



ACTHA CONTACT DETAILS

PO Box 160
Jamison ACT 2614
E-mail: info@actha.org.au
Website: www.actha.org.au

ACTHA INC. NEWS DEC 2012 - JAN 2013

*Newsletter of the
ACT Herpetological
Association Inc.*

YOUR NEW COMMITTEE FOR 2012 - 2013

President	Dennis Dyer
Vice President	Ric Longmore
Secretary	Vacant/Angus Kennedy
Treasurer	Margaret Ning
Newsletter Editor	Mandy Conway
Webmaster	Angus Kennedy
Public Officer	John Wombey *
Excursion Officer	Ric Longmore *
Conservation Officer	Joe McAuliffe
Committee Members	Iris Carter Greg Flowers Peter Child
Student Representative	Angelique Harrison Sophie Sloane

** Denotes Life Members*

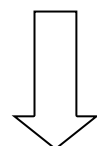
DIARY DATE

The *bi-monthly* meetings of the Association are held on the **third Tuesday of the month** at 7.30pm. Our usual venue is:

Belconnen Soccer Club, Hawker
(cnr Belconnen Way & Springvale Drive)

UPCOMING MEETING - TUES, 18 DEC

PLS NOTE CHANGE OF VENUE



IN THIS ISSUE

ACTHA event shirts...please see page 2.

Threatened Frog Conservation in Kosciuszko National Park: Fighting against the tide of extinction: David Hunter, NSW OE&H, was our guest speaker at ACTHA's October 2012 meeting, where he described the Chytridiomycosis disease in detail and the recovery programs for affected amphibians which are currently underway. A detailed account begins on page 3.

The Australian & International Scene:

New lizard struggling to survive: page 10.

The sad tale of the urban frog: page 10.

Extreme 'housework' cuts life span of female

Komodo dragons: page 11.

Snake mishandler fined: page 12.

Anglers return noxious fish to waterways: page 12.

Reptile monitoring at Scottsdale Reserve:

Bush Heritage Australia is calling for volunteers to monitor reptile abundance at this Reserve, see page 14.

ACTHA's website receives herpetofauna ID

requests: Members of the general public visit our website asking for help, page 15.

Frogwatch news: monitoring update, page 16.

Christmas party for ACTHA members

Tuesday, 18th December 2012, 6pm onwards,
at the **NEW Canberra Reptile Zoo** located at
Gold Creek Village (off the Barton Highway),
behind **Cafe Injoy** / opposite the clock tower,
17 O'Hanlon Pl, Nicholls.

The former Australian Reptile Centre, founded by Ross Bennett in 1997 and more recently known as the Canberra Reptile Sanctuary, has been taken over and revamped by the team at Reptiles Inc. There are big plans for the old Centre, but for now it has received a well deserved makeover which will be unveiled at this year's ACTHA Christmas Party!

A party not to be missed, where planning for **Snakes Alive! 2013** will also be discussed.

Just bring a polo or T-shirt for printing (see p2!)

RSVP to mandyconwy@gmail.com by Monday, 17th

***Snakes Alive!* Exhibition, 17 to 20 January 2013**

Snakes Alive! 2013 is less than **5 weeks** away. The Exhibition will run from **Thursday to Sunday inclusive**, and we will need more volunteers to handle reptiles and guide visitors with larger crowds expected each day over the shorter period.

If you can spare even a few hours **pls** come to our **Christmas party** where we will be discussing the event.

Proposal for ACTHA Member Shirts

Several ACTHA members have asked whether a T-shirt with our logo could be made available for use at events such as our annual *Snakes Alive!* Exhibition. The aim is to help the general public identify ACTHA volunteers at reptile displays.

Our talented student representative, **Angelique Harrison**, has drawn and painted a couple of beautiful images (*see below*) for possible use, along with our logo.

Interested members are asked to bring a pale cotton, good quality T-shirt, collared polo shirt, or other preferred garment to the Christmas party on Tues, 18 December '12, where printing preferences will be discussed, a decision made and the garments given to Mandy, your Editor, who will arrange printing, with costs to be reimbursed by the owner at *Snakes Alive!*

The cost is expected to be no more than \$25 per garment. Feel free to contact me for more specific information: **mandycnwy@gmail.com**



THREATENED FROG CONSERVATION IN KOSCIUSZKO NATIONAL PARK: FIGHTING AGAINST THE TIDE OF EXTINCTION

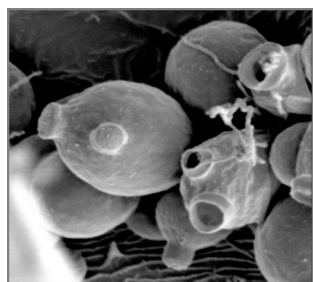


David Hunter, Biodiversity Conservation Section, NSW Office of Environment & Heritage, gave a talk to ACTHA members at its October 16, 2012 meeting on Chytridiomycosis, its affect on frogs, and the endangered amphibian recovery programs currently underway. This summary by Mandy Conway

David Hunter has touched on the effects of the chytrid fungus to the world's amphibians in previous talks to ACTHA. At this meeting's presentation he gave an in-depth insight into the way this pathogen is destroying amphibian populations worldwide, concentrating on recent developments in the battle to mitigate its impact. Frogs facing extinction in the Kosciuszko National Park were examined in depth.

Introduction

When frog declines first became apparent the cause was a mystery, particularly in the first decade. A very large proportion of our frog biodiversity was disappearing from national parks and wilderness areas which were being environmentally managed. Species like Australia's Gastric Brooding Frog and the golden toads of Central America became extinct. Academics are now suggesting that amphibians are in the midst of a sixth mass extinction event due to a variety of factors, but largely driven by the Amphibian Chytrid Fungus, *Batrachochytrium dendrobatidis* (below left). The disease is known as Chytridiomycosis.



Where did this pathogen come from? Was it a native pathogen that had become virulent or an exotic pathogen?

Standard human pregnancy testing during the 1930s to 1960s was to inject a woman's urine into the African Clawed Frog. The hormones in the female's urine, if she was pregnant, would make the frog ovulate. Almost all universities and pharmaceutical companies throughout the world would have kept this frog, which carried the chytrid fungus. It is believed to have reached Australia's wet tropics in the early 1990s, although frog declines first started in the late 1970s and early 1980s in this region, as well as throughout the Southern Tablelands, Northern Tablelands and South-east Queensland. By the mid-1980s, Yungalla, near Mackay, experienced severe amphibian population crashes. North Queensland experienced the same tragedy five years later. Chytrid reached Tasmania and Western Australia relatively recently, although with WA's hot and dry periods the frogs appear to be less susceptible in this State; there are still outbreaks of disease and death, but populations are not completely wiped out.

Recent developments

Recent developments suggest that it is an exotic pathogen that has only relatively recently spread throughout the world. For years it was thought to have come from Africa, although some academics were not convinced. More recently, researchers conducted genome studies and have a new hypothesis: a chytrid fungus from Africa and a chytrid fungus from Europe are believed to have been brought together in a laboratory, by man, where it has hybridised to produce a hyper-virulent strain, multiplied in the laboratory and then unwittingly spread throughout the world. Researchers also discovered that a chytrid fungus has existed in Central and South America for over 100 years, but not this hyper-virulent strain.

Chytridiomycosis has had an unprecedented impact on amphibian biodiversity and its ability to do this is due to its unique life history and the way in which it infects all amphibians, not just some species. It is these traits of the fungus that were also the arguments that some academics put forward as to why frog declines couldn't be due to a pathogen because this is

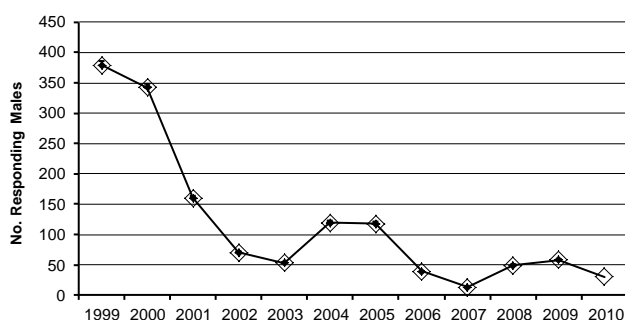
not how a pathogen usually works: they typically don't drive their host to extinction, and typically specialise on particular hosts, not, as in this case, on all amphibians. The chytrid fungus' ability to infect all amphibians and drive some through to extinction is because there are frog species that don't develop the disease; rather they carry infection to enable them to become a massive reservoir host that can spread amongst the individuals that are susceptible. Typically, under a simple host-pathogen model relationship, an animal that is susceptible will drop in numbers to a level where there are so few left in the landscape that the chances of a sick individual bumping into a non-infected individual before it dies becomes so low that it doesn't happen often enough to keep driving decline. (include slide 4: Bd a super pathogen!)

Amphibian recovery programs in our region



The **Southern Corroboree Frog**, *Pseudophryne corroboree*, will become extinct without assistance in mitigating the chytrid fungus. Last summer, only 9 individuals were found during surveys in the

wild. Less than 20 are believed to exist in the Brindabella's south, with only 2 individuals located in the Brindabella's north.



Above: Southern Corroboree Frog Population Monitoring: Summary.



The **Northern Corroboree Frog**, *Pseudophryne pengilleyi*, is in a similar predicament. All monitored populations are on a downward trajectory and look like becoming extinct in the near

future. A couple of small populations were found, which appear to be doing better, however more work is required to validate this.

The **Spotted Tree Frog**, *Litoria spenceri*, is in the same dire situation. A riverine species which is restricted to fast flowing permanent streams in south-eastern Australia has all but vanished from NSW and appears to be declining rapidly in Victoria.



Frogs like the **Gastric Brooding Frog**, *Rheobatrachus vitellinus*, disappeared virtually overnight. Others, that are clearly susceptible and whose numbers have initially declined rapidly, have residual populations which are declining gradually. Then there are other frog species which are clearly susceptible, with numbers quickly decreasing, particularly when the pathogen first arrived in Australia, but have since either remained relatively stable, albeit at greatly reduced abundance and range, or, much to the delight of researchers, appear to be recovering. Two examples include the **Alpine Tree Frog**, *Litoria verreauxii alpina* (top right) a local example,



and the **Eungella Day Frog**, *Taudactylus eungellensis* (bottom right). How have these species managed to do this? Is it selection for a more robust immune response or some other aspect in the way in which it is interacting with this pathogen that is giving these populations the edge?



Two key questions are being explored by researchers: Have frogs been able to develop an acquired immune response to the chytrid fungus? Is there an innate immune response whereby susceptible individuals die-out and the less susceptible ones remain, which results in stronger selection towards increased immunity?

Booroolong Frog vaccination experiment: development of a more robust immune response

A vaccination experiment using the Booroolong Frog, *Litoria booroolongensis*, was conducted at a Taronga Zoo laboratory by Scott Cashins, a John Curtin University postdoc. The experiment



Above: the Booroolong Frog,
Litoria booroolongensis

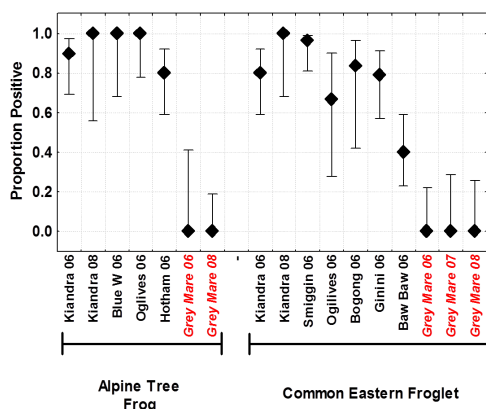
involved exposing frogs to the chytrid pathogen and allowing the infection to develop. The frogs were then cured of infection and researchers then waited for a while for the frog's system to settle and to

develop the immune response one might expect. The same frogs were then re-exposed to the chytrid fungus to see if the animals had developed a history to a prior exposure. Naive control animals were also used.

Results indicate that even if the frogs had previous exposure, it didn't appear to be an acquired immune response, effectively strengthening the animal at the next chytrid encounter. The majority of other similar studies have achieved the same outcome. Although an acquired immune response effect didn't eventuate, a clutch effect did occur. A clutch effect means that individuals from the same clutch are more likely to have a similar response – which suggests that the response is at least in part due to genetics. slide 13.

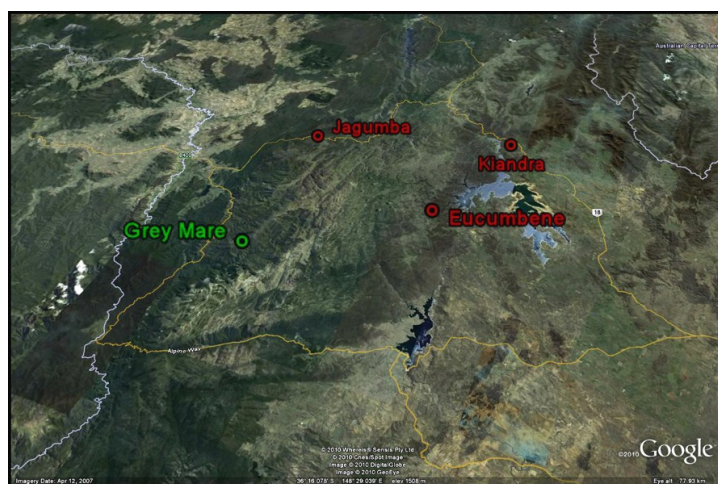
Alpine Tree Frog innate resistance experiment

Chytrid is a topical fungus that affects the epithelium layers of the skin, rather than a pathogen which attacks deeper tissues to invoke a systemic immune response. Human skin fungus is extremely difficult to treat, even though many research dollars have been spent trying. Was an innate resistance likely to explain why some frog populations were persisting whilst others perished?



Graph 1: Alpine Tree Frog innate resistance experiment results.

Scott Cashins, along with Laura Grogan, a James Cook University PhD student based at Taronga Zoo, worked on the Alpine Tree Frog innate resistance experiment (graph 1). The experiment was conducted over multiple years and included data pertaining to the **Common Eastern Froglet**, *Crinia signifera*. A significant finding was the discovery that populations of these two frog species in the Grey Mare district of Kosciuszko National Park inhabited a small bog on a very narrow ridge, a long way from any other frog population, and were chytrid free. In essence a sky island, surrounded by many kilometres of dissected non-frog habitat



that didn't appear to have been affected by the chytrid fungus over the last few decades. A similar population of chytrid-free frogs has been found in the Victorian high country.

For the experiment, frog eggs were collected from the wild to ensure there was no prior history of exposure to the chytrid fungus, and the eggs were raised to adults in the laboratory before being exposed to the fungus. Response variables included the proportion infected, time to death and infection intensity. To better understand the immune response, Laura Grogan studied transcriptomics, protein and metabolite quantity and identification, and compared the MHC (Major Histocompatibility Complex) variability among field sites with different chytrid exposure histories. Ultimately, Laura was keen to see if the frogs with a long history of exposure had a better immune system. In addition to that, she wanted to identify which part of the frog's genome might be expressing the genes that afford a greater

resistance, because ultimately the genome codes could potentially be used to selectively breed frogs in the laboratory.

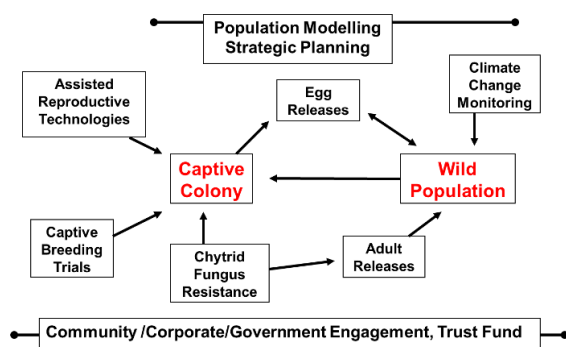
Results showed that there wasn't a strong difference in susceptibility in the laboratory between Grey Mare and exposed sites, however they did indicate a clutch effect doesn't explain what this is), which was interesting. There was not a strong selection resulting in a big difference, however there is still the suggestion that there is still some genetic components affording greater resistance as suggested by the clutch effect.

The results so far are not indicating that Alpine Tree Frog populations are persisting in the face of chytrid fungus due to the fact they have evolved a much more robust immune response to this pathogen.

Mitigating chytridiomycosis

The important role of captive breeding, rearing and reintroduction cannot be emphasised enough, David said. Preventing the complete extinction of species threatened by chytrid, and assisting selection for resistance, will require much effort and more: five of the six Australian frog species in a state of ongoing decline are already, or about to be, managed ex-situ.

Below: Corroboree Frog Recovery Program



Managing as well as making effective links between captive breeding colonies and dwindling wild populations, and trying to move towards having self-sustaining populations requires better captive breeding techniques as well as different release techniques to enhance success. Broader aspects include community engagement, sponsorship and funding of conservation programs, making programs more efficient and modelling programs to be more strategic.

Chytrid dynamics: interactions with reservoir hosts

The Common Eastern Froglet, which inhabits the high country in its millions, is a reservoir host for chytrid and for this reason could be one of the main reasons the Corroboree Frog is likely to go extinct in the wild: the two species breed in the same pools of water.

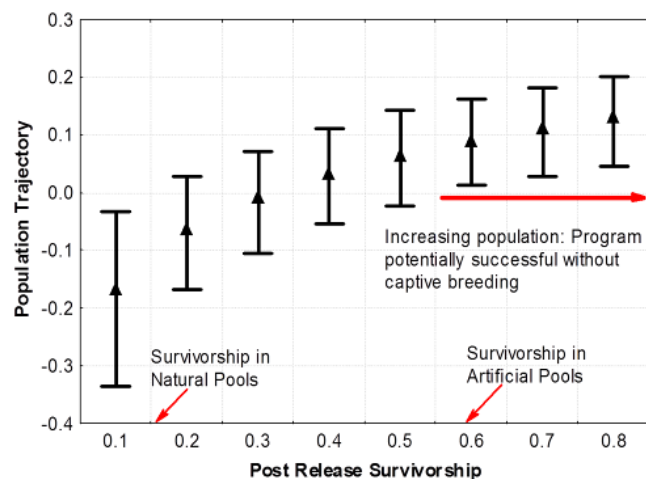
David, along with Mike McFadden from Taronga Zoo, is experimenting with the use of artificial pools where eggs are reintroduced. The eggs are put into tubs which are set 15cm above the ground. The Common Eastern Froglet isn't a skilled jumper and can't enter these artificial pools. The Corroboree eggs are then able to achieve metamorphosis without becoming infected, resulting in greater chytrid-free survivorship. In notable



comparison, 60% of Southern Corroboree Frog tadpoles became infected and died upon reaching metamorphosis in the natural pools.

"We need to be able to re-create population level processes in the wild, hundreds if not thousands of individuals. Anything that can be

Below: Is harvesting/rearing and release enough?



done to increase the efficiency of conservation programs, at every stage, is likely to greatly increase their success. Failure is usually due to lack of scale, not techniques.

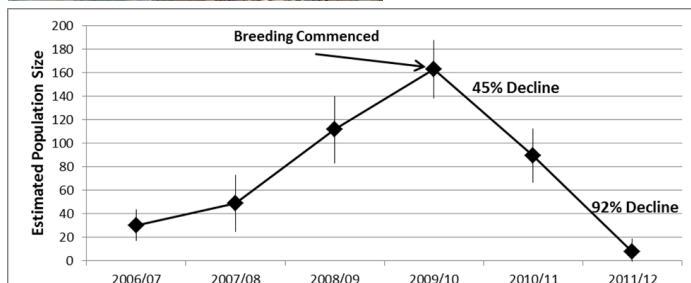
Current funding by stakeholders like Taronga Zoo, the Amphibian Research Centre and others means there is no reason why the Corroboree Frog should be left to go extinct by authorities' intent on saving dollars. The next 3-4 years will be keenly observed as the first groups of eggs will have developed into sexually mature adults." David said.

Spotted Tree frog Reintroduction Program

Captive breeding of the Spotted Tree Frog commenced in 2005. The last individual male was found in 1998 and placed in captivity with females from a Victorian population. By 2009 a relatively high proportion of released frogs



survived to sexual maturity and successfully bred to an estimated 160 individuals in a predominantly drought affected period.



The population declined rapidly one year after final release (graph above), when the weather had turned cold and very wet. Frog populations in general have benefitted greatly from the last two cool and wet years, but the threatened species have suffered huge population declines. The Spotted Tree Frog is normally just a reservoir host, but a spike in infection occurred in the cold and wet weather.

Can acquired or innate resistance management provide the 'silver bullet'?

Susceptible frog species have limited capacity to evolve a robust immune response to chytridmycosis. This has been suggested directly from studies investigating the immune response to chytrid in America (Roseblum et al.

2012), and for the Alpine Tree Frog in Kosciuszko National Park (Scott Cashins and Laura Grogan unpublished data, JCU).

Population level resilience for species that are susceptible to chytridmycosis has been achieved via ecological/demographic interactions with chytrid impacts, rather than a shift in virulence or robust immune response. These populations are persisting because they are in warmer and drier parts of Kosciuszko National Park, which is allowing enough individuals to maintain infection below a point in which disease doesn't set-in; it's allowing populations to exist. This has been similarly suggested from studies in America (eg. Muths et al. 2011), and Australia (eg. Puschendorf et al. 2011).

David cited a quote which appeared in the first few lines of a paper which said "there's not many things a hot bath won't cure, but I don't know what they are". In the US State of Arizona there is a frog which is susceptible to the chytrid fungus and is only persisting where it breeds in hot springs. The chytrid fungus dies in temperatures above 27 degrees and all life stages of this frog, including the adults, stay free of the fungus at this temperature. Similarly, in North Queensland the Armoured Mist Frog, *Litoria lorica*, a wet tropic specialist, was believed to be extinct in the wild for about 17 years. It has been rediscovered in high abundance along a stream that was situated in sclerophyll forest. As soon as this stream enters the rainforest there are no frogs of this species. The open areas of the forest is allowing enough warmth and thermo-regulation capacity to keep the infection at bay.

The here and now challenge for ongoing conservation programs is greater efficiency and productivity in producing animals for reintroduction into disease free sites in the wild. Techniques to directly mitigate chytrid at this point appear to be ecological solutions eg moving frogs to areas where they are climatically more in favour of populations persisting ie assisted colonisation.

Conservation and breeding efficiency

Ecologists need to get to a point where conservation programs are more efficient and less draining on the system so that frogs are

looking after themselves in the wild, because the reality is the Corroboree Frog and Spotted Tree Frog are utilising so many of the resources that are also needed elsewhere. These two species are used as a flagship when discussions about the environment occur, but in general it is very tenuous to create links to other aspects of the environment that also need assistance. Booroolong and Bell frogs are in the rural landscape, often beyond national park borders in food production, agricultural areas where one can marry food production with biodiversity matters. David enjoys working on this aspect of conservation and enjoys talking to farmers about better management of rivers, which he believes deserves more focus.



An example of efforts to increase breeding efficiency of Corroboree frogs in captivity is using the technique **Assisted Reproduction Technologies**.

Females are artificially induced with hormones to produce eggs and likewise males are induced to produce sperm. The eggs and sperm are mixed in a petrie

dish to enable fertilisation. Benefits with this method include a greater ability to manage the genetics of the colony (eggs and sperm from several females and males can be mixed) and frogs can be kept in small containers on racks rather than having large and elaborate artificial moss bogs which take up a lot of space and resources. David cited three facilities in the world which totally rely on this form of captive breeding.

Ecological management solutions

A novel approach for the reintroduction of species into the wild has been suggested: specifically, utilising warmer areas of Kosciuszko that are highly degraded and which are currently being rehabilitated.

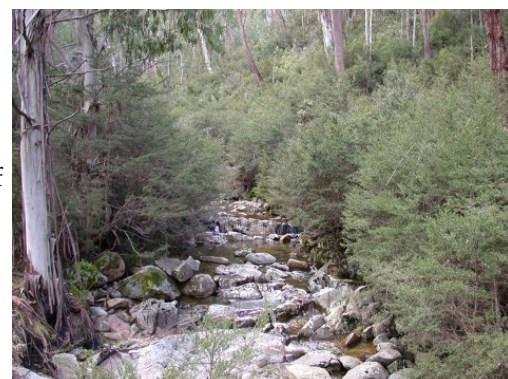


Can these rehabilitation areas (*image above*) be used as nursery sites to establish highly productive frog populations that can be harvested for reintroduction elsewhere, essentially getting Mother Nature to do the rearing for us. Keeping the sites chytrid free is just one of the challenges. If a frog population in the wild is kept chytrid free it is highly productive. Producing frogs in a relatively small area in the wild could produce an equal or greater number than within today's breeding facilities, without current costs in the order of \$200,000 to \$300,000. Captive bred animals will likely always be produced by organisations such as zoos, but having other areas producing similar numbers of animals for very little investment would increase the security and success of conservation efforts.

For the Corroboree frog, the ecological solution as suggested is to think about where else they could occur where they have an edge over the fungus. Three factors are likely to afford an increased resilience to chytrid: at a lower altitude which would be warmer; somewhere where the reservoir host, the Common Eastern Froglet, has reduced densities; sufficient moisture to enable more reliable recruitment/less susceptibility to drought. Drought has sufficiently hampered conservation efforts over the past twelve years and predicted climate change will continue to do so in the future.

The same ecological solution applies for the Spotted Tree Frog.

It was reintroduced into Bourke's Gorge, (*right*) which has a large population of green river tree frogs, which are



also susceptible to chytrid. The stream is choked with dense tea tree vegetation and it is proposed to remove this to open-up the canopy, as well as to remove other reservoir host frog species in the system. Re-establishing the Spotted Tree Frog here would enable harvesting for reintroduction into warm, open streams with a low density of other frogs.

In the long term, this frog is unlikely to persist at Bourke's Gorge because it is not sustainable to keep cutting back the dense vegetation and prevent reservoir host species from returning.

In answer to a comment that there were bound to be a couple of the river tree frogs hiding somewhere that could still pass on the fungus, David made the point that re-established frogs need to be in the presence of chytrid, because if they die very quickly then researchers want to know about it before they invest all their energies on what could be an unworkable endeavour.

"If these frogs survive into the future it will be because different people are able to work co-operatively together to make it happen." David said as he ended his presentation, highlighting some key players in the fight against chytrid.

Q Can the chytrid fungus survive on vegetation, or in water?

In relatively sterile water, zoo spawn can survive for up to 6 weeks. At this stage chytrid needs a host of some sort. The assumption has been that the only host is amphibians, however word has come out of JCU suggesting there may be some aquatic invertebrates that act as a reservoir host and, as yet undemonstrated, where the chytrid fungus can run through its lifecycle as well.

The chytrid fungus feeds on keratin, which is contained in a matrix in the frog's skin. Keratin forms the exo-skeleton of most invertebrates. Finding the chytrid fungus in the wild is done by leaving a snake's shed skin in the area, which the fungus will colonise if the skin is placed in a moist and cool environment. There are many species of chytrid fungus, many of which live in the soil, breaking down dead matter of vegetation and insects. The Amphibian Chytrid Fungus is the only one known to infect a live animal.



! *Amphibians are the most threatened vertebrate class on Earth. At least one-third of amphibian species worldwide are endangered or now extinct (Stuart et al 2004, Sodhi et al 2008).*



THE AUSTRALIAN & INTERNATIONAL SCENE

New lizard struggling to survive

ANU Media Release/Sciencealert 29 Oct 2012



Photo by
Brad Maryan.

A team of scientists from The Australian National University has discovered a new species of lizard hidden among the

sand dunes of Western Australia's coastline. However, mankind's encounter with this new species may be short-lived. Urban sprawl and habitat destruction are already pushing the tiny creature towards extinction.

The 6cm long *Ctenotus ora*, or the Coastal Plains Skink, only lives in the dunes along the Swan Coastal Plain between Dunsborough and Mandurah, south of Perth.

The discovery, detailed in the journal *Zootaxa*, took place during research to determine the levels of biological diversity in South-western Australia by ecologists Mr Geoffrey Kay from the Fenner School of Environment & Society, and Professor Scott Keogh from the ANU Research School of Biology.

"Although it's a fantastic discovery, it's poor cause for celebration. Our new lizard is under serious risk of being erased just as suddenly as it appeared.

"Only a few of these lizards have ever been found in the wild, so while we know numbers are low, we are not sure of the exact size of the remaining population."

The small stretch of sand the skink calls home is steadily being converted into residential developments.

"Developments along the coastline near Perth need to consider this new lizard and potentially a large number of other species yet to be discovered," said Mr Kay.

South-western Australia is recognised as one of the top 25 biodiversity hotspots in the world, alongside places such as Madagascar, the tropical jungles of West Africa, and Brazil's Cerrado.

"We've known for a long time that the southwest has an outstanding diversity of plants, as exhibited by its stunning wildflowers. But only now with this research are we seeing that the level of diversity in animals, in particular reptiles, is far deeper and more extreme than we previously imagined," said Mr Kay.

"In some cases, by using new genetic techniques and technology, we're finding what we thought was only one species is in fact 9 or 10 very different ones."

The sad tale of the urban frog

AR CoE for Environment Decisions (CEED)

Media Release 9 Oct 2012

In the battle for survival, the impact of climate change may tip the balance against Australia's dwindling urban frog populations.

"Who'd be a frog in the suburbs?" asks conservation biologist Joab Wilson from the ARC Centre of Excellence for Environmental Decisions (CEED) at RMIT.

"Not only do they have to contend with habitat loss, fragmentation and degradation, now there's climate change, too. They really are stuck between a rock and a hard place.

"Given that frogs around the world are suffering significant declines – some 30% of species are threatened with extinction – it's a situation Australia needs to deal with better than we have till now," he says.

Joab and his colleagues have just completed a major study of how frogs are likely to cope in Australian cities as the climate warms – and the answer is: not well.

"Frogs need to keep on the move, in order to find suitable wet areas as temperatures go up," he explains. "In rural areas, there are plenty of alternative habitats – but in fragmented landscapes, such as our cities, this isn't the case."

The team's study produced a series of best- to worst-case climate and urban growth scenarios for the suitability of pond habitat for the Spotted Marsh Frog, *Limnodynastes tasmaniensis*, (below) - a typical urban amphibian - using the

Merri Creek area on the fringes of Melbourne as a case study.

"It's expected that many ponds will become less suitable as frog

habitat as they dry out under climate change. We also wanted to see what this might mean under different development pathways in the suburbs," Joab explains.



(The Australian and International Scene, cont'd...)

The researchers used advanced mathematical and hydrological modelling to predict where the best frog ponds might be by 2070, given current urban development plans which, they note, keep on being 'extended'.

Under medium climate change predictions, they found the spotted marsh frog is around 10% less likely to occupy its current urban ponds by 2070 - whereas at the upper end of the climate predictions, the species was 40% less likely to be occupying them by 2070.

However, under an intermediate urban growth scenario, the probability of sites being occupied by frogs declined by about 30%, whereas under high levels of urban development the probability of frogs surviving locally fell by more than 90%.

"All of which makes grim reading, especially if you're a frog," Joab says.

"Pond habitats in the Merri Creek catchment are likely to become less suitable for amphibians under both climate and urbanisation scenarios. An increasingly warm and dry climate is likely to provide less standing water for species to be able to breed and for tadpoles to develop."

Under the scenario that combined high levels of development with the upper range of climate change predictions, there was less than a 1% chance the frogs would survive in their present ponds.

Joab says that a vital finding of the study is that urban development poses a bigger risk to frog survival even than does climate change.

"When you consider how much attention it being given to climate change while so little is being given to the impacts of urban expansion on wildlife, it could be we are ignoring the elephant in the room.

"Given that current urban planning laws are the largest threat to amphibians such as the spotted marsh frog, maybe it's time we started focussing more on the impact of urban expansion on our native wildlife – and finding ways to limit it," he concludes.

Extreme 'housework' cuts life span of female Komodo dragons

University of Melbourne, newsroom, 19 Oct 2012

An international team of researchers has found that female Komodo Dragons live half as long as males on average, seemingly due to their physically demanding 'housework'. The results provide important information on the endangered lizards' growth rate, lifestyle and population differences, which may help plan conservation efforts.

A research team which included scientists from the University of Melbourne, Indonesia and Italy studied 400 individual Komodo Dragons for 10 years in eastern Indonesia, their only native habitat. The team then produced a model of the Dragon's growth rate.

Males live to around 60 years of age, reaching an average 160 cm in length and 65 kg at adulthood. However their female counterparts were estimated to live an average of 32 years and reach only 120 cm in length, and 22kg.

Dr Tim Jessop from the Department of Zoology at the University of Melbourne was a co-author on the study and said that the team were surprised by the significantly shorter lifespan of females.

"The sex-based difference in size appears to be linked to the enormous amounts of energy females invest in producing eggs, and building and guarding their nests. The process can take up to six months during which they essentially fast, losing a lot of weight and body condition", he said.

"Males and females start off at the same size until they reach sexual maturity at around seven years of age. From then on females grow slower, are shorter and die younger."

The research team was keen to understand the growth rate of the Komodo Dragons as this critical process can indicate how the species prioritises its energy use in lifestyle and reproductive strategies. The results suggest that females have high energy 'costs' for reproduction resulting in their smaller size, whereas to reproduce successfully, males must keep increasing in size.

The results could have dramatic consequences for the endangered species as early female deaths may be exacerbating competition between males over the remaining females, possibly explaining why males are the world's largest lizards.

"These results may seem odd to humans when the life span between Australian men and women differ by five years.

But each species has different strategies to pass on their genes. For example humans invest a lot of energy in few children as raising them is very energy intensive, whereas insects will have hundreds of offspring with no input into their rearing."

Right: photo of female in burrow by Tim Jessop.



SNAKE MISHANDLER FINED

'Pythonesque safety error saw reptiles run wild in pet shop show' *By Malcolm Holland, Environment Reporter, The Telegraph, 24 July '12*

He was simply known as "the snake man" - famous throughout the state's central west for his shows.

But Peter Carter was so confident of his serpent knowledge he ignored the strict safety rules he preached when teaching a group of novices how to handle venomous reptiles.

At one evening event in a Bathurst pet store, tiger snakes and coastal taipans - which can both deliver a lethal bite - slithered across the shop floor amongst the guests.

A tiger snake lunged at a man in his 30s and sank its fangs into his arm. He was rushed to Bathurst Base Hospital in a serious condition. Department of Primary Industries exhibited animals manager Matthew Crane said the victim suffered a "life threatening bite" and spent several days in hospital.

Photos taken on the evening in 2009, and submitted to court, show Carter watching as a member of the public holds a venomous snake, with a pile of red bags containing other snakes in the background.

Another photo shows a deadly coastal taipan, which Carter was not permitted to keep, wriggling across the floor.

The court heard Carter, of Blue Ridge Road, Bathurst, had failed to erect the barriers required by law to separate him and the snakes from the people he was teaching.

Carter was yesterday convicted in Bathurst Local Court of five offences and ordered to pay fines and costs of \$40,000. He is also no longer authorised to "display animals or keep them for display purposes".

The court heard the coastal taipan had been photographed as it moved towards a member of the public sitting in a chair.

"This case sends a very clear signal that public safety is taken very seriously, that negligence won't be tolerated and that failure to obtain the necessary authorities is unacceptable," Mr Crane said.

Carter pleaded guilty to three counts of exhibiting an animal of prescribed class without a permit.

But he escaped conviction for failing to report the biting of the 30-year-old-man because the tiger snake he was using for training sessions was owned by a friend who also attended the meeting.

ANGLERS RETURN NOXIOUS FISH TO WATERWAYS

By John Thistleton, The Canberra Times, 10 December '12



Above: Alan Wood of Melbourne releases a large carp back into the lake. Photo: Rohan Thomson

Tonnes of huge carp are regularly returned to Lake Burley Griffin, a move that is in conflict with multi-million-dollar strategies supported by the ACT government to clean up the Murray-Darling Basin and Canberra's lakes.

Tournament rules for coarse fishing (for freshwater fish other than trout and salmon) are at odds with a key strategy of the Upper Murrumbidgee Demonstration Reach clean-up program from Bredbo in NSW to Casuarina Sands in the ACT.

Supporting the Demonstration Reach, which aims to improve the river's health for native fish, are "carp out" events, where thousands of anglers take as many carp as they can from where they breed and congregate, especially in Lake Burley Griffin. Native fish, including Murray cod, that eat carp are released in the same water.

Yet on Friday, Saturday and Sunday, the Sydney Coarse Angling Club pulled more than a thousand carp from Lake Burley Griffin and returned every one of them to the water.

Yet on Friday, Saturday and Sunday, the Sydney Coarse Angling Club pulled more than a thousand carp from Lake Burley Griffin and returned every one of them to the water.

The club's spokesman, Howard Hill, said reducing numbers would do more harm than good, because the fewer carp left in the lake would breed more to overtake the number caught and killed.

He said 37 anglers competed over the weekend, while bigger national and Australia-versus-New Zealand events were planned for February. More than 3500 kilograms of carp were caught and released at the last national event in Canberra.

Coarse anglers also got exemptions that allowed them to release noxious fish, including redfin perch, into the rivers and lakes of NSW and Victoria.

The conflict in the ACT had been apparent since 2010, when the Demonstration Reach strategy was released, with policy authors noting that coarse tournaments resulted in the capture and release of several tonnes of carp.

"Such exemptions clearly conflict with the intent of this carp reduction plan," they said. "In NSW there are similar issues with it not being illegal to return carp to the waterway after capture."

Canberra ecologist and long-time fishing commentator Bryan Pratt estimated that about eight million eggs were taken from a single carp captured in the ACT recently.

He said multiplying the tens of millions of carp in Lake Burley Griffin with the eggs they carried explained why rod-and-line fishing, netting, trapping, even lowering the lake's level during spawning, would never eradicate the pest.

Dr Pratt said other than gene and virus methods, it was unlikely Lake Burley Griffin would ever be free of carp.

"Possible yes, probable no," he said.

"No established pest has ever been eradicated from mainland Australia, despite intensive effort, many millions of dollars, and being supported by powerful legislation that requires pests to be controlled."

Such was the resilience and mobility of carp and the spread of their eggs by waterbirds, a blitz on the pest in spawning hot spots could not be in isolation. Controls were needed across a wide area to reduce numbers in rivers, lakes, urban ponds and farm dams.

The strategy, and an ACT taskforce, recommends targeting spawning or congregating carp in hot spots, such as the mouth of Sullivans Creek, Jerrabomberra Creek and its associated wetlands.

Greens MLA Shane Rattenbury said a deal on waterways contained in his agreement with ACT Labor would include carp reduction. The Greens promised \$165,000 for the carp program before the election, but details had not been settled with the government.

He said although it was unknown whether carp could be fully eradicated, substantially reducing their numbers could make a big difference.

Research indicated carp were first detected in the ACT in 1976 when several were caught in Lake Burley Griffin. They were suspected of being introduced when other fish were put into the lake.

CSIRO senior research scientist

Dr Ron Thresher believed he had a solution in 5000 potential carriers of a daughterless carp gene.

Not only would breeding carp who could have only sons help tip the balance against the freshwater menace, the technology could potentially have the same impact on cane toads.

Dr Thresher's research team found genes in a carp's relative, the zebra fish, which were female only and could trigger another gene construct that eliminated the females, turned females into males or made the females sterile.

"We could have fish ready for field trials within 12 to 18 months if the funding was available," Dr Thresher said. "With carp, it is a longer generation; we are probably looking at four or five years."

About \$8 million had been invested in the technology that rearranged genes and returned them to the fish. But research had stalled due to lack of continuing funding.

"Having invested millions of dollars to get the work to this stage, it seems short-sighted not to complete the trials," Dr Thresher said.



Volunteer activities have/are expanding again at Scottsdale!
We have a new reptile training day and monitoring program
to build on our reptile skills and understanding



Grassland tussock-skink, Geoff Robinson



Rosenberg, Vicky Saunders

Where and when
 Scottsdale reserve,

Wednesday evening 07 Nov 6pm prompt for training and then twice each in spring and autumn, dates tbc

Volunteer position basis
 Ongoing

Objective
 Continue on from initial PhD research and encouraging results (14 species) done by Bret Howland into reptile density by monitoring abundance at 11 established sites across Scottsdale

Tasks
 Attend and learn from the training and reptile education workshop at 0930 Sat 10 Nov, kindly run Bret Howland
 Then, if still interested, work in a small team and visit each of the sites across the reserve to record reptile species and numbers

This is a good opportunity to be active, enjoy the company of likeminded people, exercise your green mind and enjoy being outdoors

Prerequisites we're looking for
Essential: Fitness for working in uneven terrain and hot weather
Desirable: Reptile knowledge, competent off road driver, FA training

Volunteer support
 Light supper on day of workshop, then for the ongoing monitoring a site orientation and safety induction, task briefing, vehicle, tools and equipment, ppe, limited supervision, access to fully equipped kitchen, tea and coffee provided.

Other requested volunteer contributions
 Volunteers are required to arrange their own independent transport to and from the reserve

How to get involved
 Places are limited so if you are interested in the events please contact Heidi as soon as possible at volunteer@bushheritage.org.au or phone 03 8610 9102

NB: too late for this but please contact Heidi (below) if you are still interested in taking part.



BUSH HERITAGE
 AUSTRALIA
Our heart & soul

HERPETOFAUNA IDENTIFICATION REQUESTS THROUGH ACTHA'S WEBSITE

There has been a flurry of ID requests from members of the general public regarding herpetofauna seen in residential gardens and during outdoor leisure activities. Several long-time ACTHA members with impressive herp expertise have done their best to ID sightings: a big ask considering the poor quality of some photos and equally lacking descriptions which are submitted. We do our best!



Request one

Rachel: Hi, could you identify this skink for me please? Sorry if the quality isn't that great, I only had my phone on me.

ACTHA expert: Based on the photo & locality it looks like a three toed skink which would be confirmed if it has three toes. It probably won't last long if it is being kept captive.



Request two

Alan: Does the Black Rock Skink occur in the ACT? A friend took a photo of a large dark skink in the woodland of Stirling Park Yarralumla. It's either a Cunningham's or a BRS, in coloration much nearer to the latter according to the information in Cogger. Thank you for your help.

ACTHA expert: "The black rock skink does occur in the ACT, however it's not normally found within suburban areas and is more suited to the higher surrounding mountains. Cunningham's skinks on the other hand are much more frequent seen. Since they occupy similar habitats such as rock areas with crevices it is possible that they can co exist. Look for the presence of a pale stripe from the lips to the ear: if it doesn't have it, it will be a Cunningham's. To be completely sure, please send me a photo."



Request three

Fran: On a recent walk, I photographed this lizard at my Tomewin property (northern NSW near the Queensland border) last month. After looking at some online images, I am wondering if it might be one of the Saproscincus. Thanks for any assistance you may be able to give me.

ACTHA expert: It is a Saproscincus and because it is in an area of northern NSW where there are several species they are notoriously difficult to pin down to species, particularly by photograph alone.



Request four

Philip: "Can you identify this lizard please? I saw it at Tidbinbilla Nature Reserve last Sunday. My amateur ID is a Grasslands Eared Dragon."

ACTHA expert: It's a Jacky Dragon, *Amphibolurus muricatus*, which is common in the area.



FROGWATCH NEWS

Frogwatch ACT & Region Census results 2012,
by Anke Maria Hoefer

"There is life after the Census! We are very busy analysing and verifying this year's recordings and data entries. Thanks everyone for the great support of this year's Frogwatch Census. So far we do have around 170 surveys; most are already verified and accepted. Well done!

The overall participation was surprisingly low this year and I will take a closer look to understand what might have caused the lack of engagement. If you have any ideas and suggestions on how to attract more volunteers, and how to retain their support from one year to the next, I am very eager to hear.

Monitoring data

I am busily verifying the frog recordings and entering data. Please enter/upload all your data/photos/recordings before the end of the month. This will greatly support me in getting the job done.

Webpage problems

Many of you experienced difficulties with the data entry this year, especially the entry of frog species and numbers. As it turns out Internet Explorer was updated and - as a result - can no longer communicate with our data entry site.

Using the **free Internet browser Google CHROME** circumnavigates the problem for now. If you do not want to install CHROME on your computer you can still register monitoring events and enter **ALL OTHER DATA**. You can also attach photos and sound files as usual. To finalize your data entries just enter the frog species and estimated abundance in the **NOTES** box, instead of using the drop-boxes at the bottom of the page. You can use common or scientific names. Having said all this Frogwatch really needs someone to look after our Frogwatch Census site, the data entry and site information. Would you know a person suitable and interested in this (paid) job?? Please let us know.



Snakes Alive!

Thursday 17 - Sunday 20 January 2013

10am - 4pm Weekdays, 10am - 6pm Saturday and Sunday
Australian National Botanic Gardens, Crosbie Morrison Building

**Be charmed by live displays of snakes,
lizards, turtles, frogs and crocodiles.**

Enjoy....

- seeing and touching live reptiles and amphibians
- learning about rare and threatened species
- kids competitions (for more info visit www.actha.org.au)
- morning and afternoon feeding times
- gifts and souvenirs
- a great educational experience

Cost: \$2 child, \$5 adult (Concession \$4)

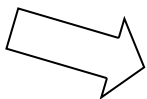
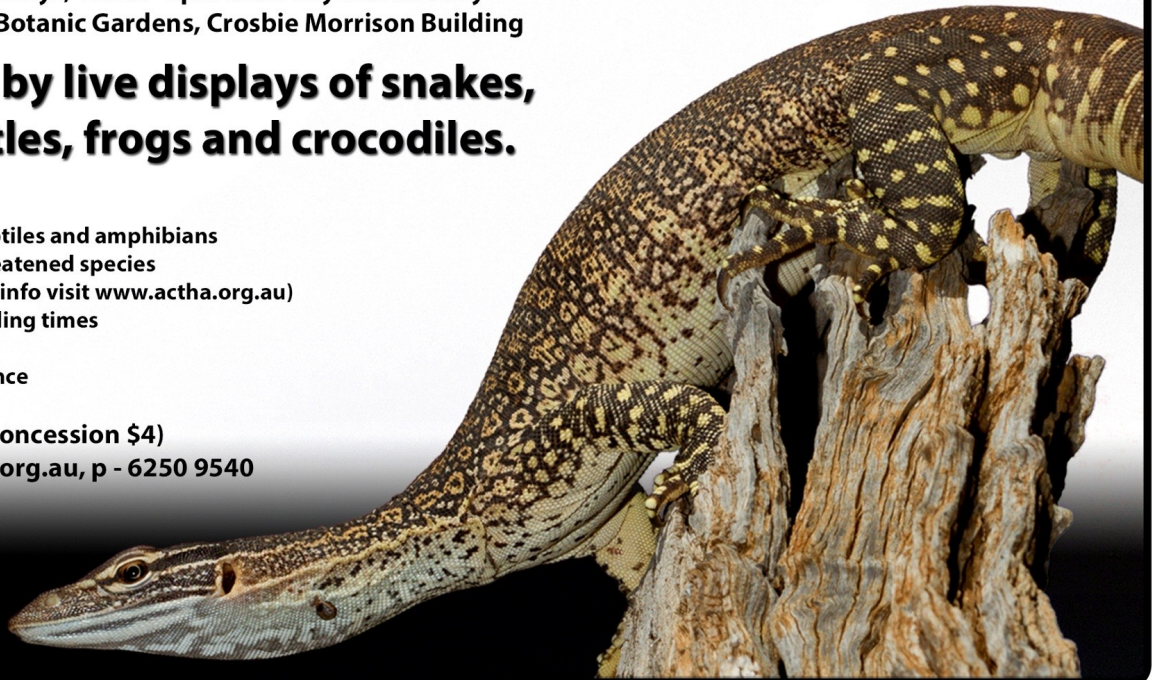
Enquiries: e - info@actha.org.au, p - 6250 9540

www.actha.org.au

www.anbg.gov.au



Australian Government
Australian National Botanic Gardens



**You must be a financial ACTHA member to come to the
Christmas party. If you haven't already done so, then**

Renew your membership on-line!

Please remember to use your **name as a reference** so that we can
identify your payment.

\$10 family membership

Payment—Direct Deposit

ACT Herpetological Association Inc.

Account Number: 040003311

BSB: 112-908

Bank: St George

