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## ACTHA INC. NEWS

**JUNE - JULY 2011**

*Newsletter of the  
ACT Herpetological  
Association Inc.*

## YOUR COMMITTEE FOR 2010 - 2011

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

*\* Denotes Life Members*

## IN THIS ISSUE

**Reptiles and urban development:** Will Osborne gave a presentation on this subject at a gathering of ACT Conservation Council members in April '11. The Forum was held at the Canberra Reptile Sanctuary in Nicholls, page 2.

## Research and a road trip to the Eyre Peninsula of SA:

Angus Kennedy, ACTHA Secretary, did a spot of reptile trapping in January '11 at Pinkawillinie Conservation Park for an ANU based research project. A write-up of his exploits and some glorious photos are presented from page 5.

*Ed. I strongly recommend you log onto ACTHA's website in a fortnight to see the images presented in this article in full colour.*

*You will not be disappointed!!*



## The International

**Scene:** from page 9.

**One gender lizard species created in the laboratory:** researchers have bred a new species of all-female lizard.

**Sthrn Corroboree Frog eggs return to the wild:** the battle to save this species from extinction continues, page 10.

**'Adapting to arid environments - lizards as model organisms' & 'Evolution big toothache for ancient reptile',** two more interesting articles, page 11.

**Sydney Wildlifeworld:** ACTHA members spent a morning admiring the animals, from page 12.

## DIARY DATE

The *bi-monthly* meetings of the Association are held on the **third Tuesday of the month at 7.30pm**, Southern Cross Club, Catchpole Street, Macquarie, Belconnen.

## UPCOMING MEETING

**Tuesday, 21 June 2011**

**Peter Child from Reptiles Inc.** will start the meeting with a **show and tell of...**

*(You'll have to come to the meeting to find out!)*

Our **guest speaker is Joe McAuliffe**, ACTHA President, who has just returned from a long trip overseas, which included a visit to Borneo. He will be giving a slideshow of some of the herpetofauna he encountered as well as give a talk about a place which many people have described as truly awesome.

## CONSERVATION OF THREATENED GRASSLAND REPTILES IN THE FACE OF URBAN DEVELOPMENT

Article by Mandy Conway, with assistance from Angus Kennedy & Will Osborne

Dr Will Osborne, a long standing ecologist and conservation biologist, gave a presentation to about 25 people on 'Urban development and conservation' on Thursday, 28 April 2011. The presentation, organised by the Conservation Council of the ACT, was held at the Canberra Reptile Sanctuary, Gold Creek, Nicholls.

After a brief introduction, Will decided to focus his talk on some cutting edge conservation issues facing several local reptile species that are experiencing declining populations. His key question to the audience: "Is the decline of local species due to the drought or the impact of urbanisation?"

### Our changing landscape

The Grassland Earless Dragon, *Tympanocryptis pinguicolla*, is an endemic species in the Canberra region. Large numbers were found in Jerrabomberra grasslands and at the Mount Majura Defence training complex when surveys were undertaken in the 1950's, however a search some twenty-five years later uncovered just one specimen.

The Grassland Earless Dragon makes its home amongst kangaroo grass on the region's limestone plains, sheltering and occupying vacant arachnid burrows. Scottish settlers approaching what was to become Canberra were once heard recalling 'wheat grass to a horse's belly can be seen across the landscape...'. This changed over the coming decades once livestock was introduced.

The kangaroo grass returned after grazing livestock was removed, however it now remains highly fragmented due to urban development and poor land management. Only 20 years ago a 'Canberra Times' article raised alarm bells about the declining numbers of the Pink-tailed Worm Lizard, *Aprasia parapulchella*, during surveys. The article was appropriately titled 'Wildlife disappearing as Canberra expands'.



Dustin Welbourne, Canberra Reptile Sanctuary, at left, with Will Osborne, right

### Reality of planning

Planning to protect the native grasslands which the Striped Legless Lizard, *Delma impar*, calls home has occurred to some extent in the recent development of new suburbs Crace, Mullagari and Gundaera in Canberra's north. There are few records of the lizard, which has an obvious ear opening and lays just two eggs. It is one of the world's most endangered reptiles, is only found in this region and has been listed under the Commonwealth Government's Nature Conservation Act as Endangered.



Striped Legless Lizard, *Delma impar*, photo by Will Osborne

Initial surveys in the Canberra Airport vicinity utilised pitfall traps to determine numbers of the lizard. Today, a new survey technique using roof tiles to measure population numbers (a much less labour intensive / invasive method than pitfall traps) found that the population size is small. Catchment and volunteer groups surveyed grassy plains and woodlands in previous known locations. Only genetic work will confirm if in fact the animals found are the same species. Numbers are thin at the northern end of their Canberra range.

The known breeding population at the new suburb of Kenny is under threat. Will indicated that there could be a viable breeding population on the grassland reserve at Jerrabomberra Valley, on the west side. On the east side a population remains

relatively undisturbed on Commonwealth land. The Cookenella property is thought to contain this species, however it has not been surveyed. Lastly, an isolated population exists at Yarramundi Reach near Lake Burley Griffin although it was detected in low numbers. These remnant areas require a timely, thoughtful, scientific base for site management. Unfortunately, leaving some grassland untouched to see if this approach was useful was not done when the opportunity arose. Is the species still there? The Symonston site is under a similar threat.

#### Proposed development of the suburb of Kenny

Survival of the species would rely on the Government's three proposed grassland reserves as opposed to a preferred unfragmented larger reserve. A decision process is the next step, particularly as Kenny has no conservation core. Would management of broader infrastructure plans be much more effective?

Do we catch the lizards at the site and move them somewhere else? Will thinks not. Site clearing would result in high fatalities and their chances of survival if moved would be slim. There would also be a risk in contaminating another genetic population. In-situ protection within the urban matrix is preferred rather than creating reserves in fragmented locations.

#### **The Pink-tailed Worm Lizard**

The Pink-Tailed Worm Lizard lives within rocky outcrops on the slopes of the Molonglo River in areas where pine plantations were not cultivated. They often live in ant burrows, feeding on the larvae and pupae. Interestingly, adult ants do not attack them; perhaps they cover themselves with the larvae/pupae scent. The species has been found in Bendigo, a small population in Tarcutta and also in Albury and Armidale however the ACT is its stronghold, particularly on Mount Taylor and at Googong. It is listed as vulnerable by the Commonwealth in both the ACT and NSW. Although it is relatively common in the ACT it is recognised as a vulnerable species on a global scale.



*Pink-tailed Worm Lizard, Aprasia parapulchella,*  
*photo by Will Osborne*

The species is very sensitive to agricultural disturbance, especially where super phosphate has been applied to improve pastures, but may not be that badly affected by urbanisation when native grasses continue to flourish in non-agricultural areas. The application of super phosphates provides nutrients in the soil for agricultural purposes. This pasture improvement is very bad for native grasses. The Canberra region has not seen large super phosphate usage over the past 60 years unlike other States and Territories which is lucky given that the species capacity to evolve would be difficult in these conditions.

The former pine forest area of the Lower Molonglo, which was destroyed in the bushfires of 2003, is now a target for urban development. As the Pink-tailed Worm Lizard lives on the edges of the Molonglo River, its habitat will be potentially affected by bicycle paths, the National Arboretum and, of greatest concern, a four-lane parkway. This proposal is being considered even though surveys commissioned by the ACT Planning and Land Authority of the area identified it as the largest population of this reptile.

Twenty years ago Mount Taylor was the site of another urban case study, surveying for the Pink-tailed Worm Lizard. A high density of the reptile was found at the time, in an area surrounded by suburbia. Will would like the same area surveyed today to help determine the impact of urbanisation on this species to date. Has the population survived amongst the now weed laden habitat, emerging from adjacent backyards? What have hundreds of tracks traversing the area since the 2003 bushfires, and local human activity of walking and running people or leisurely rock turning youths done?

#### **The Grassland Earless Dragon**

An incredible little dragon living amongst wallaby and kangaroo grass which has, albeit in small numbers, survived the drought but whose numbers have since seriously declined to critically low levels. Extinction is a very real possibility within the next five years.

In the ACT there are at least half a dozen paddocks which have never been ploughed or had super phosphate applied to them. Numbers of these dragons at the Jerrabomberra paddocks were thought to number thousands but recent surveys have found few specimens. Records show that populations once existed in the suburbs of Dickson and Turner. Remaining populations are now only thought to occur in Majura and Jerrabomberra, with about half residing on Defence lands.

Surveys at Symonston have failed to uncover any animals. The paddocks here have been poorly managed with overgrazing at Cookenella thought to be responsible. The Grassland Earless Dragon hopefully exists on Benslore Commonwealth land in the ACT's south, which has not been overgrazed and whose tussock structure has been retained.



*Grassland Earless Dragon, Tymanocryptis pinguicollis, photo by Will Osborne*

Minimal genetic studies indicate that the Majura population of these dragons is quite distinct from Jerrabomberra West. They are similar but have obviously been separated by changes to the landscape for some time.

Will pointed out that more recent surveys have been undertaken with the utmost care. PVC tubes that replicate spider burrows are laid in such a way that these small dragons can hide and emerge with ease. The dragons actually seem keen to utilise these 'traps' which resemble natural arthropod burrows, especially when 'resting' in winter. In a small way, these additional holes help counter the loss of burrows once made by the Canberra Raspy Cricket whose numbers are also in decline.

## Impact of kangaroo populations

Will showed a couple of slides of typical Grassland Earless Dragon habitat and the difference over about eight years was astounding. One image was of grasslands at the Majura Firearms Training Range in 1999; a typical healthy grassland thick with kangaroo and wallaby grasses. The other slide showed a completely barren landscape following heavy kangaroo grazing from 2006 to 2007: a couple of tussocks on an expanse of dirt.

The combination of Kangaroo overgrazing with the drought has led to dried out soil which has eliminated grasses essential for hiding from predators as well as egg desiccation.

## New urban developments

A proactive approach to conservation should include early survey work of native fauna and flora to provide an understanding of regional conservation issues on land earmarked for future development, whether it be for residential or reserve/parkland use.

Connectivity of fragmented habitat, along with adequate buffers from likely urbanisation effects are key issues for the continuing existence of animals like the Pink-tailed Worm Lizard and Grassland Earless Dragon amidst Canberra's continuing urban infill.

Focusing on regional and viable genetic populations of dwindling species and managing these populations and their habitat and landscape characteristics is paramount. Avoidance of further habitat fragmentation and management of weeds are key considerations.



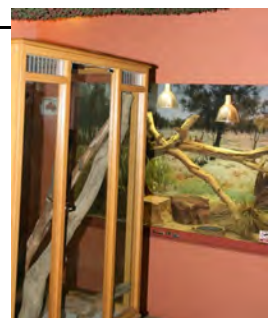
## CANBERRA REPTILE SANCTUARY, O'HANLON PL, GOLD CREEK VILLAGE, NICHOLLS

Dustin Welbourne, Manager of the Canberra Reptile Sanctuary in Nicholls, was pleased to welcome participants of the recent 'Urban development and conservation Forum' (see above article).

Participants were invited to wander around the Sanctuary's exhibits both before and after the presentation. The display enclosures were impressive with their background murals, as were the enclosures occupants. Venomous and non-venomous snakes, many of our region's lizards and an array of amphibians were on display.

The Sanctuary welcomes volunteers and invites members of the general public to 'Adopt a friend', one of the animals on display. The Sanctuary is a not for profit association dedicated to research, education and conservation efforts, and actively promotes reptile awareness as well as research in particular fields.

The Sanctuary is open 10am to 5pm, 7 days a week (except Christmas). Should you wish to volunteer, Dustin can be contacted on 02 6253 8533 or at: [enquiries@canberrareptilesanctuary.org.au](mailto:enquiries@canberrareptilesanctuary.org.au)



# RESEARCH AND A ROAD TRIP TO THE EYRE PENINSULA OF SOUTH AUSTRALIA, 23 JAN TO 9 FEB 2011

Article by Mandy Conway,  
all photos by Angus Kennedy

Angus started his road trip from Canberra before day break, travelling through classic Aussie country and amazing scenery, over the Hay plains, through Port Augusta to his destination: a town called Kimba, situated central north of the Eyre Peninsula.



The Angus K. Theory: "To encounter a Shingle-back Lizard on any trip is a positive omen." And as one was encountered just one hour out of Canberra his adventure was bound to be everything he hoped for.

First stop, around midnight, was at the edge of the Murray River within the Murray Sunset National Park on the Hay plains. Due to the recent flooding in Queensland, the Murray River



was rising and flowing swiftly. Being intuitive by nature, Angus decided to move his camp to higher ground just in time to avoid going for a swim when the Murray River burst its banks.



Reptile encounters on the first night included a Broad-banded Sand-swimmer, *Eremiascincus richardsonii*, running near the road. The photo shown, at left, was taken after it had climbed a bush to try and hide. Also

encountered was Bynoe's Gecko, *Heteronotia binoei*, a species with high variability in colour and a huge distribution across Australia.



The outback sense of humour is alive and well: 'It's bootaful!'



Angus went on to describe the region. Lake Eyre is a fragmented landscape of sand dunes with swales (low areas with hard, compacted soil) and some granite outcrops. Fifty-six percent of the Eyre Peninsula has been cleared over the decades but there are remnant patches of Mallee vegetation which couldn't be cleared due to a lack of machinery at the time, so this remains today. This part of Australia has highly variable conditions and the area provides an interesting case study of dispersal through fragmented landscape: Mallee patches containing an amazing diversity of animals, patches of disrepair, wheat and stock movement.

## Destination: Pinkawillinie Conservation Park

The Pinkawillinie Conservation Park is 130,000 hectares in area and adjoins the Gawler Ranges National Park. It is almost entirely covered in low Mallee scrub wedged within wheat land and remains relatively untouched since white settlement. The Park's declaration as a protected area was finalised in 1985.

Angus' primary reason to go to Pinkawillinie was to take part in field survey work as a volunteer with a small group to assist Juliana Lazzari's research into species survival in fragmented environments. Juliana is with the ANU's Fenner School of Environment and Society.

## Field work - trapping

The target species for Juliana's research was the Starred Knob-tailed Gecko, *Nephrurus stellatus*. Primary study areas were set-up to look at the impact of fire and fragmentation to the reptile species who call the vicinity home. Two areas were targeted: one inside the Park and one in the surrounding farming area. A total of 28 transects were established, with ten pitfall traps laid per transect. The result was a





Angus checking just one of the pitfall buckets

total of 280 buckets which needed to be checked every two days: a huge, time consuming task.

All the geckos captured were taken to the base camp where species were identified, measurement

and genetic samples taken, and a plethora of data recorded. One toe of each gecko was clipped and placed in alcohol and a small blood sample was pressed onto cards - a backup of valuable genetic material. Each individual was marked with a UV light receptive solution (which diminishes as the animal grows) so it could be identified on re-capture: each area on the animals body represents a

different number (*image at left shows the marks under UV light*).

Centipedes and ants were two critters to avoid when conducting the surveys. Even the pitfall buckets had to be made ant proof to prevent specimens being attacked. Other local inhabitants in the area included abundant Emus and Mygalomorph spiders. The spider slides drew a collective shudder from the audience.

Right: "Strange bedfellows... a Central Earless Dragon with a Southern Shovel-nosed Snake."



### Field work - spotlighting

The study site remnants that were not targeted by pitfall traps, some 8 square kilometres, were surveyed by spotlighting. Vegetation was identified at each site and then volunteers

walked 10 minutes along each site side spotlighting. Animal numbers were recorded, as was their gender and snout-vent-length. Spotlighting is very weather dependant and the fact that one night produced 43 sightings and other nights nil reflected this.

Angus showed many slides of the beautiful scenery he traversed, albeit in very hot

conditions. A 50°C day was particularly taxing, even indoors. At one homestead where they camped, there was an air-conditioned room where reptiles could be kept cool. What was soon identified as honey was slowly pouring out of the chimney of the fireplace and across the hearth. A bee hive had recently been fumigated and it was now losing its sticky contents.

Hot days meant resting in the shade and even then Angus was busy observing and photographing the small critters he came across. He went on to described to his audience an event at the Grocke Rd Homestead involving a wasp. The creature spent about 15 mins excavating a hole before flying off and returning shortly after with a paralysed grasshopper. The insect was dragged into the hole: the wasp lays its eggs in the grasshopper and the pupae eat the grasshopper before emerging, Angus explained.



Visiting the Gawler Ranges National Park was a much anticipated event by the team. The group paid their entry fees into the Park and then came across a sign which advised the Park's closure due to a week long feral animal shooting exercise. Not happy, especially after parting with the entry fee.

*Spectacularly coloured claypans could be found within the National Park, as these images show.*





## Reptiles encountered during the survey

ACTHA members were then treated to well over 100 slides of the many reptiles and some amphibians that Angus and the team encountered during their expedition. A list of most of the animals encountered in either pitfall traps, spotlighting, or attempting to dig into the sand or hide in the spinifex grass follows.

**Marbled Gecko** *Christinus marmoratus*, (a)

**Beaded Gecko** *Lucasium damaeum*, (b)

**Western Stone Gecko**

*Diplodactylus g. granariensis*

**Bynoe's Gecko** *Heteronotia binoei*

**Thick-tailed Gecko/Barking Gecko**

*Underwoodisaurus milii*

**Thorn-tailed Gecko** *Strophurus assimilis*, a rare find (c, the three images below)



**Central Bearded Dragon** *Pogona vitticeps* (d, below)



**Dwarf Bearded Dragon** *Pogona minor*

**Tawny Dragon** *Ctenophorus decresii*

**Peninsula Dragon** *Ctenophorus fionni*

**Painted Dragon** *Ctenophorus pictus* (e, below left)

**Mallee Military Dragon** *Ctenophorus fordi* (f)



## Bicycle Lizard/Crested

**Dragon** *Ctenophorus cristatus*, (g) very common in the area. So-called because of the way it runs on its hind legs.



## Lined Earless Dragon

*Tympanocryptis lineata* (h, right)



**Sand Goanna/  
Gould's Goanna** *Varanus gouldii* (i, right)



**Lace Monitor** *Varanus varius* (j, right)





**Thorny Devil** *Moloch horridus*

Thorny devils weren't caught in traps however one was eventually found after Angus followed its bizarre tracks. Angus took a video which is available on our website. An endearing little animal that never fails to impress.



**Striped Skink/Southern Mallee**  
*Ctenotus Ctenotus atlas* (k, left)



**Red-tailed Worm-lizard**  
*Aprasia inaurita* (l, left)



**Slider Lizard** *Lerista edwardsae* (m, left)

**Robust mulch Slider** *Lerista terdigitata*  
*Lerista taeniata*

**Marble Faced Delma** *Delma australis*

**Boulenger's Skink** *Morethia boulengeri*

**Common Dwarf Skink** *Menetia greyii*

**Millewae Skink** *Hemiergis millewae*

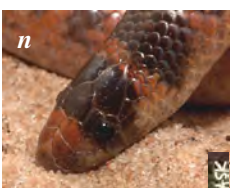
*Hemiergis p. peronii*

**Desert Skink** *Egernia inornata*

**Tree Skink** *Egernia striolata*

**White's Skink** *Egernia whitii*

**Southern Blind Snake** *Ramphotyphlops australis*,  
one of 2 burrowing species in the area



**Southern Shovel-nosed Snake**  
*Brachyuropsis semifasciatus* (n, left)

**Jan's Banded Snake**  
*Simoselaps bertholdi* (o, right)



**Frogs**

One of the burrowing frog species was found after some rain. It was deemed to be either the Trilling Frog, *Neobatrachus centralis*, or the Painted Frog, *Neobatrachus pictus*.



After his volunteering efforts with Juliana and the team, Angus drove down through the Eyre Peninsula to see what else he could find/ photograph. Very cold and windy weather greeted him as he walked along the Venus Bay headland. He came across root vegetation and spotted a dead gecko which surprised him as he didn't think there would be herps in this rather desolate area. He went on to discover Marbled Geckos, a Barking Gecko (right), a Western Stone Gecko, and a Hemiergis species which blended really well with the colourful, low vegetation.

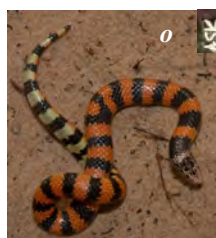
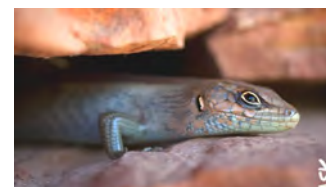


Angus said it was amazing what you could find when you really looked, commenting that reptiles really are a versatile animal.

Next stop was the Lake Newland Conservation Park which didn't produce any reptiles, just amazing scenery.

At Coffin Bay National Park Angus stumbled upon very small eggs under some shrubbery (couldn't identify), some Bearded Dragons plus many other critters, including a Tree Skink, *Egernia striolata*, a White's Skink, *Egernia whitii*, (right)

Lace Monitors, Marbled and Bynoe's Geckos, and a Tawny Dragon, *Ctenophorus fionni*.



Only 217 photos from several thousand taken by Angus were shown. ACTHA members eagerly await the next viewing of photos from his epic adventure!



## THE INTERNATIONAL SCENE

ACTHA member Tony Lawson keeps us posted on developments in the international science arena.

### ALL FEMALE LIZARD SPECIES CREATED IN THE LABORATORY

By Brandon Keim, *wired.com*

Researchers have bred a new species of all-female lizard, mimicking a process that has happened naturally in the past but has never been directly observed.



One of the hybrid offspring,  
photo by William B. Neaves

"It's recreating the events that lead to new species," said cell biologist

**Peter Baumann of the Stowers Institute for Medical Research**, whose new species is described in the 'Proceedings of the National Academy of Sciences'.

"It relates to the question of how these unisexual species arise in the first place."

Female-only species that reproduce by cloning themselves—a process called parthenogenesis, in which embryos develop without fertilization—were once considered dead-end evolutionary flukes. But in the last decade, unisexuality has been found in more than 80 groups of fish, amphibian and reptiles. It might not be such a dead end after all.

Best-known among all unisexual species are *Aspidoscelis*, the whiptail lizards of south-western North America, of which 7 of 12 species are unisexual. Genetic studies suggest their unisexuality emerged from historical unions of two sexually-reproducing lizards belonging to closely-related species, the hybrid offspring of which possessed mutations needed for parthenogenesis.

In two of the unisexual whiptails, that seems to have been enough; they immediately went all-female. In the other five, it took another round of traditional sexual mating. Those species are so-called triploids, bearing two sets of chromosomes from the original mother species and one from the father.

But for all the evidence of these historical hybridizations, it has been remarkably difficult to observe in the present. When new hybrid whiptails have been found in nature, they've invariably proved sterile. The same goes for laboratory efforts, including one that lasted for 29 years and involved 230 lizards from nine

species. Researchers were left with a conundrum: though adding chromosomes is clearly possible, it's a disaster whenever seen.

"There are recognized species for which that hybridization event occurred 100,000 years ago," said Baumann. "But there are also hybrids that have arisen in the last five years. If you go to New Mexico and look around, you can find them. They've also arisen in the lab, but they're sterile."

There was, however, one historical hint of hybrid success. In 1967, a captive *A. exsanguis* female, triploid and parthenogenetic, successfully mated with a male *A. inornata*. One female offspring laid eggs. They weren't cared for, but Baumann and colleagues suspected that they might have developed.

In the new study they revisited that experiment, again mating *A. exsanguis* with *A. inornata*. This time, it conclusively worked. Six eggs were recovered and incubated, producing four hybrid females. All went on to clone themselves. Those offspring are now into their fourth generation, fully healthy and representing "a proof of principle" for how new parthenogenetic lizards could evolve in nature.

Baumann's team hasn't yet decided what to name their new species, which as of March numbered 68 females with more eggs on the way. More pressing than a name is continued study. "What is the fundamental difference between these lizards and every hybrid that's been examined in the last 40 years?" he said.



On the **left** half of the image above, a hybrid parthenogenetically-reproducing daughter rests between her parent species; at **right** are second, third and fourth generation descendants of the hybrid.  
PNAS

It's a question with multiple implications.

Baumann's expertise is in cell division; comparing sexual cell division, known as meiosis, in the new species with other, infertile lizards could reveal as-yet-unappreciated mechanisms. "By comparing and contrasting meiosis in different species, I've gained an appreciation for how little we know about meiosis in any organism," he said.

If this laboratory hybridization proves analogous to naturally-occurring moments of hybridization, it could support the notion that unisexuality is not an evolutionary dead end. Baumann's lizards have effectively just received an influx of genetic mutations, providing variety unavailable to self-

cloners. He wonders if some lizard lineages might actually alternate between sexual and unisexual reproduction, depending on the pressures of each era.

"Is it really the case that, once a species is unisexual, it's set in stone, and it will be that way until it dies out?" he said. "Or is it there a chance that material in unisexual lineages could find its way back?"

*Citation: "Laboratory synthesis of an independently reproducing vertebrate species." By Aracely A. Lutes, Diana P. Baumann, William B. Neaves, and Peter Baumann. Proceedings of the National Academy of Sciences, Vol. 108. No. 18, May 3, 2011.*



## EGGS HEAD FOR THE HILLS IN PROJECT TO SAVE ENDANGERED FROG SPECIES

By Nicky Phillips, 3 May 2011



*Eggs-and-spoon race... Michael McFadden from Taronga Zoo and a helper release frog eggs in the Snowy Mountains. Photo: Peter Rae*

DEEP in the Snowy Mountains a helicopter lands on boggy ground, bearing three scientists and their precious cargo of 100 frog eggs.

The tiny, delicate balls are the offspring of the Southern Corroboree Frog, one of the most endangered animals in the world.

In an attempt to save the species, which is being wiped out by the chytrid fungus, scientists from the Department of Environment and Heritage have developed a breeding program with Taronga Zoo.

After a seven-hour drive from Sydney, and a cold night in a hut in the mountains, the eggs are placed in ponds designed to prevent frogs with the fungus from depositing their eggs there.

The co-ordinator of the exercise, David Hunter, a departmental threatened species officer, said the species was at the "pointy end" of extinction in the wild. Fewer than 100 can be found in their natural habitat.

"Without the breeding program this tiny black-and-yellow striped frog would vanish in less than three years", Dr Hunter said.

"The aim is to keep a population of the frogs in the wild long enough for them to develop resistance to chytrid fungus."

Before the fungus, a pathogen that lives off compounds in frog skin, was introduced in the 1980s, tens of thousands of southern corroboree frogs could have lived in the Snowy Mountains region.

The supervisor of the herpetofauna division at Taronga, Michael McFadden, said eggs had been collected in the wild and hatched at Taronga and Melbourne zoos.

Of releases in the past four years, at least half of the eggs have reached adult stages. Whether they have survived after that is unknown.

It takes four to five years for the Southern Corroboree Frog to reach sexual maturity, so the team will not be able to measure the success of their program until the first group of frogs return to their hatching area to breed. However, its members are sure that corroboree frogs will flourish again.

"The zoos have been so successful breeding eggs I feel confident we will re-establish good-sized populations out here in the wild," Dr Hunter said.

*More information can be found at:*

<http://www.smh.com.au/environment/animals/eggs-head-for-the-hills-in-project-to-save-endangered-frog-species-20110502-1e57t.html#ixzz1LELVRTDk>



## Adapting to arid environments - lizards as model organisms

With much of the continent predicted to become hotter and drier with future climate change, the ability of species to adapt to a more arid environment will be a key factor in adaptation strategies for terrestrial biodiversity.

A new study, recently funded for four years through The Australian Research Council Discovery Grant scheme, will investigate how some lizards successfully evolved and adaptively radiated within the arid zone, while other closely related groups have not, and remain confined to the mesic zone.

The study will be led by **Dr Brett Goodman**, and based jointly at the **University of Adelaide** and the **South Australian Museum**.

In particular, Dr Goodman will be investigating what physiological and morphological traits were beneficial for colonisation, and radiation within the arid zone.

"While most other Australian skink lineages had similar opportunity, only a few species from a handful of genera succeeded." Dr Goodman explains, "The genera *Lerista* and *Ctenotus* have 80 and 100 species, and are the only groups to have successfully radiated within the Australian arid zone and still have representative species within the mesic-tropical and temperate zones."

The study will focus on the theory of adaptive radiation and utilise these two groups to assess how morphological traits such as limb length and a shift to a more snake-like movement could explain expansion into the arid zone. Physiological traits including oxygen uptake will also be assessed.

The results should have direct application to understanding how some species might adapt to contemporary climate changes. "By examining how traits changed rapidly in response to the extreme conditions encountered during the rapid formation of the Australian arid zone, this could help to forecast how some terrestrial species might respond to current climate change and the projected expansion of the arid zone." says Dr Goodman.

In helping to reveal the evolutionary mechanisms which allow species to adapt and thrive in arid regions, this study could also inform management plans aimed at promoting adaptation in species faced with an increasingly arid environment.

[http://df.arcs.org.au/quickshare/284eb3a549594e1b/arn\\_tb\\_tr\\_bulletin\\_april\\_2011.pdf](http://df.arcs.org.au/quickshare/284eb3a549594e1b/arn_tb_tr_bulletin_april_2011.pdf)

## Evolution big toothache for ancient reptile

Tuesday, 19 April 2011, Reuters (Source: Diane Scott)

Missing teeth and the decayed jawbone of an ancient reptile have pushed back the earliest evidence of tooth decay some 200 million years, according to a new study.

The new find also highlights the downside of the evolutionary shift from loosely-fitted teeth that fall out but grow back to having a single set of permanent chompers, a drawback shared by adult humans, the researchers say.



*Labidosaurus hamatus* - a fat-headed, omnivorous reptile about 75 centimetres long - adapted over millions of years to life on land rather than the watery marshes of its amphibious forebear.

The reptile, which existed 275 million years ago, had stouter legs and armour-like skin adapted to running and warding off predators.

And its non-replaceable teeth, deeply anchored in its jaw, were better suited for eating fibrous plants and stems, alongside its more ancient diet of flying and crawling insects.

Researchers led by Professor Robert Reisz of the University of Toronto at Mississauga, analysed an "exquisitely preserved" jaw found near Coffee Creek, Texas using CT-scan technology.

Their findings appear in the peer-reviewed journal *Naturwissenschaften*.

They say having fixed-for-lifetime dentition made *L. Hamatus* vulnerable to the same type of bacterial decay that plague humans and keep approximately two million dentists around the world employed.

They found evidence of massive infection, likely resulting in the loss of several teeth and bone destruction in the jaw in the form of an abscess.

"Our findings allow us to speculate that our own human system of having just two sets of teeth, baby and permanent - although of obvious advantage because of its ability to chew and process many different food stuffs - is more susceptible to infection," the authors conclude.

<http://www.abc.net.au/science/articles/2011/04/19/3195509.htm>



## SYDNEY WILDLIFEWORLD, DARLING HARBOUR

*Article & photos by Mandy Conway*

In November 2010 a group of ACTHA members went to Sydney for the weekend to visit Hal Cogger and Hal Heatwole. We also took the opportunity to visit several local reptile attractions.

On page 5 of the 'Feb- Mar 2011' edition of our ACTHA Newsletter, Iris Carter wrote about our trip to the Gosford Reptile Park on Sunday, 21 November '10.

In this edition of the News, I've included some of the photos I took of our visit to Sydney Wildlifeworld at Darling Harbour ,which we toured before meeting Messers Hal on the Saturday.

Only a few of us had been to Sydney Wildlifeworld previously, and they assured the rest of us that we were in for an awesome morning. We were not disappointed!

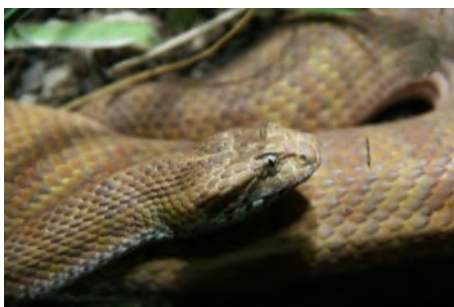
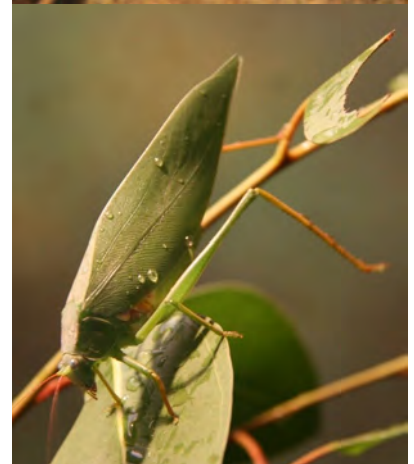
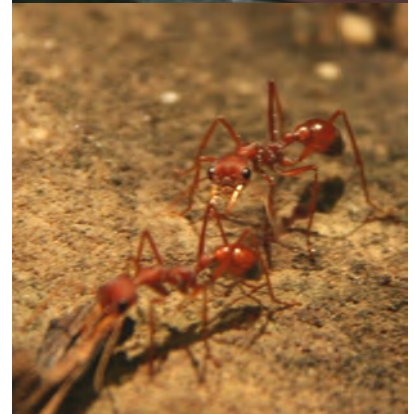
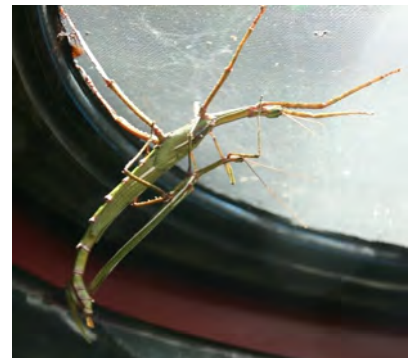
All of the animals were displayed in a very natural environment with child friendly factual signage around every bend.

We all admired the many insects on display, including Australia's large ants and spiders. The stick and leaf insects were probably the most entertaining though.

Popular reptile exhibits included the Mulga Snake, Red-bellied Black Snake and Boyd's Forest Dragon.

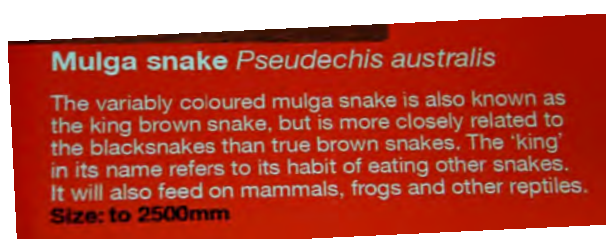
The MOST popular reptile was the crocodile: from the very young crocs who quietly sat and observed us to the massive specimen slowly swimming in the huge water arena. Its graceful tail movements propelling it through the water was mesmerising.

We'd like to thank Sydney Wildlifeworld for the opportunity to visit (at a discounted price for ACTHA members) and look forward to seeing new exhibits in the future.



*Southern Death Adder*

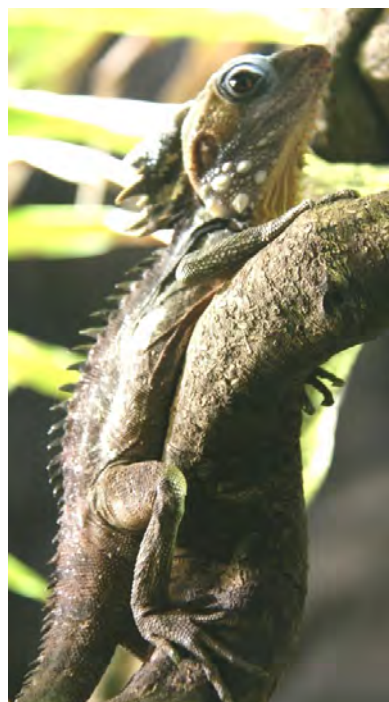
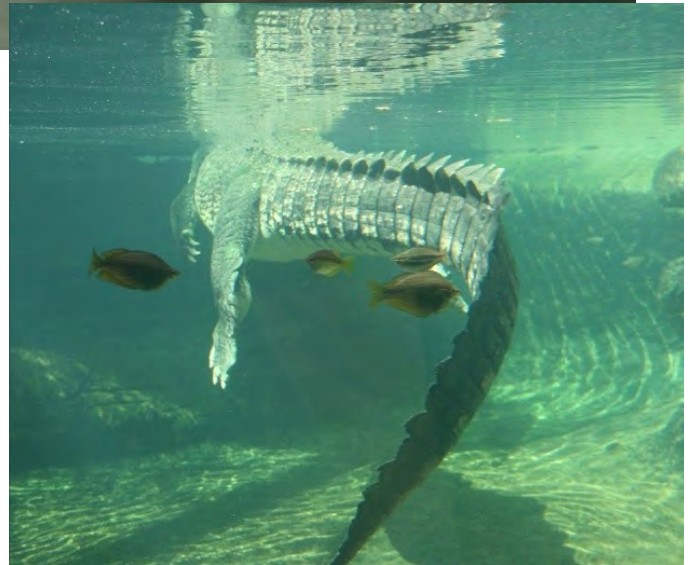
*Signage for each enclosure was very good, example below.*



*Jake the show man!*



*From little crocs, BIG crocs grow!*



*Boyd's Forest Dragon*

*Cunningham Skink*



## WHITE-LIPPED SNAKE SPOTTED AT NIMMITABEL

*Photo by Susanna Chung*



On yet another trip to her *Garrawunga* property to eradicate weeds in April, Margaret Ning and friend, Susanna Chung, spotted a White-lipped Snake.

The photo is not perfect as it was taken in haste, but once this Newsletter goes on our Website you'll be able to see most of the snake's brilliant colouring.

Anyone else spotted an interesting herp finding a place to hibernate? Then please send it, along with where you found it, to

[mmconway@homemail.com.au](mailto:mmconway@homemail.com.au).

**A note from the Editor**

*The views expressed by contributors and authors and any links to Websites provided in this Newsletter are not necessarily those of ACTHA.*

### NEWS JUST TO HAND: WILDCARE QUEANBEYAN QUICKLY RESCUES TURTLES

Maryanne, Reptile Coordinator, Wildcare Queanbeyan, wrote on an on-line freshwater turtle forum: "I'm preparing to rescue Eastern Long-necked Turtles (ELN) from a dam near Queanbeyan, NSW, that is in the process of being drained to make way for a highway upgrade..."

Maryanne later advised, "The rescue went ahead on Wednesday 8 June - the coldest day so far this year in Canberra (8 degree maximum temp!) After a very slow start searching the silt and mud, as soon as the volunteers ventured into the water they quickly found **54 turtles!** The dam had been slowly drained over a period of about 2 weeks and the turtles had obviously moved into the remaining water in the middle.

"Based on advice received, from Arthur Georges, ANU, and renowned ELN experts from Canberra University and elsewhere, the turtles were relocated as soon as possible after the rescue to a nearby dam. It was not possible to tell whether the turtles were affected by shock, or whether the fact they had already been disturbed by the water being drained helped prevent this, but the alternative was sure death from the bulldozers. Nevertheless, we will monitor the dam they were released in to check for any signs of mortality.

Another rescue is planned for Friday 17 June for the second dam affected by the road works. It is a much bigger dam so more turtles are expected."

On Wednesday, 15 June, after speaking with Maryanne, I offered my help and that of ACTHA members who could be contacted in time. The results will be included in the next edition of the Newsletter.

*By Mandy Conway*



ACTHA News

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