



ACTHA CONTACT DETAILS

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

ACTHA INC. NEWS DEC 2011 – JAN 2012

*Newsletter of the
ACT Herpetological
Association Inc.*

IN THIS ISSUE

ACT Government releases 2011 Action Plan for the Northern Corroboree Frog: an outline of the document's contents and some inclusions are included on pages 2 and 3.

Professor Rick Shine wins NSW science award: the award was presented for Rick's research on the ecology and evolutionary biology of Australian reptiles and amphibians, see page 4.

A word from Paul Scanlan: a student member of ACTHA from way back, Paul came along to a recent meeting and penned some words, see page 5.

Dr Tom Bergin: a can of worms: Dr Tom Bergin was one of our guest speakers at ACTHA's October '11 meeting, see page 6 & 7.

The interaction of fire & fragmentation... reptiles: Juliana Lazzari was one of our guest speakers at ACTHA's August '11 meeting, and spoke about her research into species survival in fire affected and fragmented environments. A summary of Juliana's talk and some awesome images from her slideshow start on page 8.

The Aust & International Scene: from page 13.

YOUR NEW COMMITTEE FOR 2011 - 2012

President	Dennis Dyer
Vice President	Ric Longmore
Secretary	Angus Kennedy
Treasurer	Vacant
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
Student Representatives	Angelique Harrison

** Denotes Life Members*

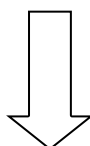
DIARY DATE

The *bi-monthly* meetings of the Association are usually held on the **third Tuesday of the month at 7.30pm,**

**Belconnen Soccer Club, Hawker
cnr Belconnen Way & Springvale Drive**

UPCOMING MEETING

NOTE – CHANGE OF VENUE



Snakes Alive! 2012
Mon 23 to Sun 29 Jan
is only **5 weeks** away
& **we need volunteers**
during opening hours
to handle reptiles &
guide visitors.

If you can spare even a
few hours **pls** be at the
Christmas party.

Christmas party for ACTHA members

from 5.30pm, Tuesday 13th December 2011

to be held at **Reptiles Inc. Kambah Shops, Mannheim St Kambah.**

Our guest speaker will be **Murray Evans**, who will outline the latest corroboree frog Action Plan and recent developments at Namadgi.

This will be followed by a **BBQ** with a selection of food & drink, where planning for **Snakes Alive! 2012** will be the hot topic of conversation.

*(Want to come to the Christmas party but haven't renewed your membership yet?
Fear not, you can do it via direct debit (see page 3) or at the party!)*

RSVP to mandyconwy@gmail.com by Monday, 12 December 2011

ACT GOVERNMENT RELEASES 2011 ACTION PLAN FOR THE NORTHERN CORROBOREE FROG

Pseudophryne pengilleyi

The Northern Corroboree Frog was declared an endangered species on 8 December 2003. The *Nature Conservation Act 1980* requires the Conservator of Flora and Fauna to prepare an Action Plan in response to each declaration. The second edition of Action Plan No. 6, which covers the Northern Corroboree Frog, *Pseudophryne pengilleyi*, has just been released.

The 16 page document covers much of what is known about this species and a summary of its contents and some inclusions follow.

A preamble gives background information on the Northern Corroboree Frog's initial 'Endangered' declaration and the criteria that was used to formulate this declaration.

Species description and ecology

Description and distribution

Habitat

Life-history and ecology

Population decline

During the 1960s and 1970s the northern corroboree frog was quite common in suitable habitat. Many breeding aggregations in the ACT region were reported to be very large, often consisting of many hundreds of individuals. The frogs present at Ginini Flats have been monitored regularly since the mid-1980s and other sites have been monitored since the mid-1990s. The results indicate that northern corroboree frog populations have suffered severe and widespread decline since the early 1980s, and that the decline is still occurring. In the western section of Ginini Flats there was estimated to be 500 to 1000 male northern corroboree frogs calling in 1986; three years later the figure had dropped to about 50 males calling. At the time of writing there are estimated to be less than 100 adult northern corroboree frogs remaining in the wild across the species' range in the ACT.

Threats

Threats to corroboree frogs include disease, fire, drought, climate change, feral animals and weeds. Such threats rarely act in isolation and when more than one threat acts against a population the effects are often synergistic (magnifying). For example, warmer temperatures and less rainfall due to climate change might modify corroboree frog breeding

habitat. These conditions might also increase the frequency of fire in Alpine environments, which in turn will also modify breeding habitat. Drought causes failed recruitment, the effect of which may be compounded by fewer breeding adults due to amphibian chytrid fungus, and both threats might increase the species susceptibility to the inherent risks faced by small populations. Effective management of threats will require consideration of risks and potential synergies.

Disease

Recent evidence points to disease caused by an introduced fungal pathogen as the main reason for decline in corroboree frogs. The amphibian chytrid fungus *Batrachochytrium dendrobatidis* has only recently spread around the world and the disease it causes (Chytridiomycosis) has resulted in mass amphibian declines and extinctions. Frog species vary in their susceptibility to the disease; corroboree frogs are highly susceptible, whereas the sympatric common eastern froglet *Crinia signifera* is apparently relatively unaffected and can act as a reservoir host for the disease. Field sampling for chytrid fungus indicates that it is present in all key corroboree frog habitats in the ACT. Chytrid fungus can infect tadpole and frog stages but not eggs as they do not contain keratin, which is required by the fungus.

Fire and drought

Feral animals and weeds

Habitat disturbance and degradation

Climate change

Small population size

Captive population

In response to ongoing declines of corroboree frogs in the ACT, and in particular a sharp decline through 2001 and 2002, the decision was made to collect eggs to establish a captive assurance population in a biosecure (free of chytrid fungus) facility to safeguard against the loss of the Southern Brindabella ESU in the event that the species becomes extinct in the wild.

Northern corroboree frog eggs were collected from the wild in April 2003 to establish the captive population at Tidbinbilla Nature Reserve. The egg stage was collected because the eggs are naturally free of chytrid fungus, most eggs in the wild are unlikely to survive to become a frog and survivorship of eggs can be markedly increased under controlled (captive) conditions, enabling a rapid increase in the size of the captive, and potentially wild (through reintroduction), populations.

Major conservation objective, to be achieved through the following strategies

Protection

Protecting sites and vegetation communities that are critical to the survival of the species. This includes habitat that is listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Alpine Sphagnum Bogs and Associated Fens), and the Ramsar-listed Ginini Flat Subalpine Bog Complex in the ACT.

Managing activities in the catchments of breeding sites and surrounding woodlands to minimise or eliminate any threat to frog populations.

Increasing community awareness of the need to protect the frogs and their habitat.

Monitoring, research and experimental management

Captive breeding and release

Conservation issues and intended management actions

Monitoring

Annual monitoring will be expanded to include an assessment of pool and bog characteristics that may be impacted from climate change, fire and feral animals. Monitoring will be conducted by suitably experienced personnel, and will follow procedures agreed by the Corroboree Frog National Recovery Team to allow for consistency of techniques across the region.

Legislative provisions

International Agreements

Consultation and community participation

Implementation and review

A full copy of Action Plan No. 6 can be found at: www.environment.act.gov.au

Conservation status

P. pengilleyi is recognised as a threatened species in the following sources:

International

Endangered. IUCN (2010).

National

Vulnerable. *Environment Protection and Biodiversity Conservation Act 1999*.

New South Wales

Critically Endangered. *Threatened Species Conservation Act 1995*.

Australian Capital Territory

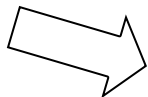
Endangered. *Nature Conservation Act 1980*. Special Protection Status Species. *Nature Conservation Act 1980*.

This Action Plan was prepared by Dr Murray Evans (Conservation Planning and Research, ACT Government). Unpublished information was provided by Dr David Hunter and Rod Pietsch (NSW DECCW) and Dr Will Osborne (University of Canberra).

Further information on this Action Plan or other threatened species and ecological communities can be obtained from:

Environment and Sustainable development Directorate
ACT Government
Phone: (02) 132281
Territory and Municipal Services Website:
<http://www.tams.act.gov.au/>

Ed.



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



2011 NSW SCIENCE AND ENGINEERING AWARD WINNERS

http://sydney.edu.au/news/84.html?newsstoryid=8271&utm_source=console&utm_medium=news&utm_campaign=cws

A professor who has led Australia's battle against the cane toad, and a researcher who led a novel, open source research project resulting in medicine for a disease that afflicts millions of the world's poorest people, have been honoured in the NSW Science and Engineering Awards.

Professor Rick Shine from the School of Biological Sciences won the Plant and Animal Research category for the excellence and impact of his research on the ecology and evolutionary biology of Australian reptiles and amphibians, while **Dr Mat Todd** from the School of Chemistry won the Emerging Research category in a tie with a researcher from UNSW.

They received their \$5000 prizes from the Honourable Andrew Stoner MP, Deputy Premier of NSW, Minister for Trade and Investment, Minister for Regional Infrastructure and Services, at an awards ceremony at Government House on Wednesday 23 November.

Previously known as the NSW Scientist of the Year Awards, the newly named NSW Science and Engineering Awards recognise the State's leading researchers conducting cutting edge work that generates economic, health, environmental or technological benefits for NSW.

Professor Shine's research has transformed our understanding of big questions in biology, but also paved the way for innovative and effective solutions to practical problems in wildlife conservation.

"It's an honour to win the NSW Science and Engineering Award for Plant and Animal Research. It's a great recognition of my lab's work on a number of problems facing native reptiles and amphibians, as well as research on introduced amphibians such as cane toads," said Professor Shine.

The award recognises work conducted over the past five years, a period in which Professor Shine has published 230 scientific papers and



been cited by other scientists in their papers more than 6000 times.

"Our work has identified processes that endanger NSW snakes and lizards, and we've devised and field-tested solutions to those threats. The award also recognises the fact that I've worked closely with state-based management agencies to implement my results," said Professor Shine.

"Working on the ecological impacts of invasive cane toads, our results have led to a major re-think by federal authorities on how to mitigate those impacts. Specific work on cane toad pheromones has revealed novel opportunities to control cane toads by exploiting the chemical arsenal that toads use to compete with each other."

In addition to his outstanding research Professor Shine has invested considerable effort in communicating his research to the general public through many media appearances, articles in popular magazines and developing and contributing to websites for non-scientists.

The School of Biological Sciences has dominated these awards since their creation in 2008, with Professor Chris Dickman winning the Plant and Animal Sciences category in 2010 and Professor Steve Simpson winning NSW Scientist of the Year in 2009.



THE VIEW FROM THE UNITED KINGDOM

By Paul Scanlan, one of ACTHA's original student members

As part of a whirlwind visit to Canberra, I was delighted to be present at ACTHA's Annual General Meeting and talks at the Belconnen Soccer Club on Tuesday 18 October 2011. It was great to be welcomed back into the fold by Ric Longmore and John Wombey. Both of these gentlemen I had first met in the mid 1980s when I was still a fresh-faced young lad growing up in the ACT.

Back then, their guidance in all matters herpetological was inspirational and I am so glad to see that they continue in this role to the present day. Earlier in the day I had also managed to catch up with another key member from the founding of ACTHA, Will Osborne, who had allowed me to accompany him on many a field trip into the Brindabellas and beyond.

The two invited speakers on Tuesday 18 October 2011 were Tom Bergin and Peri Bolton. Tom shared the benefit of his veterinary expertise and highlighted the importance of ACTHA members doing the right thing in terms of legalities and animal husbandry. Tom made the point that non-conformist scientists (or rogues) should be valued because they are often responsible for important scientific breakthroughs. However, Tom also pointed out that flouting the rules relating to importing animals or neglecting sensible husbandry procedures could have devastating consequences (such as spreading diseases like chytridiomycosis). As such, Tom's talk was a timely reminder as to the privileges and obligations of being a member of ACTHA.

Peri gave an insight into her work on the phylogeny of certain elapid species such as the Bandy-Bandy, *Vermicella annulata*, including looking at the question of how long ago burrowing developed as an evolutionary adaptation. I have never had the pleasure of encountering a Bandy-Bandy – the closest I came was finding an example of what is understood to be their main prey item, a Blackish Blind Snake *Ramphotyphlops nigrescens*. After Peri's talk though, I now know a lot more about the

evolutionary relationships between some of Australia's burrowing elapids.

Since late 2002 I have been based in the UK and am currently living in London. The local diversity of herpetofauna here (12 native species in total) is no match for Australia's bounty. As some consolation, there is vast of range of reptiles and amphibians for sale in the UK. In fact, there are more reptile-owners than dog-owners in the UK. Bearded Dragons (*Pogona vitticeps*, rather than their ACT-occurring cousins *Pogona barbata*) are particularly popular. One pet trade success story is the New Caledonian Crested Gecko, *Rhacodactylus ciliatus*, which was thought extinct until being rediscovered in 1994. From that low base, Crested Geckos are now one of the most widely kept and bred species of gecko in the world. However, harking back to the message from Tom's talk, there are rogue elements within the pet trade, so if or when purchasing a reptile or amphibian there are many ethical considerations to bear in mind.

My short visit to Canberra included a brief walk around Red Hill lookout. There I saw several families of Cunningham's Skinks, *Egernia cunninghami*, and an adult Eastern Blue-Tongue Lizard, *Tiliqua scincoides*. I also heard a great spring chorus of frogs near Kambah Pool Road, including old favourites like the Spotted Marsh Frog, *Lymnodynastes tasmaniensis* and the Common Eastern Froglet, *Crinia signifera*. Long live the ACT, its herpetofauna and ACTHA.



Trivial pursuit

Many of us have used the technical term for a reptile shedding its skin as **ecdysis**, or the veterinary term when the process doesn't go well as **dysecdysis**. Did you know there's also an **ecdysiast**?

Ecdysiast is a fancy word for a stripper. The word dates from 1940 and was coined in America to avoid the less palatable term "strip-tease". See <http://www.worldwidewords.org/weirdwords/wv-ecd1.htm>

Alternatively, when your reptile next sheds its skin, you can accuse it of strip-teasing!
Yours in obfuscation, Janet Wild

DR TOM BERGIN: A CAN OF WORMS

This summary of Tom Bergin's talk by Mandy Conway

Dr Tom Bergin was one of our guest speakers at ACTHA's October '11 meeting. A long-standing veterinary surgeon before taking on the role of Curator of Mammals at Taronga Park Zoo for 5 years, he has since spent his time working with quarantine and customs authorities on wildlife health and diseases.

Ric Longmore introduced Tom to ACTHA members, saying they'd first met in 1974 in Tibooburra, Sturt National Park, NSW, when he was doing a reptile survey and Tom was working on kangaroos. They have remained good friends ever since.

Tom started by explaining that Australian custom laws were formulated in the 1930's to deal with the disappearance of koalas. The situations and types of animals affected have changed dramatically over the decades and so have the management options. Herpetology is probably more affected than any other field, he said. For example:

- there is a demonstrated disappearance of amphibians due to ecological change, the gathering of specimens and the introduction of diseases;
- species are disappearing from home ranges due to human activities;
- species are being introduced into other natural landscapes with dire consequences for the native inhabitants. The Cane Toad and Red-eared Slider are classic examples;
- quarantine travesties - smuggled amphibians and reptiles can carry dreadful diseases.

Tom went on to elaborate on some of the points above.

Chytrid fungus

Authorities became aware of this disease in Queensland in 1993, however preserved specimens showed that this fungus had in fact been around for decades. The oldest known cases were identified in the African Clawed Frog in the 1970s. It was spread in body fluids or contact with handlers.

A disease of skin and membranes, it affects the rate of fluids crossing those membranes and can include nerve cell membranes, membranes around the brain and the gut, just to name a few. "Initially you see poor sloughing, thickening of the ventral area, the animal becoming listless before having convulsions and tremors. Daktarin and other fungicides have been seen to have some affect but antibiotics are useless. The only hope of control is with quarantine and hygiene." "Keep it clean!" Tom emphasised.

OPMV – Ophidian Paramyxovirus

OPMV was first discovered in 1972 in Switzerland in a collection of Ferdinand snakes. Animal record keeping was poor and unfortunately specimens were put together with no effective disease control measures. The disease has since spread worldwide, largely due to smuggling.

OPMV develops over the course of a few months, especially over winter if the snakes are held in un-ideal conditions. Stressors which weaken the animal include poor temperature control, feeding issues and incompatible cage mates. Transmission occurs through respiratory exudates via drinking water, unremoved faeces, owner's hands, etc. The virus is closely related to measles in man and distemper in dogs.

"A disease of the brain and respiratory system, you don't see much initially. The animal just sits quietly for the first few months, then starts to get restless before going off its food. The mouth then stays open, the tongue lacks control and the lungs sound like a milkshake being sucked through a straw (due to haemorrhaging). Pus is seen at rear of throat. Later on the pupils dilate and tremors and excessive activity precedes convulsions." Tom explained. "As a virus, expect to see secondary mixed bacterial infections in the lungs. These can be treated with antibiotics. There is a diagnostic blood test called an 'agglutination inhibition test'. Two blood samples are taken a couple of weeks apart to see if the animal is increasing or decreasing its immune responses to the virus. Cures are not unheard of but are really deemed rare. Realistically, animals may respond to a combination of Gentamycin and

(Dr Tom Bergin: a can worms, cont'd...)

prayer. Excessive contact, handling and sanitation are part of the picture leading up to the spread of this disease. Transferring animals between collections needs to be undertaken with the utmost care. Quarantine is paramount. Washing hands is a simple preventative and cleaning out enclosures with sodium hydrochloride is recommended."

Salmonella

"Reptiles spreading salmonella is something that appears regularly in writing," Tom said. "Bourke and Wills did indeed cop a good dose of salmonella when they ate a python up in the gulf, it's true, but to single reptiles out is a nonsense. Salmonella can be obtained from any living creature and in fact the worst type is carried by humans and Salmon (the origin of this bacteria). Reptiles usually get infected by consuming rodents purchased in a shop or sourced from the wild.

Mixed maladies

Thrush, stomatitis and mouth rot are almost inevitably mixed infections of half a dozen mixed bacteria combined with some fungal infection. These are once again conditions usually seen in animals which are kept in poor husbandry conditions with poor quarantine protocols. Optimum husbandry conditions are a simple and effective cure: "really is a case of cleaning up your act!"

Leave surgery to the vet

Tom went on to briefly talk about some animal welfare issues which he personally finds abhorrent, in this case practicing surgery on a reptile without having the required qualifications or any attempt to ameliorate pain or suffering. "To perform an operation to remove fangs from a snake without using any form of anaesthesia is completely unacceptable, and to claim that the animal would not be in pain or under stress during the procedure is

completely false. Bodies such as ACTHA are able to influence the ethics and ethos of herpetology for the greater good."

Accidental discovery in the field does occur – never give-up!

"A colleague and I were investigating blindness in wild long-necked turtles. A new parasite was discovered, purely by chance, after not more than 5 minutes into an autopsy. A lot of tissue damage to the inside of the eye was seen in many other turtles examined. A worm larvae was responsible. They migrate through the back of the eye which has a severe allergic response, damaging the retinal nerve. By the time this is seen the damage has already been done. Widespread throughout NSW, the intermediate host is unknown, although a fish of some sort is being assumed. Less likely is an amphibian." Tom added that likely costs to do a full-scale study unfortunately proved prohibitive.

Rogues and rascals

At the end of his presentation, Tom described some of the herpetologists he has met over the years: some were rogues and rascals, many were non-conformists and most were definitely not boring. "Such people are not necessarily a bad thing in science as many scientific breakthroughs have been known to occur through individuals with such passion for their field!"

Tom grimaced when recounting many of the liquid medicines he had been plied with over the years for 'reptile induced trauma' by the same passionate individuals. 'Taipan juice' was recommended by the likes of herpetologists such as Hal Heatwole, Eric Worrell, Mark Walsh, Harry Butler and Gerald Durrell. Whilst Tom has had difficulties dealing with herpetologists over the years he has also had some wonderful times and has enjoyed their company.



A **Canberra Times** poll, published in the paper itself on 6 Sept 2011, received 1239 votes on the following question:

Q: 'Do you think the ACT's cat curfews are a good idea?'

24.7% of respondents ticked "Yes, they protect native animals in areas where they are at risk."

44% chose "Yes, it should be extended across the territory."

31.3% chose "No, it's another example of the nanny state telling us what we can and cannot do."

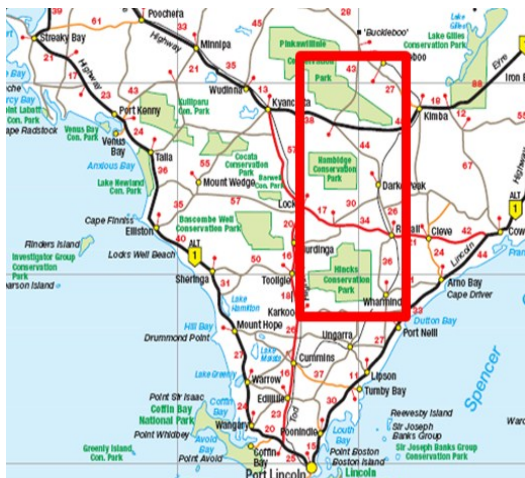
THE INTERACTION OF FIRE & FRAGMENTATION...REPTILES

This article by Mandy Conway with significant input by Juliana Lazzari



Juliana Lazzari, PhD Scholar, The Fenner School of Environment and Society, ANU, was one of our guest speakers at the August 2011 ACTHA meeting and spoke about her research into species survival in fire affected and fragmented environments. Most of

Juliana's work to date centres around identifying the vegetation type of the northern Eyre Peninsula of South Australia, as well as capturing and marking reptiles with the Starred Knob-tailed Gecko, *Nephrurus stellatus*, being the most abundant capture. Some fire experiments have also been conducted and in the near future Juliana hopes to start analysing



Eyre Peninsula, South Australia her reptile survey data.

Juliana's project is just one of a number of research projects that are in progress in the area. Other researchers are looking at birds and specific vegetation such as spinifex. The main issues relate to fire or the lack of fire and potential extinction effects on local flora and fauna, which could lead to regional declines.



The landscape

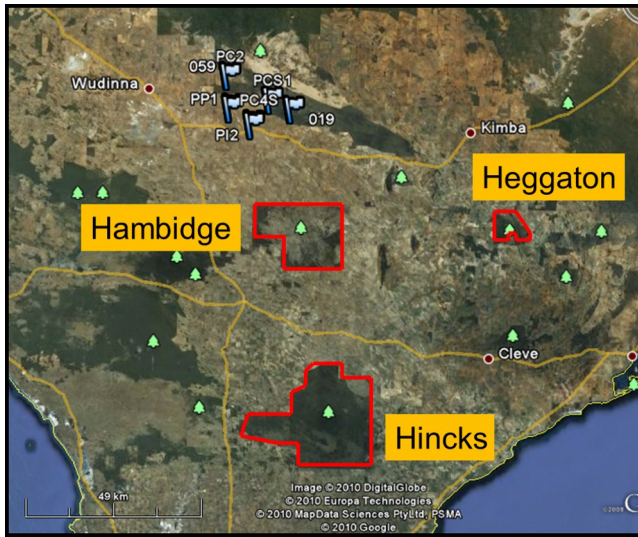
The northern part of the Eyre Peninsula is semi-arid mallee country. The landscape is highly modified, with many farming properties producing wheat, barley and some canola, and grazing sheep and some cattle. The paddocks are interspersed with remnant native vegetation on sand dune formations making them long and narrow. There are a number of conservation parks in the region.

Eucalypts are the predominant tree species in a mallee woodland with a spinifex understory. These multi-stemmed mallee eucalypts have an underground tuber that can coppice (produce many new stems) after a fire. They can also grow from seeds.

Key questions

Landholders have suppressed fire on their properties for many decades. Many of the remnant patches of vegetation in cropping paddocks are, therefore, also long unburnt. Although highly disturbed, these remnants still provide habitat for a number of reptile species. Some of the questions that Juliana is seeking to answer are:

- Can fire in fragmented landscapes cause regional declines of fire-specialist (reptile) species?
- What is the fire age of remnant mallee?
- Do reptile populations persist in long unburnt, isolated dunes?
- Are reptile communities in the isolated dunes influenced by the recently burnt and long unburnt site in the conservation park?
- Do reptiles recolonise recently burnt isolated dunes?



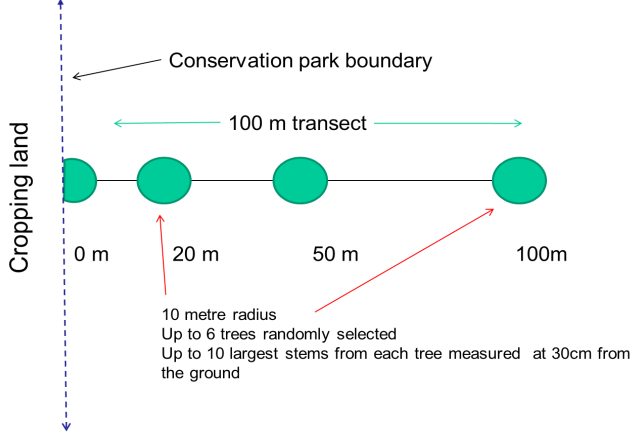
Fire-age prediction model. Hincks, Hambidge and Heggaton Conservation Parks

Fire age prediction model

The region’s local authorities have records of fires in some areas but not in others. Juliana is developing a fire age prediction model to help determine the age of fires in areas where the time since the last fire is unknown.

Taking measurements of stem diameters from a

Fire-age prediction model. Stem diameter measurements



selection of mallee eucalypts in known fire ages was the first step in the process. Six trees were randomly picked at four points along 100m transects. Ten of the largest branches on each tree were then measured. There was some variation between the different species but, after conferring with a statistician, Juliana was able to narrow the number of species that could be used to develop the model down to two. Other vegetation data, including leaf litter etc, was also recorded.

Fire experiment

This part of the project included setting pitfall traps to conduct reptile and invertebrate surveys, both in Pinkawillinie Conservation Park and in remnants in the middle of cropping paddocks. At the end of the first year of trapping, some of the remnants in the cropping paddocks were burnt.

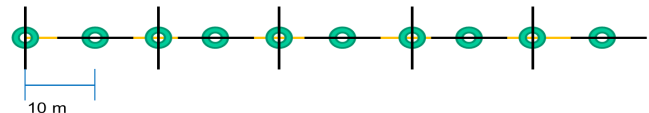
There were 30 transects with different treatments. Transects were paired (a total of 15 pairs) and the different treatments of the pairs included: dunes and swales in a recently burnt area of the park, dunes and swales in a long unburnt area of the park, burnt and unburnt dunes located close to the park, burnt and unburnt dunes located far from the park. (A swale is the area between sand dunes.) This stratification of the sites will help ensure a comprehensive analysis can be undertaken with the most important factors considered.

Pitfall traps

Within each transect 10 pitfall traps were laid and black plastic drift fences set up. 300 traps were needed and luckily 100 had been laid by another researcher, so Juliana only had to dig 200! Trap fences were placed to run across the dune then along it. This pattern was repeated every 10m.

Pitfall traps along 100 m transects – e.g. dune

Top view: 10m drift fences placed alternately - along & across the dune



Side view: 10 buckets - 1 at every 10m along the dune



Each pitfall bucket had some sand placed in the bottom along with half a piece of PVC pipe for housing/shelter. A wooden float block with two sloping sides was leant on the PVC housing to allow the animals to climb onto and avoid drowning if it rained. The housing and block were



Photo: Mailyn Thomas

(The interaction of fire & fragmentation...reptiles, cont'd...)

placed on the northern side of the bucket to avoid the hot afternoon sun.

Juliana emphasised the importance of putting the lids securely back on the traps, with sand and a rock or branch on top, at the end of each trapping period. This prevents large animals putting a hole in the lids and not only avoiding injuring themselves but most importantly it prevents small animals falling into a damaged trap and perishing.



Photo: Joe Tilley, DEH, FB4-21

Burning dunes

Vegetated mallee remnants were set alight by the Country Fire Service (CFS) fire crews. One dune was left unburnt as a control and another was burnt. Timing the burns was tricky because of either too much moisture in the air or it was too hot and windy.

Mark and recapture site surveys

Each year, during the study, four reptile surveys are taken at both the northern and southern sites. Site surveys are alternated each fortnight to take into account the weather factor.

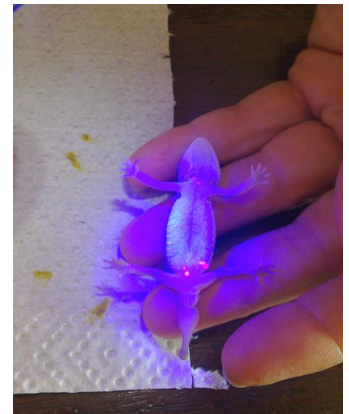
Most skinks and dragons are not often recaptured hence they are not marked for perpetuity. Recaptures of snakes and blind snakes are also quite low. But they are also difficult to mark and are simply marked with white-out.

Geckos are marked by clipping one toe (a different one each year) and then injected with a fluorescent polymer just under the skin, which can

be viewed under a UV light. The 'year' toe and the fluorescent colour is changed for new captures (ie not recaptures) each year: pink for the first year, green for the second and orange for third and final year. Blood samples are also taken for future DNA work.

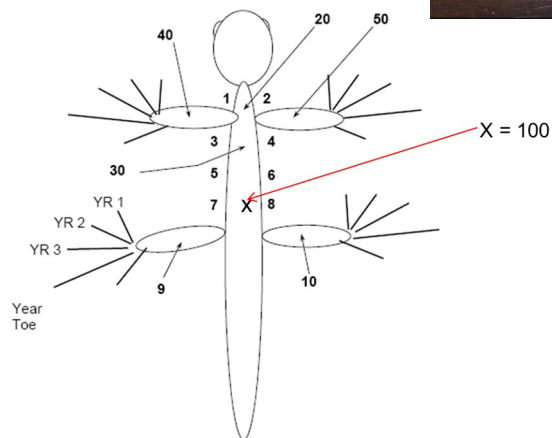


Photos above and below: Rebecca Clemas



GECKO INJECTING SYSTEM

Looking underneath lizard



Trapping data – Southern & Northern sites Season 1 – pre-burn

South 180 pitfall traps	Total animals	Species	#	%
	590	<i>Nephurus stellatus</i>	348	59
		<i>Pogona sp.</i>	54	9
		<i>Lerista taeniata</i>	37	6
		<i>Lerista edwardsae</i>	23	4
		<i>Ctenophorus cristatus</i>	20	3
		<i>Hemiergis millewae</i>	14	2
		<i>Ctenotus atlas</i>	11	2
		Other	83	14

North 120 pitfall traps	Total animals	Species	#	%
	232	<i>Nephurus stellatus</i>	118	51
		<i>Ctenophorus cristatus</i>	28	12
		<i>Pogona sp.</i>	13	6
		<i>Menetia greyii</i>	13	6
		<i>Lerista edwardsae</i>	10	4
		<i>Lerista taeniata</i>	9	4
		<i>Ctenotus atlas</i>	9	4
		Other	32	14



Photo: Maily Thomas

(The interaction of fire & fragmentation...reptiles, cont'd...)

Making sense of all the data

Lots of preliminary work now needs to be done before data analysis can begin. Juliana will be looking for trends and posing some reasons for the trends occurring, specifically in relation to numbers being recorded and the localities where specimens are being caught. That is, she will be looking to see if there are greater or fewer numbers of animals in recently burnt or long unburnt dunes. Or whether the different habitats might affect species richness or abundance.

A plethora of critter-by-catch photos...



Painted Dragon, *Ctenophorus pictus*, photo by Hannah Brugman: caught in parks, not in far sites. Five individuals in the first year and twenty-five in the second year.



Pogona species, photo by Mailyn Thomas: 67 caught in the first year and 90 in the second.



Thorny Devil, *Moloch horridus*, photo by Mailyn Thomas: only one fell in a bucket. Volunteers rarely see these and those on this field trip were fortunate that Angus Kennedy was there, being extremely adept at finding a lot of reptiles, including this little devil.



Desert Skink, *Egernia inornata*, photo by Jana Bradley: one of Juliana's favourite reptiles, it was caught in the sandy areas of parks, hardly ever on private land. Juliana described them as the 'rugby players' of the skinks: no neck, hefty and strong.



Four **Lined Earless Dragons**, *Tymanocryptis lineata*, were caught in the first year and eleven the next. Interestingly, these specimens were found not only in parks but also in remnant areas. Juliana is surprised they are surviving in some of those remnants.



Broad-banded Sand Swimmer, *Eremiascincus richardsonii*, photo by Mailyn Thomas: three were caught in the first year and six in the second year. Whilst relatively common, not many are seen. Juliana was also surprised to have caught the first one in a clapped-out dune, heavily disturbed by cattle with lots of cow pats. Subsequent individuals were caught in close and far dunes.



Jan's Banded Snake, *Simoselaps bertholdi*, photo by Catherine Whitehead: caught on nearly every trip, in the park and in paddocks. They are fairly mobile so this was not surprising.



Gould's or Sand Goanna, *Varanus gouldii*: only found on the far sites of the parks. Two were seen the first year and fourteen in the second year. Juliana puts the number down to the population explosion of mice.



Southern Mallee Skink, *Ctenotus atlas*, photo by Jana Bradley: quite a few were caught. They are feisty, cranky and very willing to bite, despite their small size.



Starred Knob-tailed Gecko, *Nephruurus stellatus*

Juliana also collected invertebrates. Egyptian beetles are plentiful and even though they are an introduced species they do not appear to be a problem in out-competing the native invertebrate species. Scorpions in a wide variety of sizes were plentiful. Their size is apparently species specific, not age dependent. All of this information is being kept in the hope that entomologists will be able to use it in future fire impact research.

Juliana finished her presentation by emphasising the importance of volunteers. Much of her research would not be possible without their crucial help and she was thankful for each and every pair of helping hands.



Genus: *Sminthopsis* (Dunnart)



Mus musculus (House Mouse)



Amblyomma limbatum (Tick)

THE AUSTRALIAN & INTERNATIONAL SCENE

New boulder frog found

*The Australian National University, Tuesday,
11 October 2011 www.sciencealert.com.au/news*



*Above: The newly discovered Cophixalus kulakula.
Image by Kieran Aland*

Scientists have discovered two new species of boulder-dwelling frogs, hidden in remote areas of rainforest in north-east Queensland.

Dr Conrad Hoskin, who did most of his research at The Australian National University, and Kieran Aland from the Queensland Museum, described the Kutini Boulder Frog (*Cophixalus kulakula*) and the Golden-capped Boulder Frog, *Cophixalus pakayakulangun*, in a recently published paper.

Dr Hoskin said the species names were derived from the local Kuuku Ya'u language in consultation with the Indigenous custodians of the land where they were discovered. He said the new species were restricted to piles of massive boulders in the rainforest and they had adapted to their rocky world.

"The frogs have long arms, long slender fingers and big triangular finger pads, which enable them to climb among the labyrinth of rocks," he said.

"They only occur in the rocks and never in the surrounding forest and although they're highly localised, they're abundant where they occur. You can sit there as darkness falls and watch these amazing frogs emerge from the boulders all around you."

The frogs were found in two different areas on the Cape York Peninsula. Dr Hoskin said that not many species were found in the boulder piles – just the boulder frogs, a few species of lizards and various insects and spiders.

"The two species eat mostly ants. They lay their eggs on land and the tadpoles develop within the egg and miniature frogs hatch out before they head off into the forest or boulders," he said.

"Most Australian relatives of these frog species are only about two centimetres in length, but these new ones are comparatively huge at five centimetres.

"The new frogs live deep down among the boulders and only come to the surface when it rains in the summer wet season.

To explore these remote areas for frogs, we had to fly in during the wet season and hike through swamps to get to the boulder fields.

"It's truly amazing that in this day and age you can still go out in a fairly well explored country like Australia and find species that are totally new to science."

Dr Hoskin is now based at James Cook University, QLD, as an Australian Biological Resources Study Bush Blitz Postdoctoral Fellow.

Frog's amazing leaps due to springy tendons

ScienceDaily, November 16, 2011

The secret to frogs' superlative jumping lies in their tendons. Researchers at Brown University, filming frogs jumping at 500 frames per second with special X-ray technology, show that the frog's tendon stretches as it readies its leap and then recoils, much like a spring, when the frog jumps. The finding could explain how other animals are exceptional leapers.

Some species of frogs and many other animals are able to jump far beyond what appear to be their capabilities. The trained contestants in the frog-jumping competition in Calaveras County, Calif., come to mind, but even ordinary frogs can leap several times farther than their physiology would seem to allow.

"Muscles alone couldn't produce jumps that good," said Henry Astley, who studies the biomechanics of frog jumping at Brown University.

In a paper published in *Biology Letters*, Astley and Thomas Roberts, associate professor of biology, show that the key to frogs' leaping lies in their stretchy tendons: Before jumping, the leg muscle shortens, loading energy into the tendon, which then recoils like a spring to propel the frog up, up and away. Even though as much as a quarter of a frog's mass is in its legs, it would be physically incapable of jumping as far without the tendon's services.

(The Australian & International scene, cont'd...)

"In order to get truly exceptional jumping performance, you need some sort of elastic structure," said Astley, a fourth-year graduate student in Roberts's lab in the Department of Ecology and Evolutionary Biology.

Astley and Roberts examined jumps by the northern leopard frog (*Rana pipiens*), a pond frog common in the northeast United States. The pair implanted metal beads into the shin bone, ankle bone and leg muscle of four frogs and then recorded their leaps with 3-D X-ray video technology developed at Brown. The video, filmed at 500 frames per second and displaying the jump about 17 times slower than normal, tracks the changes in the leg muscle's length and joint movement before, during and after a jump.

As the frog readies itself to leap, its calf muscle shortens. After about 100 milliseconds, the calf muscle stops moving, and the energy has been fully loaded into the stretched tendon. At the moment the frog jumps, the tendon, which wraps around the ankle bone, releases its energy, much like a catapult or archer's bow, causing a very rapid extension of the ankle joint

that propels the frog forward. The entire jump - from preparation to leap -- lasts about a fifth of a second, the experiments showed. Other frog species jump much faster.

"It's the first time we've really gotten the inner workings, that we've put all the pieces (to frog jumping) together," Astley said. "We now have a clearer idea what's going on."

How the tendons, muscles and joints work in frog jumping may help explain how other animals are such head-scratching leapers -- invertebrates like the humble flea or the grasshopper or vertebrates like guinea fowl and bush babies.

"Frogs are interesting in their own right, but we are also confident that this study gives us insight into how muscles and tendons work together in animal movement," said Roberts. "Other studies have presented evidence for an elastic mechanism, but Henry's gives us the first glimpse of how it actually works."

The National Science Foundation funded the research.



Christmas party & BBQ for ACTHA members
from 5.30pm, Tuesday 13th December 2011
To be held at Reptiles Inc. Kambah Shops, Mannheim St Kambah
Murray Evans is our informal guest speaker (*see front page...*)
Please **RSVP** to mandycnwy@gmail.com
by **Friday, 9 December 2011** to assist catering:



ACTHA News
PO Box 160
Jamison ACT 2614