FROGCALL

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

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FRIDAY 7th JUNE 2002 at the **AUSTRALIAN MUSEUM, WILLIAM ST ENTRANCE**
6.30 PM for a 7.30 PM start,

Our frog group is in need of members to run one or occasional local evening field trips



from Martin Reuter

MEETING FORMAT for 7th June 2002

6.30 pm A limited number of lost frogs are ready for collection by FATS members with amphibian licences.

7.30 pm Our main speaker is Karen Thumm, talking about Red-crowned Toadlets.

Arthur White will be giving a spiel about the outbreak of chytrid in New Zealand.

Lothar is going to show a short video about Frogs as Pets.

Nicole Barbe reporting on the Bell frog monitoring survey at the Cronulla Waste Water Treatment Plant.

9.00 pm Five slides or 5 minutes,

auction and guessing competition.

CONTENTS

THE LAST MEETING 5TH APRIL 2002

Many thanks to Lou Petho for his talk and the preview of his film "Natural History of Green and Golden Bell Frogs". In addition to inspiring his audience with the excitement and challenges of filming frogs in their natural habitat, members were in awe of the detail and quality of the production. Congratulations Lou.

Jodi Rowley discussed the monitoring and conservation program at Long Reef Golf Course for the Green and golden Bell Frogs.

Our meetings and exhibitions are a wonderful achievement because we are so well supported by many people within the frog community. Special thanks go to Arthur and Karen White, Steve Weir, Lothar Voigt, Barbara Bohdanowicz, Wendy Grimm, Punia Jeffery, Marion Anstis and many others for their work behind the scenes and for making each FATS meeting a success.

Donations of items for our auction are always welcome. It doesn't have to be frog related! We appreciate all the donations given at our last meeting and all the contributions to our meeting topics including the many slides. **MW**

NOTICE OF ANNUAL GENERAL MEETING

The AGM of the Frog and Tadpole Study Group NSW inc will be held at 7.30pm on Friday the 2nd of August 2002. PLEASE NOTE THE CHANGE OF MONTH. The timing of AGM has been moved to August each year. This was a motion passed at the last AGM.

Nomination forms are available from Arthur White or Wendy Grimm, at our June and August meetings, write to the Post Office Box 296 Rockdale NSW 2216 or call Monica on 9797 6543 for a copy. Anyone interested in nominating for any position is greatly encouraged to do so as the committee is always short of a least a couple of people. Duties of most positions can be fitted to suit your situation. **MW**

PRIVACY

The FATS membership list (your contact details) is used to mail out our newsletter or other publications and to provide or seek information from members by the FATS committee. Occasionally committee members use the membership list to seek assistance on frog matters such as frog rescue and seeking frog explainers for publicity events. The information is not made available or sold to any other groups or individuals. **MW**

DISCOUNT PRICES

Marion Anstis' book "Tadpoles of South-eastern Australia" is for sale at the Australian Museum bookshop and at our next FATS meeting at a special members price. The previous special price was a "one of". Tadpole posters are $5 and FATS polo shirts are discounted to $20.

FATS wish to acknowledge and thank New Holland publishers for their gift of six books to our frog group.

BUSH DANCE at HERB GREEDY HALL

FATS members enjoyed a good night at the Greens bush dance in April. The entry price had been reduced for us. My husband, Bill, said it reminded him of bush dances in the country when he was young. The friendly atmosphere ensured that all FATS members were made welcome. The Irish band Swim-Two-Birds called the dances. Those attending, including MLC Lee Rhiannon, took great interest in our frog group's literature. I encourage you to attend the next event for a fun and cheap family night out. **MW**

WETLAND PLANT DONATIONS AND EXPERTISE

FATS are seeking members to bring in wetland and pond plant donations for our auction each meeting. Any botanists out there willing to give a talk on suitable frog friendly plants for ponds will be most welcome. MW

NEW PUBLICATION

The Queensland Frog Society has produced the proceedings of its Brisbane symposium, "Frogs In The Community" - held February 13-14, 1999. A wide range of topics are covered in this 164 page document, primarily related to the frog fauna of Queensland. Copies are available for $26.00, which includes postage and handling. Send your cheque or money order to: Queensland Frog Society, PO Box 7017, East Brisbane, 4169, Queensland. **Stan A. Orchard**

ATRAZINE

For info. on the current review of Atrazine visit the National Registration Authority, http://www.nra.gov.au/chemrev/atrazine_final.pdf This review contains information about the use of Atrazine in Australia and regulations affecting the continued use. Residue levels are discussed in relation to produce and environments. **G Prichard**

WATCH THIS SPACE

Exciting new Field Trips coming up
FATS is out when FROGGIES are about
Details in next FROGCALL

Cheers, Punia

CANE TOAD ON SECRET TOAD'S BUSINESS

A cane toad found in southern Sydney is believed to be a lone traveler, rather than part of a colony.

A Menai man and his four-year-old daughter found the amphibian on the front veranda of their home and kept it under a bucket until it was positively identified this morning.

National Parks and Wildlife Service ranger Craig Shepherd says the toxic sacks on the toad's shoulders can kill a pet if eaten.

Mr Shepherd says so far no cane toad colonies have been identified in the Sydney region.

"They appear to come down probably from northern New South Wales or Queensland in landscape materials such a mulches and other types of materials. There is no established colony of cane toads in Sydney but they appear to be visitors each year and they possibly don't survive the winter." Forwarded to FrogCall by **Giselle Howard**

FROGS UNDER THREAT FROM BANANA IMPORTS

The Australian Democrats have urged the Federal Government to ensure that the impact on native frogs is considered before agreeing to import Filipino bananas.

Democrats' Agriculture spokesperson, Senator John Cherry, said native frogs could be decimated if imports of bananas from the Philippines also include illegal amphibians.

"The Worldwide Fund for Nature has identified the very real risk that imported bananas could pose for native frog populations because it is very difficult to prevent frogs being included in import shipments," said Senator Cherry.

"Frogs have been known to survive being refrigerated, sprayed, and even shrink wrapped - there is no doubt in my mind that some frogs will make it to Australia, and that will jeopardise our native species.

"Have we learnt nothing from the cane toad debacle in Queensland? It would be an ecological disaster if Filipino frogs got into the North Queensland ecosystem and destroyed our local species.

"The potential ecological damage to native frogs is in addition to the very substantial damage that could be done to our $400 million banana industry if exotic diseases like black Sigatoka, Moko, Bugtok, Freckle or Bract Mosaic got into Australia.

"Research suggests that introduction of these diseases could cost the industry $198 million in lost production, increased spraying and labour costs.

"Last month, the Australian Government was forced to deny Filipino media reports that approval had already been given for banana imports.

"With the Import Risk Assessment report imminent from Biosecurity Australia, it is essential that industry, community and environment groups are assured that all risks - economic and environmental have been considered.

"The Democrats' concern, a concern shared by groups as diverse as WWF, the National Civic Council, the Queensland Government and the Fruit and Vegetable Growers Association, is that the assessment report will cut corners, ignore scientific advice, and downplay risk in the interests of promoting 'free trade'.

"The Democrats hope that on this occasion, the Federal Government acts in the best interests of all the residents of North Queensland - banana growers and native frogs alike.

"There is no way that the risks associated with imported bananas can be lowered enough to make this even worth considering," concluded Senator Cherry. **For further information: Pam Hose 07 3252 9129 or 0408 752 750 Stan A. Orchard National Co-ordinator - WWF/Rio Tinto Frogs! Program World Wide Fund for Nature Aust. sorchard@bigpond.com www.frogs.wwf.org.au**

FUNGUS THREATENS TO CROAK NEW ZEALAND FROGS

The chytrid fungus, a toxic fungus blamed for decimating amphibian populations around the world has been found in New Zealand, prompting fears that the country's unique and rare frog species could be wiped out. For example, New Zealand has four matchbox-sized native frog species that all lack ears, don't croak and hatch directly into froglets without going through a tadpole stage.

These frogs -- not necessarily the same species but frogs that morphologically are very, very similar lived 200 million years ago. New Zealand's rarest species, the Hamilton's frog, numbers less than 300 and is found only on a few hundred square meters of rocky ground on the summit of a single islet between the South Pacific country's main North and South Islands. The chytrid fungus was first discovered in New Zealand in 1999. The fungus kills most of the frogs it infects.

HerpDigest Based on article form the Reuters News Service website http://www.herpdigest.org/ Email asalzberg@herpdigest.org

BAD EVOLUTION

For the first time, a major study has catalogued the beginning of the slippery slope to the collapse of Earth's ecosystems. Because of global warming, animals and plants are changing in unpredictable ways. ALANNA MITCHELL reports

Imagine you are standing at the bottom of a snowcapped mountain, glorying in the beauty of it all. You hear a loud crack and look up. A tiny chunk of snow falls off the top of the mountain. A thread of loose snow follows gently.

Before you can catch your breath, the whole side of the mountain collapses in on itself. The speed is terrifying, the sound a deafening rumble. This is an avalanche. Nothing can stop it and heaven help whatever is in its way.

For the first time, a major scientific paper has catalogued the biological equivalent of that first tiny chunk of snow falling off the mountain. Except in this case, rather than the precursor to an avalanche, it's the beginning of what scientists believe is the collapse of many of the planet's ecosystems.

And rather than being caused by a random natural effect, like the avalanche, this coming collapse of ecosystems is happening because humans are polluting the atmosphere with greenhouse gases and changing the planet's climate.

The paper, Ecological Responses to Recent Climate Change, published in the journal Nature on March 28, looks at how a relatively tiny overall increase in global temperatures over the past 100 years -- just 0.6 degrees Celsius -- has affected life forms.

It's worth noting that roughly two-thirds of that increase has happened since 1976, so the warming is speeding up. It's also worth noting that the latest scientific predictions from the Intergovernmental Panel on Climate Change say that average global warming within the coming 100 years may be as much as 5.8 degrees.

The paper, by a string of authors including Gian-Reto Walther of the University of Hannover and Eric Post of Pennsylvania State University, looks from the Arctic to the tropics and from the land to the sea.

Frighteningly, it finds "a coherent pattern of ecological change across systems." In other words, because of our actions, the planet's ecosystems are visibly evolving in ways humans have not predicted.

They seem, in some cases, like small changes. Take the frogs and newts in Britain. The winters are warmer there now because of human-caused climate change. That means the breeding ponds are warmer.

So newts (*Triturus*) have begun to breed earlier. But frogs (*Rana temporaria*) haven't. That means the newts are big and hungry when the frogs are still embryos. And that means the frog spawn is becoming newt lunch. So there are far fewer frogs.

What does it mean if there are fewer frogs? That part is hard to say, and it's hard to say when it will matter. Maybe the British newt ponds can go on for decades with fewer and fewer frogs and then one day the pond's ecosystem will collapse. The point is, we don't know.

"What we're seeing is just a fraction of what might happen," Post says from his office at Pennsylvania State University.

And, of course, it's not just frogs and newts. Post says the most unexpected finding from his paper -- which reviewed loads of scientific literature and then put it all together -- was that in every single biome for which there was any reasonable data, this visible, human-caused evolution was going on. That means, literally, from pole to pole.

It wasn't just the size of populations either. It was the composition of the life forms within the ecological communities that was changing.

And this leads Post to talk about biologists' greatest and most secret fear when it comes to climate change. It is called "non-linearity." It means, quite simply, that nature doesn't follow a straight line when it changes. Or, more correctly, that it might follow a straight line for a while, then it hits a point of no return -- a threshold -- and then it crashes.

The recent collapse of the massive ice shelf in the Antarctic is the perfect example of this threshold concept, Post says. Scientists knew the ice was warming, but hadn't a clue that five billion tonnes of Antarctic ice would crumble in a matter of mere months.

"It's almost impossible to predict, " he says. "We are left to guess. Ecology is non-linear."

It's reasonable to expect, he says, that over time "entire assemblages of species will disappear as we know them."

This piece of the future puzzle is what ecologist Jay Malcolm has been working on. Malcolm, a professor of forestry at the University of Toronto, has just published a study on how climate change

will affect the planet's biodiversity, or the range of species.

Published in February by the World Wildlife Fund, the study, Habitats at Risk, takes the Nature article and puts it on fast-forward. It's a theoretical and mathematical model, suggesting that the Nature article only shows the tip of the proverbial iceberg.

Malcolm focuses on the most beautiful and most biologically rich parts of nature and tries to figure out what will happen to plants and animals if the climate warms up as quickly as it is predicted to do over the next 100 years.

The basic assumption is that the concentrations of carbon dioxide in the atmosphere will double from pre-industrial times by the end of this century. That would warm up the surface of the Earth by as much as 5.8 degrees on average, according to scientific consensus.

Malcolm's findings speak of catastrophe. More than 80 per cent of the land ecosystems examined are expected to suffer extinctions of plants and animals because of climate change.

About a fifth of the most important ecosystems on the planet, including Canada's boreal forests and lower arctic tundra and some of the critical tropical systems, are expected to lose more than 70 per cent of the types of plants that live there.

Some of the other losers on the list? The eastern Himalayan alpine meadows, the southwestern Australia forests and scrub, the dry forests of Indochina and the coastal forests of East Africa.

Habitat loss of that magnitude is like the avalanche. It looks a lot like total collapse. "We don't want to go there," Malcolm says. "It's an extinction wave."

He is reminded of the last massive extinction spasm that took place 65 million years ago when an asteroid hit the planet. It was only the fifth in the 3.6-billion-year history of life on Earth and it took out the dinosaurs. This extinction wave would be the sixth. "We've now elevated ourselves to the role of asteroids," Malcolm says.

The problem is partly the amount of change, but it's also the rate. Malcolm is a specialist in species migration, which makes him a rare bird in scientific circles.

So if a whole ecosystem collapses, the species might be able to move somewhere else. Malcolm tries to figure out how fast animals and plants are capable of moving to catch up when their favourite temperature and rainfall zones go somewhere else. That's what's now happening on a global scale with climate change.

He has looked at the past for answers, most notably to the ice age about 10,000 years ago. He has found that most plants could keep up with the retreat of the glaciers. So as the ground thawed, plants gently spread into new parts of the Earth that had been off-limits before.

But the current human-orchestrated climate change is quite different. "Now, we're talking about warming that is 10 times faster than that. If not more," Malcolm says.

Will plants -- and therefore animals -- be able to keep up? Probably some of them, Malcolm says. They will be the ones that can adapt to almost anything, the weeds of the universe like cockroaches, crabgrass and maybe humans, although in much smaller numbers than we exist now.

But as for the rest it's a big question mark. "It's speculative, but if it's bad, it's going to be really, really bad," Malcolm says.

There's a great pity in all of this. Much of the climate change is already a given because there is already so much greenhouse-gas pollution in the atmosphere.

But Malcolm's hope rests on slowing down the rate of that warming by slowing down the amount of pollution spewed into the air. That means cutting down on emissions of carbon dioxide and other greenhouse gases such as methane.

If that happened, it would give plants and animals more time to adapt to their new homes once the old ones were destroyed. When you've looked into the future and seen what Malcolm has seen, that looks like a pretty good bargain. **Stan A. Orchard from http://www.theglobeandmail.com**

Myall Lakes National Park

BARREN GROUNDS NATURE RESERVE

The reserve, located on the Illawarra Plateau is managed by the NSW National Parks and Wildlife service. It is home to a diverse array of wildlife including frogs. The reserve has been protected for over 40 years and boasts more than 500 species of plants in heathland, woodland wet sclerophyll forest and rainforest. Contact 02 4236 0195 to find out when the next frog related event will be occur. **MW**

STUDY SITES WANTED

I am a PhD student at the University of New South Wales investigating relationships between Australian frog species and their predators. I am currently looking for permanent ponds and dams in natural bushland that are preferably (though not essentially) in the Sydney Basin. The ponds could be in reserves, National Park or private land. In particular, I'm interested in ponds that support the introduced mosquito fish, *Gambusia holbrooki*, though information about ponds without these fish would also be useful.

Any information on potential study sites that could be provided by FATS people would be a great help. My contact details are below. **Many thanks, Fiona Powell 02 9385 1153 AH 02 9399 3914 f.powell@student.unsw.edu.au**

LARVAL SURVEYS

Visible Implant Elastomer (VIE) system is available from Northwest Marine Technology. It was originally designed for marking fish. I marked hundreds of adult frogs and salamanders this spring with wonderful success. The elastomer is a two part mixture (I guess you would call it an epoxy) that is injected just under the skin using a syringe with a very thin needle. At above freezing temperatures it solidifies in ~24 hrs. It is nontoxic, flexible, and has no sharp edges so it seems to be very easy on the animals. The skin of the animal heals over the mark and it becomes permanent. Th mark reacts to UV, so only a small amount is used and it can be readily seen. There are four colors available and if you use several marking locations there are hundreds of potential marks, so every larvae can be unique if you would like. If this sounds good, I suggest visiting the companies webpage, it should be easily found with a search engine. If you can't find it, email me and I'll dig it up for you. **Discussions Related to Monitoring Amphibians amp@rana.er.usgs.gov Seth Myers myers59@marshall.edu**

THE BBC WEBSITE

The BBC website (below) has a follow-up article on the frog virus story. Please note another story about cancer researchers using frog eggs to study and find a critical compound that triggers cell division.

http://news.bbc.co.uk/hi/english/sci/tech/newsid_1786000/1786584.stm **Stan Orchard**

FDR PROJECT (FROG HOSPITAL) WEBSITE

Just thought you would like to know that we have just added about 8 new web pages into our FNQ frog site and redesigned it so the information takes more space on the page. The results are now online at www.fdrproject.org

New topics include:

raising tadpoles in tanks

the special threats posed by cats to frogs

a new virus page

expanded information on cancer

local threats to Cairns frogs

the 'bigger picture' including Greenhouse/climate change

information for potential volunteers

a rundown of all our current and planned projects

information about keeping frogs in QLD

plus more photos and information on local species

and updates to all previous pages

Any comments are welcome. Cheers, **Deborah Frog Decline Reversal Project, Inc. (includes Cairns Frog Hospital) www.fdrproject.org**

Are frogs croaking it? Not in the Riverina

By FIONA MYERS

ONE region in rural Australia is going along swimmingly when it comes to population.

The latest census has shown numbers are jumping with plenty of the younger generation staying where their parents grew up.

Many are calling it a population explosion and with good reason — there's now thought to be 44 billion frogs in the Riverina.

Not that anyone's actually counted each frog — the idea of an amphibious census leaves most researchers, well, cold.

But a study being conducted by University of Canberra researcher Dr Sean Doody has been brave enough to have a good guess and found that several frog species are a long way from croaking it.

The king of frogs in numbers is the spotted grass frog.

Dr Doody reckons there must be tens of billions of that species in the rice fields.

The barking frog also scores well, probably in the hundreds of millions.

Birds and snakes are also in good numbers, feasting on the frog and tadpole smorgasbord provided every year by the aquatic rice environment.

So while rice farming might have some critics in the environmental world, you won't hear a complaint from the frogs.

They have billions of reasons to like it.

• Reprieve for rare species, Page 27.

FROG DANCE ON FILLING FLAPS FAILS FLUSH

Eurobodalla Shire Council staff, on the NSW south coast, have taken a walk on the wild side to solve a problem with the public toilets at Bodalla Oval.

The toilets had been working only on and off in recent weeks with no apparent reason for their fickle behaviour. But a close inspection by council staff revealed that frogs had taken up residence in the old-fashioned cisterns and were sitting on the flaps that allow the units to refill.

The council's Works and Facilities Committee chairman Keith Dance says council will now be taking some "frog-friendly measures" to discourage the little amphibians from their home-making habits. Cr Dance says the remedy will probably be something as simple as flyscreen or netting across the top of the cisterns to stop the frogs getting in.

But he says frog-lovers can rest assured that council will not be harming the frogs.

http://abc.net.au/cgibin/common/printfriendly.pl?http://abc.net.au/news/newsitems/s521709.htm

Giselle Howard

CONFERENCE IN DECEMBER

We are organising a symposium on frog decline for the joint ESA & NZES conference to be held from 2nd to 6th December 2002 in Cairns. The goals are:

(1) to exchange information on the recent declines of both New Zealand and Australian amphibians, specifically looking at methods to monitor declines and to reduce potential impacts on wild populations; and

(2) to exchange current understanding on the impact of newly emerging amphibian diseases, their detection and epidemiology.

So far we have received positive responses from five speakers, but we would like to include others. Bruce Waldman Department of Zoology University of Canterbury Private Bag 4800 Christchurch New Zealand Voice: +64 3 364 2066 FAX: +64 3 364 2024 email: bw@zool.canterbury.ac.nz

SMITHS LAKE FIELD TRIP

It was very exciting to finally arrive at Smiths Lake to begin the field trip. This was something I had been looking forward to for a long time! After settling into camp and meeting new friends it was nightfall and we were all able to head out to the quarry. On the way we saw an *Litoria freycineti*.

Once there, we were able to see a number of other species including *L.fallax, L.tyleri* the red backed toadlet and also *L.revelata*. We spotted a Jacki lizard lying on a small bush that was happy to pose for our photographs!

Next, we trekked up a track for a while and spotted a Koala up a tree. It was about then that we realised we were heading the wrong way so we headed back to the car. Another Koala was in a tree grunting as we passed him by. It felt great to be watching wildlife in their natural habitat and listening to their sounds. We returned back to base camp where some of the group retired for a good nights sleep. The rest of us headed out again to search for more nocturnal creatures in the wild. We headed towards a mountain and were amazed to see the road was literally jumping with several species of frogs like *L.lesueuri* and *L.phyllochroa*. We saw a Water Dragon put in an appearance as well.

We drove on and stopped at a number of small creeks where we found *L.peronii*, also *L.phyllochroa* amplexing and some *L.fallax*. Eventually we returned back to base camp in the early hours of the morning.

The next day was spent swimming in the lake and down at Seal Rocks. Afterwards, a game of cricket was a major action at the campsite.

When night fell, we headed out to two ponds where we found *L.fallax* and *L.revelata*. David found a Great Barred Frog and Anne found a Tusk frog both rare and exciting to find! As well, we saw a small eyed snake, and the common little Striped Marsh Frog. After a few hours of viewing all those wonderful creatures we finally headed back to base camp and slept contentedly.

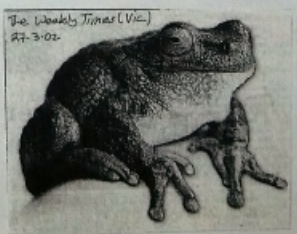
I returned home the next day and excitedly told my friends about this amazing field trip that I enjoyed having the opportunity to be a part of!

Brendon Levot.

Numbers game:

frog numbers are booming

in Riverina rice fields.



VIRUS

Mystery virus ravages UK frogs. Scientists say they are now certain that the disease which has killed millions of British frogs is caused by a virus. The disease, which began in south-east England, has crossed the Scottish border, hundreds of kilometres to the north.

The animals' paws and feet drop off and they die a protracted and painful death. But money to research the outbreak and possible remedies has run out. Tom Langton, the director of the Froglife Trust, told BBC Radio 4's Today programme: "It's worse than myxomatosis, the plague that devastated rabbit populations. "It's a living death: the animals take a considerable time to die, and there are some indications that their numbers are permanently depressed in some areas.

"The ends of their limb extremities, their hands and feet, drop off, they haemorrhage, open sores develop, they get thin and emaciated, and then they die."

BBC Wildlife Magazine published the research showing that a virus is responsible. The work of Froglife and the Institute of Zoology involved investigation of more than 62,000 dead frogs.

Writing in the magazine, Mr Langton says one theory for the disease's origin is a change in the source of imported goldfish. Until 20 years ago most goldfish imported to the UK came from Italy, but since then Israel and the US have dominated the trade. In the US, bullfrogs breed alongside the goldfish enclosures, and are often attacked with shotguns to stop them competing for food pellets.

Mr Langton writes: "Bits of bullfrog could be eaten by a goldfish that is netted and flown off for quick distribution to British garden centres.

"It's a complex situation and the exact causes are still not known. Slug pellets, vehicle emissions and changing weather patterns may play a role in reducing frogs' resistance to the virus; the isolation of urban frogs and in-breeding could also be a factor. More research is needed urgently."

Mr Langton told BBC News Online: "We need £1m for research, but because they're not edible there's no Ministry of Frogs, so we're not getting funding from the government.

"But they're the gardener's friend, and for many children watching tadpoles is one of their earliest learning experiences.

"Frogs are also one of the pivotal species in the food chain, converting invertebrates into nourishment for species higher up.

"Every carnivore eats them - herons, badgers, foxes, hedgehogs. And lacking fur or feathers, frogs are ready to go - the hamburgers of the food chain.

"Frogs are hugely important to the British ecology. But we're now bankrupt."

Froglife says the disease was first seen to be increasing in suburban London gardens in the late 1980s.

"Typically, adult frogs are seen to be dying over several weeks, resulting in dozens, or even hundreds, of deaths. Reports of the virus reach a peak in July and August. Large-scale frog mortalities also occur in late winter and are usually caused by a garden pond freezing over, which can suffocate male frogs hibernating at the bottom.We have found no evidence of the disease affecting people, pets or other pond life; most people report that toads, newts and fish in a pond where frogs are dying appear totally healthy." **Alex Kirby 28 January, 2002 BBC News Online environment correspondent**
http://news.bbc.co.uk/hi/english/sci/tech/newsid_1786000/1786584.stm forwarded by StanOrchard

VIRUS UP-DATE

For those of you who do not subscribe to ProMED-mail, below is a slightly more accurate and detailed explanation of the situation in England that was recently reported on the BBC. Stan

FROG MORTALITY, VIRUS - UKA ProMED-mail post http://www.promedmail.org ProMED-mail is a program of the International Society for Infectious Diseases http://www.isid.org 1 Feb 2002 Source: BBC News http://news.bbc.co.uk/hi/english/sci/tech/newsid_1786000/1786584.stm Mystery virus ravages UK frogs – EXTRACT…..The virus implicated in this outbreak is a member of the genus _*Ranavirus* of the family _*Iridoviridae*_. Iridoviruses are large complex viruses possessing a large double-stranded DNA genome, which infect a variety of hosts. Iridoviruses have only been isolated from poikilothermic animals, however, usually those inhabiting damp or aquatic environments, including marine habitats. None are known to infect warm-blooded vertebrates. Curiously, however, there is a weak amino acid sequence homology of the major capsid protein with a corresponding protein of African swine fever virus, a vertebrate virus of uncertain phylogeny. The epidemiology of how this ranavirus gets transported around the world is a lesson to us all. Today frogs, tomorrow ?? Frogs are eaten by humans, and the major trade, which is out of Southeast Asia, could be used to explain some

movement of _*Vibrio cholerae*_ 'El Tor'. With the collapse of the US rural population we don't catch the number of frogs that we used to, but the culinary demand for 'frog legs' is as high as ever. Many years ago I had my students here in Louisiana study the survival of _*V. cholerae*_ in frozen frog legs -- they do very nicely, thank you -- It is the only paper in the literature on irradiated frog legs in Louisiana.

The following background information on this outbreak has been supplied by Dr Peter Daszak, Executive Director, Consortium for Conservation Medicine, Lamont-Doherty Earth Observatory, Palisades, New York 10964-8000, USA daszak@aol.com daszak@conservationmedicine.org

The facts behind this story originate in the work of Dr Andrew A. Cunningham, Head of Wildlife Epidemiology, Institute of Zoology, London and Dr Alex Hyatt at CSIRO. Cunningham has been working on the UK frog mortality events for a decade. His work convincingly implicates a ranavirus (Genus _*Ranavirus*_ Family _*Iridoviridae*_) as the causative agent. Ranaviruses have been isolated from a range of amphibian, fish, and reptile hosts in America, Europe, Australia, and Asia. Cunningham has published solid epidemiological data to support this. He has also replicated clinical signs (skin ulceration and systemic hemorrhage) experimentally and fulfilled Koch's postulates for a ranavirus isolate from common frogs (_*Rana temporaria*_) (Phil Trans Roy Soc London B. 1996, 351: 1539-1557). This is an important disease. It is implicated in amphibian population declines in the UK and has received a great deal of scientific and public interest not least because of widespread mass die-offs and the striking lesions (the feet don't strictly "drop off", but there often is extensive necrosis of the digits).

The hypothesis that this is an introduced pathogen is based on a recent phylogeny paper (Arch Virol 2000, 145: 301-331). Major coat protein DNA sequences from UK ranavirus isolates (one from a common frog, the other from a toad) group with sequences of isolates from North American amphibians including the bullfrog (_*Rana catesbeiana*_), suggesting it could have been introduced from North America.

The bullfrog is a recent introduction to the UK and is now resident there, but the first reports of this easily noticeable disease pre-date the bullfrog's introduction. Langton suggests goldfish may be involved, and although this hypothesis seems like a tabloid dream, it also is not unreasonable. The global trade in aquarium fish is huge: it represents the largest live animal trade globally and the largest portion of the import of live animals into the UK.

Many ranaviruses have a wide host range experimentally, and experimental infections of fish with amphibian ranaviruses (and vice versa) have been published. Another potential source of introduction is the significant pet trade in amphibians. Of course, hand-in-hand with import of aquarium fish is import of aquarium water and its constituent microbial flora and fauna.

Ranaviruses are generally hardy outside the host, especially at cool temperatures, and previous authors have proposed transport on fishing nets, by waterbirds, and during fish stocking as means of pathogen introduction to new sites (reviewed in EID 1999, 5: 735-748). The dimensions of the aquarium fish and amphibian pet trade, the hardiness of the virus, and lack of knowledge of amphibian pathogens (let alone surveillance, quarantine and control measures) all suggest that this hypothesis is worth testing, and that the disease outbreaks in the UK may represent yet another example of "pathogen pollution."

ORIGINAL VIRUS ARTICLE FOLLOW-UP

Comments below from Bruce Bury on the UK virus article. The loss of amphibians in the UK is a shocking development, but the report was a bit accusatory in tone or premature, methinks. A couple of statements may be offkey:

"...Bits of bullfrog could be eaten by a goldfish that is netted and flown off for quick distribution to British garden centres.

"It's a complex situation and the exact causes are still not known. Slug pellets, vehicle emissions and changing weather patterns may play a role in reducing frogs' resistance to the virus; the isolation of urban frogs and in-breeding could also be a factor. More research is needed urgently."

The sources of the goldfish to the UK were reportedly imported from Israel and the United States. But, only mention is made of [American] bullfrogs being blown to bits [because they were eating the fish pellets fed to the goldfish] and then these parts are netted up with the fish and shipped to the UK. If that is a hypothesis or suspicion, it is not logical. There is no evidence presented that the bullfrogs have this virus. Viruses and fungi can attach themselves to fish skin.

Has anyone checked them for chytrid fungus? This is a worldwide taxa, and it attacks amphibians. There is a lot of research starting up on the issue and a portion of the work is funded by the National

Science Foundation (U.S.) for a global view. There is a team involved with this research and funding was fairly substantial.

Anyhow, it would be better to be cautionary about explanations of amphibian declines until there is thorough laboratory analysis of the dead or dying animals. We ought not presume causative factors without a scientific basis..**R. Bruce Bury, Zoologist USGS Forest and Rangeland Ecosystem Science Center 3200 SW Jefferson Way Corvallis, OR 97331 (541) 758-7788 FAX (541) 758-7761email: Bruce_Bury@usgs.gov**

GAMBUSIA

The NSW National Parks and Wildlife Service has prepared a draft threat abatement plan for the listed NSW key threatening process 'Predation by *Gambusia holbrookii* - the Plague Minnow'.

A copy of the plan is available on the NPWS Website www.npws.nsw.gov.au (go to Nature and Conservation then Threat Abatement Planning).

Any comments on the draft plan are welcome. Please forward to the address on the website.

Hard copy can also be provided for a small fee. Regards **Ron Haering National Parks & Wildlife Service Senior Threatened Species Officer Biodiversity Management Unit 02-95856426**

WATER POLLUTANTS

A smart material identifies and destroys toxic pollutants in water. When exposed to the offending molecules, tiny light-emitting zinc oxide particles glow dimly, burn them up, and glow brightly to show they've finished.

The advantage of such an approach, say Prashant Kamat and co-workers at the University of Notre Dame in Indiana, is that the energy-consuming burn-up stage switches on only when pollutants are present. Kamat's team is training its cross-hairs on organic aromatic pollutants such as chlorinated phenols. These are used as wood preservatives and pesticides, and are often the by-products of paper pulp milling.

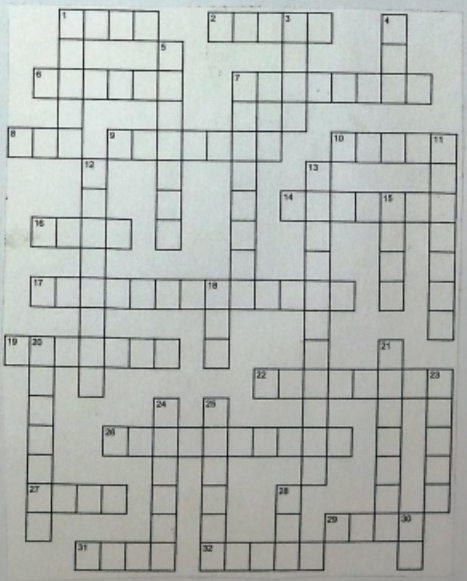
Polychlorinated biphenyls (PCBs) are related substances that are widespread contaminants in industrialize nations. They are used to manufacture paints, plastics, adhesives and electrical goods, and as hydraulic and cooling fluids.

Municipal incinerators produce similar chlorinated aromatic compounds called dioxins. All these chemicals are toxic in high doses, and are possibly carcinogenic. One widely studied new method for decontaminating water is photocatalytic oxidation: the burning-up of organic molecules in air, stimulated by a light-sensitive catalyst.

The most common catalyst in these studies (which have not yet delivered a commercial process) is titanium dioxide. Zinc oxide might prove more versatile, the Notre Dame group thinks. It destroys organic molecules in much the same way as titanium dioxide, but can also sense the presence of these compounds in the first place. Zinc oxide is fluorescent: it absorbs ultraviolet light

And re-emits the energy as green light. This light level falls by 15% when zinc oxide is exposed to just one part per million of chlorinated aromatic molecules - a few drops in a bath of water. When such a solution is exposed to strong UV irradiation, a film of zinc oxide particles reacts with the organic molecules, converting them to harmless substances. After several hours of irradiation, the film's fluorescence increases, because there is less chlorinated compound left. In a water-purification system, this brightening green light could signal that most of the contaminant has been destroyed, triggering a shutdown of the ultraviolet irradiation.

Whether such a system will be commercially viable depends on whether the contaminants can be removed efficiently and quickly enough. **Nature Science Update (http://www.nature.com/nsu/): 4 February 2002 PHILIP BALL http://www.nature.com/nsu/020128/020128-13.html references 1.Kamat, P. V., Huehn, R. & Nicolaescu, R. A 'sense and shoot' approach for photocatalytic degradation of organic contaminants in water. Journal of Physical Chemistry B, 106, 788 - 794, (2002). © Nature News Service / Macmillan Magazines Ltd 2002**



ENDANGERED FROGS OF MEDICAL VALUE

BEING close to extinction is not the only reason science has taken a renewed interest in the NSW Southern Corroboree Frog. It has now been discovered that the bizarre amphibian is unique amoung animals.

US researchers have identified the amphibian, from the Snowy Mountains of southern NSW, as the only frog known to make its own chemical weapons.

It is the first documented case of a vertebrate that has the ability to generate poison in the form of a unique brand of alkaloids - a group of chemicals normally linked to plants. And the discovery of its properties could be applied to new treatments for chronic pain and heart conditions. But the discovery may have come too late for the frog, with numbers of this brightly coloured creature so low that it is almost beyond help.

Confined to an area of 400 square kilometres, the frog's distribution has now been reduced to the sub-alpine region of the Kosciuszko National Park.

According to the Federal Government, the cause of its decline may be due to a number of factors including disease, habitat loss from human development, and climate change.

Now US researchers from the National Institutes of Health and Adelaide University biologists have found a phenomenon which is found only in the *Pseudophryne* genus of frog - the Southern Corroboree Frog.

"This was surprising. We didn't expect it," said John Daly, a biochemist with the NIH. Dr Daly and his colleagues, who have been looking at alkaloids in frogs for 40 years, said a unique group of alkaloids was found only in these Australian frogs. They are now known as pseudophrynamines.

Poison frogs release these chemical poisons to defend themselves against predators.

All frogs derive these alkaloids from eating insects - all, that is, except the Corroboree Frog. The discovery has been reported in the proceedings of the world's largest scientific society, the American Chemical Society's Journal of Natural Products.

http://www.dailytelegraph.news.com.au/common/story_page/0,5936,4102827%255E3163,00.html

SIMON BENSON 10apr02

Across

1 FATS stands for .... and Tadpole Study
2 Frogs like to be ..... rather than dry
6 FrogCall Editor, ... Wangmann
7 A favourite food for frogs, available in shops
8 Most frogs will ... anything smaller than them
9 Males of the Brown Striped Marsh Frog have ..... forearms than females
10 Best period of the day to find frogs
14 Recently identified frog fungal disease"
16 A frog has this many toes
17 A common suburban frog that makes foam egg nests is ..... peroni
19 In NSW you must have one of these from NPWS to keep frogs
22 Frog mating embrace
26 A small black and yellow alpine ground dweller is the ..... Frog
27 Hylidae is the family of .... Frogs
29 Only frogs of this gender croak
31 A frog has this many fingers
32 Cyclorana translates as ..... frog

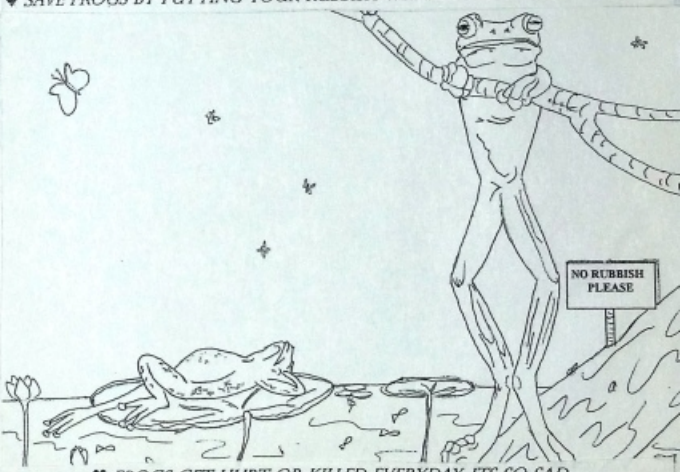
Down

1 A frogs tongue is attached to the ..... of the mouth
3 Frogs can absorb water through their ....
4 Most Tropical frogs breed during the ... season
5 A newly described close relative of Litoria subglandulosa featured in a recent FrogCall is Litoria .....
7 The Green Tree Frog is also known as Litoria ....."
11 A larval frog
12 Frog week is in this month
13 Australia's largest frog is the ..... Tree Frog
15 Many frogs will start to call after Spring ....
18 Use this to catch tadpoles
20 A frogs diet in the wild consists mostly of these
21 A non-native tailed amphibian, common as a pet
23 Frog eggs
24 FATS Group President, ... White
25 FATS Group Publicity Officer, ... Voigt
28 Good place to look for frogs
30 A frogs tympanum is like a human ...drum

SAVE THE FROGS!

♥

♥ *SAVE FROGS BY PUTTING YOUR RUBBISH WHERE IT BELONGS IN THE BIN.*



♥ *FROGS GET HURT OR KILLED EVERYDAY, ITS SO SAD.*

♥ *TO STOP FROG S FROM HARM KEEP OUR ENVIRONMENT CLEAN.*

♥ *WE CAN, AS A COMMUNITY, WORK TOGETHER TO MAKE FROG FRIENDLY ENVIRONMENTS IN PEOPLES BACK YARDS OR IN OUR SCHOOLS.*

♥ *FROGS ARE VERY SPECIAL TO ALL OF US, PLEASE DON'T LET ONE MORE OF THEM DIE.*

♥

11 Reproduced in Frogcall from a poster sent in by Reegln McElligott to the Townsville Frog Club Newsletter NQCC March – April 2002

Herbicide causes frog sex change

The commonly-used herbicide atrazine has drastic effects on the sexuality of male frogs, a US study has found. The report comes hot on the heels of an investigation into the use of the herbicide in Australia.

Abnormal gonads in a male Xenopus frog, the result of exposure to the herbicide atrazine. The frog has become a hermaphrodite – it has both male (testes) and female (ovaries) sex organs. (Pic: Tyrone Hayes/UC Berkeley, courtesy PNAS)

A team at the University of California, Berkeley found that atrazine demasculinises male tadpoles, turning them into hermaphrodites. The findings are published in this week's *Proceedings of the National Academy of Sciences*.

"Atrazine-exposed frogs don't have normal reproductive systems," said lead researcher Associate Professor Tyrone Hayes.

"The males have ovaries in their testes and much smaller vocal organs." Vocal organs are essential for frogs in calling potential mates.

The experiments were conducted on two separate populations of the African clawed frog, *Xenopus laevis*. Frogs exposed to atrazine levels of 0.1 parts per billion or higher showed abnormalities.

Sexually mature males showed a 10-fold decrease in testosterone levels, bringing them below levels found in normal females, which could explain the smaller vocal organs and abnormal sex organs. As many as 16 per cent of the animals had more than the normal number of gonads.

This is the first study to investigate the effect of atrazine on the tadpole stage of frogs, and to look at low levels of atrazine, similar to those found in the environment. To date, atrazine's effects on mammals and amphibians have been tested only at large doses.

Atrazine has been used for 40 years in 80 countries. It could be one of the many factors in the global decline of amphibians, suggested Associate Professor Hayes.

Frogs are more affected by atrazine than humans because they spend their lives in water, but amphibians are often considered to be sensitive environmental 'sentinels', argued the researchers in their report.

"[This] raises real concern for amphibians in the wild," they write.

Some countries, including France, Belgium, Germany, Italy, Sweden, and Norway, have banned the chemical.

Australian review

In Australian, atrazine has been used for weed control for more than 25 years, and is the active ingredient in 37 products registered with the National Registration Authority for Agricultural and Veterinary Chemicals (NRA). It is the most commonly-found pesticide in groundwater throughout Australia.

Atrazine was prioritised for review on public health grounds because of concerns that, as a relatively persistent chemical in the environment, it could have endocrine-disruptor and carcinogenic potential. Endocrine disruptors are chemicals that interfere with the activity of sex hormones.

The 18-month study in 1997 concluded that atrazine was fit for continued use in Australia, but that extra controls were needed to reduce the risk of water contamination. These included measures for reducing the contamination of waterways, monitoring levels of atrazine in waterways, and a recommendation to incorporate metabolites of atrazine into water quality guidelines.

In addition, non-agricultural uses of atrazine were banned. These had included lawns, golf courses, drains, roadsides, industrial premises, and irrigation channels. All old labels that did not have instructions reflecting these changes were cancelled on 23 March 2001.

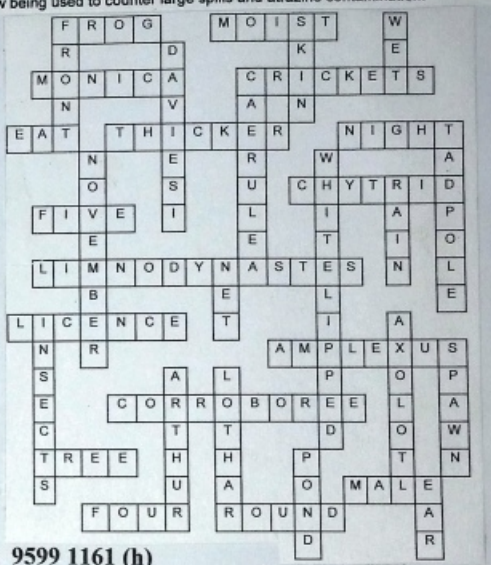
CSIRO Land and Water identified atrazine contamination in the Perth groundwater in 1998. The city relies on groundwater for 70 per cent of its water supply.

Atrazine in groundwater is a big problem because the lack of light and oxygen means it degrades very slowly, with a half-life of eight years. In surface water, atrazine has a half-life of 40 days.

In 1999, CSIRO announced it had discovered, in conjunction with University of Western Australia researcher Dr Amanda Tilbury, a native microbe that can digest and neutralise atrazine.

This is now being used to counter large spills and atrazine contamination.

Original URL: http://abc.net.au/science/news/stories/s531726.htm
Danny Kingsley – ABC Science Online



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We hold six informative, informal, topical and practical meetings each year at the Australian Museum, Sydney (William Street entrance).
Meetings are held on the first Friday of every **even** **month** (February, April, June, August, October and December) at 6.30 pm for a 7:30pm start.
NO MEETINGS ARE HELD ON GOOD FRIDAY so check each newsletter for alternate dates. Visitors are welcome. We are actively involved in monitoring frog populations and in other frog studies, and we produce the newsletter *FROGCALL* and *FROGFACTS* information sheets.
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