use for this treatment so we continued for another hour with elastoplast pulling. Strong painkillers were issued so we drove home.

By morning, Jan's pain had only slightly eased but we were able to locate some Cold Body Wax Strips at the Yungaburra Supermarket. Once this was applied to Jan's hand and rear end it was surprising how the pain was alleviated. It certainly did the trick in removing the minute poisonous hairs. By the afternoon the affected areas had subsided to a burning/tingling sensation that I believe may continue to fade over the next few days/weeks/months.

Ultimately, we now carry, and I thoroughly recommend to all froggers, a packet of Cold Wax Body Strips for the First Aid Kit...available at all great supermarkets!

AUTHOR: Ele Duignan.



Figure 4: TFC member Jo Green, examining the fine translucent silicone hairs on the leaves of the Stinging Tree (*Dendrocnide moroides*).



Children saving wildlife...

In his book *The Human Relationship With Nature*, Peter Kahn (2001) describes time spent at his 670 acres of mountain meadows and forests in California, USA...

"One afternoon a hummingbird flew into our cabin. Upon seeing the bird, my four year old daughter, Zoe, followed it, and I followed her, with a plastic container in my hand. I trapped the bird against a window, walked outside, and let it go. "Be well and live free," I said.

An hour later, I see a butterfly trapped inside. I cup it in my hands and walk onto the porch to find Zoe. When she sees my with my cupped hands she immediately cups hers, and walks up to me. She knows what is happening, as we have done this before on her request. Very gently I transfer the butterfly into her hands. She holds it cupped like that for ten seconds and then opens her hands. The butterfly stays put. Zoe stands poised, quiet, looking at the butterfly in her hands. A minute later the butterfly flies off. Zoe says, "Be well and live free."

Later that afternoon Zoes sees a bee drowning in the water. She says "Dad, quick, get me something to save the bee." I find a lid to a container and give it to her and she dips it in the water. Zoe then positions the lid in different ways until the bee is able to climb on board, and then she sets the lid down on the porch. We both watch the bee. It tries to fly, but cannot. "Dad, it's probably so tired." A few minutes later the bee flies away.

Birds, butterflies, and bees die all the time in nature, and we see our share of such death. I also recognise that from an ecological standpoint it is not necessarily good or even warranted that we save any of them. But as a parent, one seeking to educate his child, I see something else going on during our 'animal rescues.'"

The above account reminded me of another story, this time the story is not a real event, but a well-known parable...

One day I came across a young boy on the beach. He was throwing starfish into the sea. With every crashing wave, it stranded another five starfish on the sandy beach. The boy picked up more starfish and through them into the sea. After a few minutes I approached the boy.

"What are you doing?" I asked.

"I'm saving starfish" he replied.

"But there are thousands of starfish washed up onto the beach, what does it matter?"

With that the boy picked up another starfish and threw it into the sea. He retorted, "It matters to that one."

In the book *Children & Nature: Psychological, Sociocultural & Evolutionary Investigations*, Peter Kahn (2002) Looks at environmental generational amnesia. People take the natural environment they encounter during childhood as the norm against which they measure environmental degradation later in their life. With each ensuing generation, the amount of environmental degradation increases, but each generation takes that degraded condition as the non-degraded condition, as the normal experience. The upside of environmental generational amnesia is that each generation starts afresh, unencumbered mentally by the environmental misdeeds of previous generations. The downside is enormous. As we lose daily, intimate positive affiliations with nature and accept negative experiences (such as pollution) as the norm, we suffer physically and psychologically and hardly know it. Since the problem of environmental generational amnesia has its genesis in childhood, I suggest that childhood is a good place to start solving the problem. We need to engage children in environmental education to maximise their exploration of and interaction with the nature that still exists within their world; bugs, pets, plants, trees, wind, rain soil, sunshine...



Kellert (2002), in *Children & Nature: Psychological, Sociocultural & Evolutionary Investigations*, explains that simply stated the loss of neighbourhood species endangers our experience of nature. Direct, personal contact with living things affects us in vital ways that vicarious experience can never replace. He believes that one of the greatest causes of the ecological crisis is the state of personal alienation from nature, which many people live. We lack a widespread sense of intimacy with the living world. The extinction of experience implies a cycle of disaffection that can have disastrous consequences. As cities and metastasising suburbs forsake their natural diversity, and their citizens grow more removed from personal contact with nature, awareness and appreciation retreat. So it goes, the extinction of experience sucking life from the land, the intimacy from our connections.

Various dimensions of contemporary environmental degradation and decline, like extensive habitat destruction, species loss, environmental contamination, natural resource depletion, urban sprawl, and human population growth, all point toward substantially fewer opportunities for most children, especially in densely populated areas, to have contact with high-quality natural environments.

Involve your children with TFC so that they may learn and hopefully become future carers and naturalists.

AUTHOR: Compiled and written by Darren Green.



Animal book series

Animal is a pioneering series from Reaktion Books. The first of its kind to explore the historical significance and impact on humans of a wide range of animals, each book in the series takes a different animal and examines its role in history around the world. The importance of mythology, religion and science are described as is the history of food, the trade in animals and their products, pets, exhibition, film and photography, and their roles in the artistic and literary imagination. Written by authors who are passionate about their subjects, these highly accessible, informative and beautifully produced books will appeal to the general reader as well as to those with a specialist interest, and will be of educational value to college students and schoolchildren.

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Pond croakings

Like most fields of scientific endeavour, herpetology (the study of reptiles and amphibians) involves a certain amount of jargon. In this section I will attempt to explain the terms they use. I will provide other definitions as required in forthcoming newsletters. Over time you will be able to build up a dictionary of common terms.

AMPLEXUS

The breeding position in frogs. This may be auxiliary (the male grips the female's armpits) or inguinal (the male grips the female's groin).

CLOACA

The common chamber in herps into which the reproductive, intestinal and urinary ducts open, the external opening is often referred to as the vent or anus.

COPULATION

Sexual union.

NEONATE

Recently hatched or born herp.

NUPTIAL PADS

A roughened pad on the thumb and first finger of male frogs that develop during the breeding season.

ORAL DISC

The slightly funnel shaped area around the tadpole's mouth.

PAPILLAE

Small fleshy bumps around the tadpole's mouth.

SPIRACLE

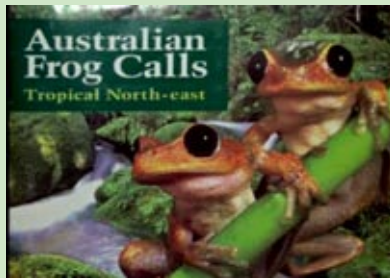
A small tube opening on the side of the tadpoles body.



SOURCE: <http://www.strangezoo.com>



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