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

ACTHA INC. NEWS
JUNE-JULY 2012
Newsletter of the ACT Herpetological Association Inc.

NOTE FROM THE EDITOR

Due to unforeseen circumstances, the **April-May 2012** edition of the ACTHA newsletter never made it to the presses. My sincere apologies.

This means, however, that this June-July 2012 edition is HUGE and I hope you enjoy reading it!

AND...

ACT HERPETOLOGICAL ASSOC. INC.

2012 - 2013 MEMBERSHIP RENEWAL NOW DUE, ***pls see page 17.***

IN THIS ISSUE

YOUR COMMITTEE FOR 2011 - 2012

President	Dennis Dyer
Vice President	Ric Longmore
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Excursion Officer	**Ric Longmore ***
Conservation Officer	Joe McAuliffe
Committee Members	Iris Carter
	Greg Flowers
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**, at the

***Belconnen Soccer Club*, Hawker**

(cnr Belconnen Way & Springvale Drive)

UPCOMING MEETING

Tuesday, 19 June 2012

This month's guest speaker is Dustin Welbourne, PhD Candidate, University of NSW (Canberra Campus), who will give a presentation entitled '**Non-indigenous reptiles as a threat to Canberra's biodiversity**'.

Where geographic obstacles once stood as barriers to non-indigenous flora and fauna, these are now regularly breached as goods and people are transported at unprecedented rates around the globe. Australia has not been immune to this trend and there are now more than 80 invasive vertebrates, and thousands of plants that call Australia home. Though most of these vertebrates are mammals, non-indigenous reptiles are a huge concern given the growth of the pet industry and especially so due to the diversity of reptiles Australia hosts.

Brunch at Hudson's Cafe, ANBG

ACTHA *Snakes Alive!* volunteers were invited to have a complimentary brunch at the ANBG's Hudson's Cafe on Saturday, 18 Feb 2012. Wendy, Hudson's owner, kindly hosts the brunch each year to thank ACTHA for all the extra patronage the Cafe receives during the Exhibition.

We'd like to once again thank Wendy for her generosity and would like to say how much ACTHA members rely, and always enjoy, refreshments from Hudson's during the very busy week.

The dozen ACTHA members who attended the brunch swapped Exhibition stories before being treated to another of Dennis' poems. His offer to sing it was respectively declined so as not to detract from the true meaning of the phrases!

This was the very model of a modern Herpetofauna Festival,
That gave much information on many species of reptilian animal.
We know how to describe them in ways methodical,
And classify them in orders categorical.
We're very well acquainted too with matters mathematical,
Because we understand attendances, shop sales and all things financial.
About what each species eats we're teaming with a lot of news,
With many cheerful facts about each one's tasty views.

We know how to handle them all, except the crocs,
And we answer our visitor's questions without much paradox.
We can quote all manner of books, the likes of Cogger
Not hesitating too much on what others might consider!
We have also learnt what progress has been made in making displays.
However, when we know how to attract more folk who are on holidays,
And our herp knowledge has been updated to the beginning of this century.
In short, we will then have a smattering of elemental strategy.
But still in matters about each reptilian and amphibian animal
This was indeed the very model of a modem Herpetofauna Festival!

What's the difference between a Green Tree Python and a Green Tree Snake?

Did you spot this Editor's error in the Feb—Mar 2012 newsletter?
The animal which appeared on page 7 was not a Green Tree Snake, but a **Green Tree Python** (*below right*).

The specimen above is the real **Green Tree Snake**, *Dendrelaphis punctulata*: found in a wide variety of habitats, from woodlands to rainforests and tropical gardens from Sydney through Cape York Peninsula, Qld, to the Kimberley, WA.

Green Tree Python
Morelia viridis: restricted in Australia to the rainforests of the Iron and McIlwraith Ranges, NE of Cape York Peninsula, this python spends much of its time amongst the bushes, shrubs and trees of rainforests. Primarily arboreal, it has a distinctive way of resting on a branch by looping its coils in a saddle position and placing its head in the centre.

Fake snakes at the 2012 *Snakes Alive!* Exhibition

Article by Stephen Holland

As a Canberra artist I have been creating sculptures about animals for quite some time. Over the years I have made artworks about an array of animals such as ants, snails, dogs, birds, foxes and sheep, to name a few. Beside animal biology, I am also interested in the

names we give to animals and the stories that we tell about them. This led me to the realisation that perhaps the snake has more words written about it and stories told about it than any other animal. Maybe this has something to do with the fact that we have lived alongside snakes for a very long time and that snakes enthralled and terrified our ancient human ancestors in the same way that they do today.

After noticing beautiful and intriguing snake artworks in art galleries, and reading numerous serpent legends, it became clear that the snake was considered a special animal in many cultures. In 2011 I decided to focus this observation into a PhD research at the Australian National University. Based in the

Sculpture Workshop at the School of Art, the topic of my project is on the snakes that live in the Canberra region and bronze serpent sculpture. It is a deeply rewarding study and the greatest challenge of working within the tradition of snakes in art is to communicate something about the actual life of Canberra's snakes through the material of bronze.

Eastern Brown Snake at the Canberra Reptile Sanctuary

I started my project with the Eastern Brown Snake. It was the species of snake I had seen most often. The process of modelling snakes in plasticine is quite slow and contemplative and whilst I worked I read about snakes. This ophidian research ranged between fact and fiction. Scientific studies such as those conducted on the Red-Bellied Black snake by Richard Shine enriched my understanding of snake anatomy and thermoregulatory behaviour. A reading of Serpent characters in myths and religious texts also added to an appreciation of snakes as they exist in the human psyche. The account of Buddha Sheltered by Muchalinda the Serpent King was a particularly insightful reference whilst I was making the bronzes. Muchalinda, the powerful seven-headed cobra creature, inspired me to make seven pairs of bronze Eastern Brown snakes for the artwork which I called *'being'*.

As it was nearing completion, Professor Scott Keogh, from the Biology Department at the ANU, suggested that I approach the ACT Herpetological Association to exhibit the sculptures at *Snakes Alive*! 2012. A site for the sculptures was chosen outside the entrance to the Crosbie Morrison Building.

Eastern Brown Snake, *Pseudonaja textilis*

Shortly after setting up the sculptures a family of White-winged Choughs flew in for a closer look. The birds were greatly concerned by the sudden appearance of the bronze snakes and gathered in a nearby tree. Shrieking loudly, several of the braver birds came nearer. The commotion drew the attention of other birds. Mud larks flapped above the sculptures threatening to peck at them, ravens cawed from a branch high above the scene, currawongs, magpies and wattle birds joined in the uproar and a bower bird was seen. In due course the birds flew off. This was when a number of fairy wrens appeared and took their turn at protesting about the presence of the sculptures. To release them from further apprehension I decided to pack the display away and return the following day.

My role as an artist at this event took several forms. I wanted to test the formal and conceptual qualities of my snake sculptures and was keen to have them seen in the context of a herpetological occasion with live snakes. It was a worthwhile opportunity to seek reactions from a wide cross section of people. I placed and looked after the sculptures each day which gave me an excellent chance to meet professional and amateur herpetologists alike, and to gather information about elapid snakes. A free standing explanatory sign gave the low lying artwork a more tangible presence. The text, in part, read:

Title: **being** *Artist*: **Steven Holland**
Medium: **Bronze**

Snakes are inspiring animals. They often appear as characters in stories and art and have a special place in the human imagination... The display showed several pairs of Eastern Brown Snakes, made in the shape of the letters b and e. Together they spell the word 'be'. The sculptures carry the idea of being in our busy world alongside of snakes; to let them be.

As a mark of respect for Canberra's snakes the artist has made them in the material of bronze.

Canberra's Snakes in Art at *Snakes Alive!*

After the birds, the next reaction to the installation of sculptures was from children, who couldn't wait to touch them. Eventually, notices reading *Do Not Touch; For Looking Only; Snakes Might Bite* were erected, a practical remedy suggested by Kay Hick.

Upon seeing the sculptures, with the notices in place, visitors arriving at *Snakes Alive!* would engage with issues of representation. Peoples' comments included "they are not real… they are just pretend… they are fake snakes". Alternatively, without being so sure others would ask "Are they real? Are they toys? Will they bite? Why does it say they will bite? How can they bite?" These questions allowed for positive interaction with people. It was a way to explain that inside the Exhibition it was possible to touch snakes and lizards but outside in the bush it was inadvisable. It then became a way to ask people about their experiences with snakes in the wild and to exchange observations and stories. People genuinely welcomed these sometime lengthy conversations and often expressed awe and reverence for Australian snakes.

On Wednesday evening I was invited to give a talk to members of ACTHA which presented a further exchange of ideas. The following day I surrounded the sculptures with leaf litter, bark and sticks which visually softened the stark brick pavement and extended the sculptural installation into the trees and shrubs of the botanical gardens. A profound shift of awareness ensued.

A real snake is spotted

About midday, Joe McAuliffe, the Conservation Officer for ACTHA and an ANBG staff member, quietly signalled me down to an Eastern Brown Snake he had found hiding in a pipe inside a stormwater culvert a short distance from my display. I was amazed at how close we were to this venomous snake and how easily it glided through the bars of the pipe grill. Joe was somewhat concerned about people having picnics nearby. He pointed out a Jackie Dragon sitting on a retaining wall above the drain who was bobbing its head rapidly up and down to signal the presence of the snake to other animals. The snake slipped out of the drain and headed into a tangle of bark at the base of a tree. Suddenly a boy from the picnic grounds ran down the hill, he grabbed his ball and ran back again. The snake stopped and rapidly made its way into another drain a few meters away. We watched it disappear then come back, heading out across an access road towards the safety of long grass. A bird let out an alarm call. At the same time people could be seen walking across the road some way off. Again the snake stopped momentarily before vanishing through the fence.

In its natural environment this Eastern Brown Snake could be seen to respond to the sounds and movements of other animals. The subtle visual relationship between its light brown colour and the filtered light falling onto the leaf litter was a breathtaking spectacle. This was *Snakes Alive!* and I was thrilled to have observed a wild snake from such close range.

Following this palpable incident I returned to watching over the *fake snakes* and listening enthusiastically to visitors' snake encounters.

Tales of snake encounters

The stories varied between personal experience and hearsay. Someone tells of a man from Cowra who was bitten by a snake and drove himself to hospital. We laugh at his valid excuse to break the speed limit. The same person tells me that tiger snakes are aggressive in attitude and refuse to retreat when you come across them. Someone else tells me how it was common for Queensland cattlemen to be bitten by death adders in decades past. They tell of an outback cemetery where some of the stockmen are buried. A more recent story occurred in Canberra, when a cyclist recounts how she had stopped for a large Eastern Brown Snake which was lying on a bike path in Weston. The snake was reluctant to move and ten bike riders were held up.

Several events were planned at the ANBG the following day. Event organisers sought to divert the separate audiences expected for a twilight concert, a wedding ceremony and *Snakes Alive!*, and as a consequence I was asked to relocate my display. The new entrance was a steep curving path which branched off from the main path leading to the concert. With no open level surface to display the bronze sculptures I was required to put them on sloping ground amongst the shrubs at the edge of the path.

ACTHA member Kay Hick teaching children about venomous snakes, photo by Lucinda Royston.

Some of the sculptures were visible to people heading to the concert. This impromptu set up created a scenario which I would later regret. Two particularly negative reactions forced me to pack up early.

Loaded with folding chairs, pillows and hampers, concert goers marched past the sculptures mostly unaware of the artworks. On several occasions however the sculptures did surprise people and their fearful reaction changed to anger when they realised that the snakes were not real. The effect was not one I had intended and it seemed that without a properly considered context the sculptures were betraying their underlying meaning. Placed in the garden near a busy path the skilfully crafted bronze *fake snakes* were operating in a similar manner as a rubber spider or a snake in a B Grade movie. The sculptures were promptly

removed. I returned the next day to set them up at the original entrance to *Snakes Alive!* where the site and the notices created an appropriate setting for promoting an understanding of elapid snakes.

At the end of a very busy week…

Through this cooperation with ACTHA's *Snakes Alive!* my sculptural research into elapid snakes of the Canberra region can be advanced. The Exhibition provides a focused context where I can extend the aims of my research and further refine issues of representation and ways to display my bronze snake sculptures. Based on biological inquiry, the Exhibition is a unique forum for my sculpture where scientific understanding of Canberra's elapid snakes can exist in harmony with material poetry. If everything goes to plan in the coming year I am looking forward to exhibiting a series sculptures based on the Red-bellied Black Snake in 2013.

The Australian & International Scene

Invasive plant saving Australian lizards

Chicago, 23 February 2012 (UPI)

An Australian lizard may have been saved from extinction at the hands of invasive toxic toads by an invasive species of plant, researchers say.

Cane toads, introduced in Australia in the 1930s to control a beetle pest in sugar cane crops, quickly became an ecological disaster of their own because they produce toxins called Bufadienolides, deadly to many native Australian species that feed on frogs and toads, an article in **The American Naturalist** reported.

Blue-tongue lizards are one of the vulnerable species, but some blue-tongue populations seem less vulnerable to the toxins, researchers said.

"Some lizard populations were vulnerable to bufotoxins whereas others were not -- and the populations with high tolerance to bufotoxins included some that had never been exposed to toads," researcher Richard Shine of the University of Sydney said.

The reason, Shine and his colleagues said, is likely an invasive plant species known as mother-of-millions, imported from Madagascar as an ornamental plant, that has become part of the diet of blue-tongues in some regions and happens to produce a toxin that's virtually identical to that of the cane toad.

The researchers suggest the plant drove strong selection for lizards that could tolerate bufotoxins -- a remarkable example of evolution over a relatively short period of some 20 to 40 generations of lizards.

"Now it appears we have a population of eastern bluetongue lizards that are able to defend themselves well against cane toads -- even though they've never actually met one -- whereas the devastation of the cane toads on the north-western lizard population continues," Shine said. "Eating this plant has pre-adapted the eastern blueys against cane toad poisons."

Turtles in trouble

By Bruce Chessman
Source: ECOS MAGAZINE, 15 March 2012

Dr Bruce Chessman is a Principal Research Scientist in the New South Wales Office of Environment and Heritage. He has particular interests in the ecology of rivers and wetlands and the conservation of freshwater biodiversity.

Imagine a world without turtles and tortoises. Unfortunately, many of the world's turtle and tortoise species are at risk of extinction within a few decades, as more of their habitats are lost or degraded and they are killed for their meat or shells, or their eggs are dug up and eaten.

Australia's turtles, though better protected than those in many countries, are not free from

hazards – in fact, the signs are that introduced predators, drought and the new threat of climate change add up to an uncertain future for our unique turtle species.

Turtles and tortoises are great survivors. They first appear in the fossil record some 220 million years ago, about the same time as the first dinosaurs. But today, turtles rank among the most endangered of animals, with nearly half of the world's species now regarded as threatened, largely by excessive harvesting and habitat loss or degradation.

Australia lacks the land tortoises found on most other continents, but has a rich variety of marine and freshwater turtles. Most of Australia's freshwater turtles occur nowhere else in the world, and those few that extend beyond our borders range only as far as Papua New Guinea and eastern Indonesia.

Our 24 or so freshwater species include the critically endangered Western Swamp Turtle, which is restricted to a few wetlands near Perth. We also have much more widespread and abundant species like the eastern long-necked turtle, a frequent victim of motor vehicles when it crosses roads after rain in pursuit of new habitat.

We have little idea of the conservation status or population trends of many of our turtle species. Spending most of their time on the bottom of rivers and lakes, freshwater turtles are usually out of the public eye, and they are rarely included in long-term monitoring programs.

There are, however, good reasons for concern about the future of our freshwater turtles. Research has shown that most turtle eggs, which nesting females bury in shallow sand or soil, are dug out and eaten by predators – mainly introduced species, such as foxes and feral pigs.

Still, adult turtles can live for decades and lay hundreds of eggs in a lifetime, so even if only a few eggs survive, the resulting hatchlings may be enough to sustain turtle populations.

But if hatchlings, juvenile turtles and adults also suffer a heavy mortality, turtle populations may slowly wither away. And turtles are assailed by many hazards in today's Australia. In addition to road kills, turtles are drowned in fishing nets and struck by boats. They are eaten by dogs, cats, foxes, pigs and some native animals.

During the recent 'millennium drought' in south-eastern Australia, some dry lake beds were littered with the remains of dead turtles. And in the lakes at the mouth of the Murray River in South Australia, where salinity rose during the drought, many turtles perished after becoming weighed down by massive growths of estuarine tubeworms on their shells.

"In the last few years I have been re-visiting turtle populations on the Murray River near Yarrawonga that I first studied as a PhD student in the 1970s."

Changes in catch rates suggest that one of the three species inhabiting this area, the eastern long-necked turtle, has declined in abundance by about 90 per cent over the past 30 years. The Murray turtle appears to have declined by about 70 per cent. The broad-shelled turtle, does not seem to have become less abundant, but was scarce in the 1970s and remains so today.

The population structures of the first two species – the eastern long-necked and the Murray turtles – have also changed. They are now dominated by older turtles, with a small proportion of juveniles. Such population structures are also seen elsewhere, suggesting that population ageing may be widespread.

Turtles are an integral part of our natural heritage and widely recognised in Indigenous culture. Only through a sound understanding of their population trends and the threats that they face, gained through adequate monitoring and research, can we plan effective conservation actions to ensure their future.

Roufous Night Heron dismembering cane toads

Here is some latent information from birder David James in Jakarta, who previously conducted scientific research on Cane Toads and frogs in North Qld.

The toxic parts of adult cane toads are the parotoid glands on the shoulders, the dorsal skin and the ovaries. Quite a number of animals have learnt to eat the non-toxic parts by flipping the toads and chomping through the underbelly. Mostly they eat the internal organs (except the ovaries) and the thigh muscle meat. In Townsville in the 1990s I recorded Australian white ibis, black kites, Australian ravens and water rats doing this regularly. None, however, left a tiny hole in the throat, they sliced the belly

wide open. All searched for them systematically, apparently following the theory of search pattern behaviour . At one point I had 24 open pens in a cow paddock by a dam, each with a single adult and 10-30 tiny metamorphs (i.e. newly metamorphosed from tadpoles). The adults started mysteriously disappearing after a couple of days. Turned out that a flock of ravens that had learnt to check the pens at dawn each day, flip and kill the toads and then cache them in trees. The sympatric Torresian Crows showed no interest in the toads, but the ravens would defended my pens from their rival crows all the same.

It does not surprise me that night herons also eat cane toads, and I'm sure many other herons do too. However, I would be surprised if night herons did so by making a small incision in the throat. They might be able to get the gut that way, but not the heart or the thigh meat. I'm not sure what would eat them that way, but suspect it might be something capable of crawling inside, a centipede perhaps? Dissecting one of these victims might help.

Few things can eat a toad whole. A lot of snakes, goannas and quolls have apparently died trying to do so. The widespread decline of these predators still puzzles me a little, because the Common Green Tree Frog is just as toxic as the cane toad. These predators learn not to eat green frogs, but often don't learn to eat toads. Many of your listeners will know that their puppies learn not to eat toads and green frogs alike after only lick of each, but might be sick for a day or two afterwards (and then pretend not to notice frogs for the rest of their lives). The Keel-back, a common water snake that specialises in eating frogs, eats the young metamorphs whole, and even seems to prefer them to other frogs, at least sometimes. Meat ants swarm and devour small toads. Green Tree Ants will carry flattened and dried road killed toads in one piece up a tree to their nests in extraordinary displays of determination. A photo of a Papuan Frogmouth with a frog in its bill was published on the back cover of Wingspan maybe 15 years ago, with the suggestion it may have been a cane toad, but who knows. In my pens, I observed naive juvenile pied butcherbirds trying unsuccessfully to eat my metamorph toads. They would pick them up and fiddle with them in their bills but quickly drop them (alive and unharmed) and try another. I assume the small parcel of edible meat wrapped in poisonous skin is too difficult to process, unlike the adult toads.

The question is often asked by frog researchers "why are metamorph cane toads diurnal when most other frogs are nocturnal?". They usually offer answers like the night is too cold or some other reason why metamorphs are unable to be active at night. I would suggest that they are able to be active by day when most other frogs (including adult toads) cannot be, because they have better defence against predatory diurnal birds.

Incidentally, the tadpoles are very poisonous too, and few predators can handle them. This allows them to breed in water with fish, unlike native frogs. A colleague was studying what did and did not eat the tadpoles, but so long ago I can't recall much. Dragonfly larvae snip the tails off the taddies, which leaves them to die floundering helplessly.

Herpetofauna delays explained *By Margaret Ning, ACTHA Treasurer*

As those of you who subscribe to Herpetofauna already know, Issues are arriving later and later. The last to arrive was the June 2010 Issue which came out in June 2011, the second Herpetofauna for the membership year of 2009-10!

As you can see, Herpetofauna is running a long way behind the financial year that it should be in kilter with. I have made an executive decision to bring some Herpetofauna subscriptions forward for those members who paid for a subscription in the membership year 2011-12, so those members will receive the next issue that arrives. If a member paid for 2010-11 (and 2011-12 for that matter), you will also receive the next issue when it arrives.

Dealing with Herpetofauna has become increasingly problematic. The two yearly Issues were always a couple of months late, that 'lateness' has blown out to well over 12 months. ACTHA has little control as it is merely the distributer. A few months ago I talked to those responsible for producing it (professional herpetologists in Sydney), and was told that there is a possibility that they will combine a couple of issues in an effort to catch up. Since then, I have heard nothing.

I hope this helps to explain the delays and also my decision to try to deal with future issues for some of our members. Please drop me an email (margaretning1@gmail.com) if you have any further queries.

ACTHA has mail!

Compiled by Mandy Conway, Editor

ACTHA receives several herpetological publications in return for copies of our Newsletter, as well as other material from time to time. I look through this 'mail' and generally file most of it for future reference.

I'd like to make these documents available to ACTHA's membership, so, from this issue forth, I will endeavour to list any publications I receive along with some information on any interesting topics contained within. Come along to the next meeting to peruse any of these publications!

South Australian Herpetology Group (SAHG): Newsletter No. 149, Spring 2011

General articles include identification of local reptiles, keeper's corner, book reviews and field excursion articles.

Keeper's corner: **Experiences when caring for the dwarf Skink** (*Menetia greyii*) by Gary Stokes

Book review: '**Snakes of South Australia**', by Geoff Coombe (SAHG member). "The first comprehensive book on South Australian snakes since Edgar Waite published 'Reptile and Amphibians of South Australia' in 1929. Geoff Coombe's book is unique in that it has three chapters on snake behaviour, also describing interactions between snakes and humans." Email: geoffcoombe@bigpond.com

Article: **Reptiles within the Mallee Habitat west of the Middleback Ranges, Upper Eyre Peninsula, SA, Oct & Nov 2011**, by Peter Matejcic (SAHG member). Article contains photos and lists of reptile species found on two visits to the area. Exact species location co-ordinates are included.

The Australian Herpetological Society, Newsletter, July2011

General information includes a Speaker Calender spanning 6 months, field trips and international news.

Article: **Rapt with snakes,** by Emily King. Article is about Anthony Stimson, who has toured Sydney and beyond for 17 years doing reptile shows.

Field Trip: **Sydney Olympic Park, Summer 2010/2011.** "This summer we continued our survey work at Sydney Olympic Park. As part of that work we conducted five field trips which included one night survey and four day trips."

Profile: **Bryan Fry,** by Lucinda Schmidt. "This world expert on venoms has rewritten the scientific voodoo on komodo dragons."

FROGCALL
The Frog & Tadpole Study Group NSW Inc (FATS), Newsletter No. 116, December 2011

Many interesting articles and photos.
20th Anniversary edition, in full colour.

Article: **Green Tree Frog Story,** by Arthur White. "It is surely the best known and widely loved frog in Australia, but apart from being green and a good pet, Green Tree Frogs have lots of other aspects that make them remarkable."

Article: **The Tassie Trifecta,** by David Nelson. "Frog-wise, Tasmania lays claim to only a modest three endemics—the other eight species that call the island home also occur on the mainland." David spends a summer in Tasmania looking for the three endemic species.

FROGCALL
The Frog & Tadpole Study Group NSW Inc (FATS), Newsletter No. 117, February 2012

Many interesting articles and photos.

Guest Speaker: Jo Ocock, '**Frogs in the boom**'. "Home to 15 different frog species, the Macquarie Marshes are NSW's largest remaining inland floodplain wetland, situated two hours north of Dubbo." Jo's fieldwork was undertaken with two student research grants from FATS.

Event: **2012 Sydney Royal Easter Show: Frog & Reptile Show Competition**. "Wildexpo are calling for entries from all species and classes of frogs, lizards and non-venomous snakes. Part of the official Royal Easter Show's program, entrants will be judged by independent judges and prizes will be awarded." info@wildexpo.com.au

Article: **What's the prognosis, Doc? am I going to croak?** Lee Peacock, Veterinarian. "Frogging is not the domain of a single group of people. Instead a diverse range of scientific

professionals are often involved including biologists, ecologists, conservationists and amateur enthusiasts. There are many professionals who study frog diseases, but who treats sick frogs?"

Article: **Update on the critically endangered Tinker Frog,** by Harry Hines, Dept of Environment and Resource Management, QLD Parks & Wildlife Service, June 2011. "The Kroombit Tinkerfrog, *Taudactylus pleione*, is a critically endangered species known to live in only 12 small rainforest patches totalling 596ha. Each year staff from DERM, plus volunteers, head to Kroombit to look for frogs during Frog Search."

Article: **Native tadpole... or cane toad?** by Marion Anstis, Cane toads are now in some areas of Sydney. This article explains the difference in laymen's terms.

Article: **Amazon adventure,** by Mark Semeniuk, who spent three months travelling through South America in 2010 looking for frogs.

Australian Biodiversity Record 2012 (No 1) ISSN 1325-2992 March, 2012

Some Taxonomic and Nomenclatural Considerations on the Class Reptilia in Australia. A Reclassification of the Genus *Lerista* (Scincidae), including the Descriptions of New Genera. Richard W. Wells, Lismore NSW

A revision of the scincid genus *Lerista* Bell, 1833 has been undertaken on the basis of external morphology and the genus partitioned into 20 genera.

The endemic Australian skink genus Lerista currently includes 101 taxa (species and subspecies) (Wilson and Swan, 2010, this work) and although long suspected by some herpetologists to be likely a polyphyletic assemblage, it has generally defied attempts at a satisfactory generic division. One of the reasons for this has undoubtedly been the apparent morphological conservatism of body form (and in some, scalation) coupled with a perplexing state of variation in limb morphology occurring in a large array of species that occupy habitats that have often been erroneously considered as geologically and environmentally similar.

Consequently, features that would in any other group of reptiles be justification for a phylogenetic partition have been considered to be unreliable in Lerista. The existence or discovery of species that show morphological variation in normally good higher level characters (such as digit number), and even aspects of cranial osteology) have forced most herpetologists to treat Lerista as a single genus representing an evolutionary continuum, even including differing reproductive states not only within the genus but also within a single species within that genus!

Despite this, some workers have recognized distinct patterns within various clusters of species of Lerista – and a number of such 'species groups' or assemblages have been identified that readily conform to what would be treated as distinct genera in any other group of reptiles. At present there are eight such 'species groups' within Lerista that are fairly widely accepted, and several more that are suspected by field herpetologists. Although such workers have stopped short of giving formal recognition to such groups as separate genera, some believe that such recognition is long overdue. But this has not always been the case.

Richard Wells recently forwarded a PDF of this 361 page article to Ric Longmore for ACTHA's membership. The article was first printed on paper on 15 March 2012.

Report on Canberra Nature Park [nature reserves]; Molonglo River Corridor [nature reserves] and Googong Foreshores Investigation.

Summary and Recommendations, Report and Appendices: Dr Maxine Cooper, Commissioner for Sustainability and the Environment, 2011

Format: CD

April-May 2012 ACTHA Meeting 'Show & Tell'

By Mandy Conway

ACTHA member Toby introduced several of his reptiles to members at the February 2012 meeting, describing their individual characteristics and his husbandry routine. His passion for his pets was quite obvious and he is almost certainly on the path to becoming an active herpetologist in the field.

Carr, a one year old Jungle Python, whom Toby has owned for about four months, will eventually grow to 7 foot in length. Carr's beautiful black and yellow colouring and easy demeanour made him an exceptional snake to own. Jungle Pythons use their entire bodies to climb, including gripping with their chin. Toby has not seen any of his other carpet family snakes doing this. They are also the strongest snakes Toby owns.

Next came George, a female Jungle Python, whose yellow colouring was darker than usual due to an impending shed. She is stronger but much lazier than Carr, often holding onto something with her neck and letting the rest of her body hang loose. Her colouring is such that it is unlikely she is a sibling to Carr.

Lastly, Toby showed members his Murray-Darling Carpet Python, which originates from down south towards and into the Murray-Darling Basin. They have a more slender head and body, grow to 5m in length, and are predominantly terrestrial. As such, they tend to hold their head up when sitting still, although Toby said that Captain always moved around a lot.

Conservation of threatened grassland reptiles in the face of urban expansion: Case studies from the ACT

By Mandy Conway, with much assistance from Will Osborne.

Ric Longmore introduced our February 2012 meeting's guest speaker , Will Osborne, declaring they had known each other since 1982 (although it felt like 1892!). "Will has a strong interest in the conservation and ecology of our local herpetofauna and has an intriguing love of what he studies. Will's long herpetological career has culminated with lecturing at the University of Canberra where his passion has helped keep our younger generation involved in the study of herps."

Will's presentation concentrated on the conservation of the Pink-Tailed Worm-lizard, *Aprasia parapulchella,* and the Striped Legless Lizard, *Delma impar,* which included an assessment of their natural habitat.

Firstly though, Will started his presentation by highlighting a number of other species who appear to be relatively scarce in our region.

Two ACTHA members admire one of Toby's 'show & tell' snakes, which is being held by Will Osborne.

Less than five records of the **Common Scaly-foot**, *Pygopus lepidopodus,* in the ACT (*below*):

one record is mentioned by Ross Bennett in his 'Reptiles and frogs of the ACT' book; a specimen was caught by Ron Dencio in the Pinnacle Nature Reserve; there is a record from Tidbinbilla (Will used to think this may have been a specimen that someone let go); and Ric cited a record of a specimen on Mount Ainslie in 1961, which was lodged with the CSIRO Collection. It thus appears that this animal occurs naturally in the ACT and yet there is no apparent concern about their uncommon

existence. Records do exist from several areas around NSW and ACT populations would be at the southern edge of their range. Will hopes that someone will study this lizard, of which very little is known, in the near future.

Will has personally seen two **Burton's Legless Lizard**, *Lialis burtonis, (below left)* specimens in the ACT (one near Casuarina Sands and one at the foot of Mt Tenant). Ric recalls seeing one on Mount Ainslie and Margaret Ning has seen one near Queanbeyan.

Another example of an elusive reptile is the **Bandy-Bandy**, *Vermicella annulata.* Will thinks this is the rarest snake in our region and yet no action has been or is currently being taken to assess its status. It is listed as being a species of conservation concern in NSW, but not listed yet in the ACT.

The impressive **Rosenberg's Monitor**, *Varanus rosenbergi*, is extremely rare in the ACT. Will knows of three records in the past decade or so - one from the Murrumbidgee River, one from Fitz's Hill and one from Boboyen Road in Namadgi (a specimen photographed dead on the road by Sean Doody). Will has photographed an adult at Ginninderra Falls in NSW not far from ACT border. Some years ago Ross Bennett photographed an adult on Mt Majura and a specimen seen at Hawker. People recall seeing specimens that had been run over on the roads around Queanbeyan, along Macs Reef Road and near Googong in particular. The species is considered to be Vulnerable in NSW but remains unlisted in the ACT.

Delma inornata, (*above*), the olive or inornate legless lizard, is a large species with a pencil-shaped body, which is likely to be commonly found in much of the woodland and rocky country of the lowland parts of the ACT.

Surprisingly, there have been many more records of the Striped Legless Lizard (***Delma impar***) (*left*) in the ACT compared to *Delma inornata*.

Given its apparent abundance in the ACT it may seem surprising that it was listed as Vulnerable by the ACT Government. This listing came about because almost the entire habitat in the ACT (native grasslands and native pasture) was under threat of development 20 years ago. This is still the situation with some new development areas like Kenny at Gungahlin.

Will concluded his introduction by pointing out that the Pink-tailed Worm-lizard (*Aprasia parapulchella) (right*) has over 200 records in the ACT yet only three records of the Common Scaly-foot exist. Will highlighted the point that one really needs to look at regional and Australia-wide records to properly consider the conservation of these reptiles. The ACT is a political boundary rather than a geographical one, Ric commented.

Conservation of threatened grassland reptiles in the face of urban expansion

First Case Study: Striped Legless Lizard, *Delma impar* (SLL)

Image at right: Will engaged some of our young members by asking "*What sex are these Striped Legless Lizards?*" Answer: both are females and heavily gravid with 2 eggs each.

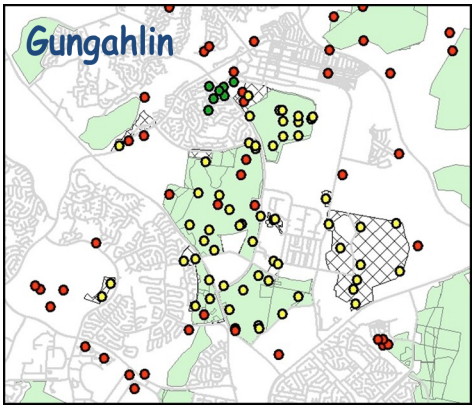
"*If you roll over a rock and find 2 eggs, what two groups of animals could they be?*" Answer: legless lizards and geckos. This small clutch size restricts the capacity of the species to bounce back quickly from disturbances that have led to population declines. It is therefore quite susceptible to disturbance by humans.

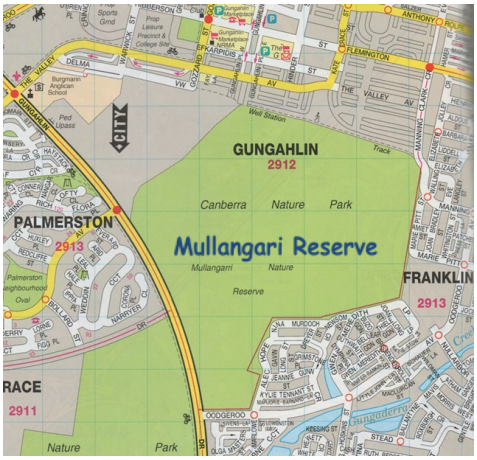
SLL are quite uncommon in a distributional sense in NSW, however there are many records of them in Victoria, across to near the South Australian border and around Melbourne, Vic, (impeding rapid urban development Will commented). They are insectivores feed mainly on beetles, moths, larvae, spiders and crickets. Ants are not known to be part of their diet.

This slide (*right*) is of kangaroo grass, *Themeda australis,* at Yarramundi Reach. Even though the habitat here is ideal, the population at this site is small and has been declining for many years. Classed as native grassland specialists, SLL individuals have been found in disturbed habitat that has been grazed but not subject to intensive agriculture such as cropping (a hypothesis tested some years ago by former Herp group member Josh Dorrough).

"*What are these things?"* Will asked his audience. Answer: roof tiles. They're placed on fresh grass and a week later they're checked for SLL, usually early in the day. These humble 'homes' also attract snakes and other lizards and are considered more effective and less stressful to animals than pit-fall traps.

Early surveys: The yellow dots (*) on the graph (*below*) indicate where SLL were previously caught in the ACT, including the Jerrabomberra Valley. There was a large population in Gungahlin and on towards the suburb of Ainslie (before it was built on) plus a few small populations towards Queanbeyan, Hume and near the airport. The green dots indicate old SLL sites.





Increasing awareness of environmental issues led to a review of Gungahlin's Town Centre quite early in its planning stages. The Mulanggari Grasslands area was declared off limits for development due to its high ecological value in 1995. Fifteen years on, are we getting it right at Gungahlin? Are the reserves working and were they well designed? Grasslands surveyed in the past have not been re-visited in the last 10 years so it is difficult to know what condition the area is in now. No-one is currently being paid to undertake surveys unless they are in new development areas. "We have to believe all those dots (on the map) denoting specimens still exist," Will added, "as large numbers of SLL are turning up whenever an area has been lucky enough to be thoroughly surveyed."

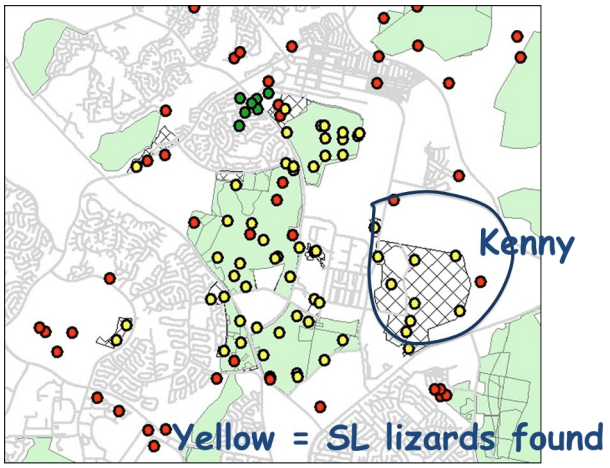
Another recommendation highlighted at Gungahlin's planning stage was to include buffer zones around the nature reserves to filter human activities. A broad strip that is at least 50 metres wide is required to effectively buffer these reserved areas of habitat. This is because to buffer typically also functions as a fire protection area and may include roads, paths, fire trails and open drainage ditches.

Currently 50-60 metres of landscape, which includes a road and some water ditches, acts as this zone. Grassland reserves have been established at Crace, Mulanggari and Gungaderra and the Striped Legless Lizard occurs in each reserve. Unfortunately these reserves do not have buffer zones, creating issues when bush fire asset protection activities are required.

Suburb of Kenny – an opportunity for conservation in the urban matrix?

Another extensive population of the SLL has been found in recent years in the Gungahlin area, proposed for development as the new suburb of Kenny. Interestingly, the area is quite variable in the quality of its grassland, indicating the capacity for this species to cope with different kinds of management (native

(*) Coloured 'dots' will become clear once this Newsletter is placed on the ACTHA Website in full colour



grassland, disturbed grassland, Phalaris dominated etc). Will would like to see a small area of suburban low-lying, native dominated and disturbed grassland kept in Kenny as a network of interconnected patches. This would provide a good experiment to see how well the species would cope in the urban matrix. This, as opposed to man-made playing fields, and neatly manicured urban parks would make sense.

Will suggested that "translocation" of SLL to other sites was not a good idea. Unfortunately consultants are increasingly using this option as a way of getting around development issues. Instead such specimens should be collected for museums or zoos, or better still left on site with greater effort to keep the habitat within the developed landscape. Translocation is not supported in an ecological sense because habitat elsewhere will also be at ecological carrying capacity. Evidence shows that adult wildlife, often rescued off a road and placed 3km or more away in 'safer' habitat, are given a very hard time by the locals of a similar species. Will cited an example of twelve possums that were radio-tracked on post-rehabilitation release into distant territories: they all died.

Second Case Study: Pink-tailed Worm-lizard (PTWL)

The Pink-tailed Worm-lizard, *Aprasia parapulchella,* is an ant specialist, feeding on the ant's larvae and eggs. The adult ant's pheromones may be transferred to the lizard, which might mean it is not recognised as a threat.

Several years ago, ACTHA and FOG (Friends of Grasslands) successfully lobbied for the PTWL to be declared a vulnerable species. Once only known at Coppins Crossing, the PTWL was found in later surveys to be relatively common in the ACT. It is also found in other parts of Australia, including Bendigo, Vic. The PTWL is often confused with baby snakes, which share a preference for burrows under rocks. Other records of the PTWL exist in NSW near the towns of Albury, Tarcutta, Bathurst and Goulburn. One population at West Wyalong is thought to be of the same species, however one scale difference has been noted.

The PTWL is sensitive to agricultural disturbance, particularly pasture improvement with super phosphate. Overstocking with livestock is also a problem. Even in paddocks with good rock coverage, once there is no native grass left the chances of finding a PTWL is very small.

Approach to surveys

"The PTWL is fairly easy to survey for", Will said. "A constrained search beneath suitable stones in potential habitat (*below*) is the key. Density per number of stones and/or specimens per area searched are recorded. There is a seasonal limitation, with summer and winter generally not amenable to surveys: sunny days during late August, September and early October is best.


Photo: W. Osborne

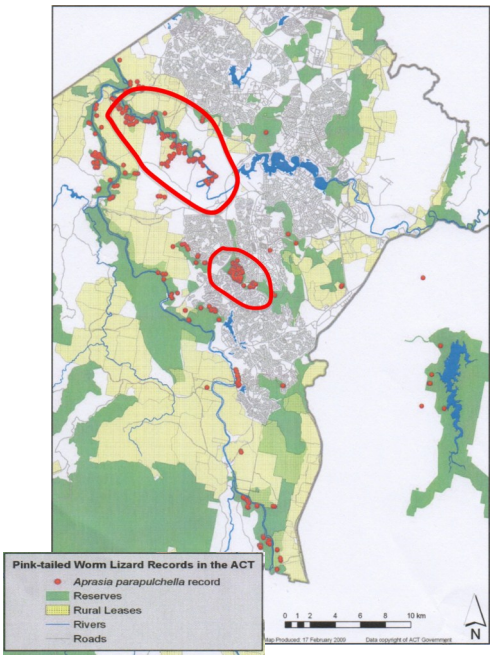

Photo: D. Wong

Surveys conducted at Mount Taylor and Cooleman Ridge required people to crawl on hands and knees, turning every stone in search areas constrained and marked by ropes. David Wong and Will are still refining a technique for quantifying habitat quality.

What is a record? In the instance on the previous page, the data recorded was very

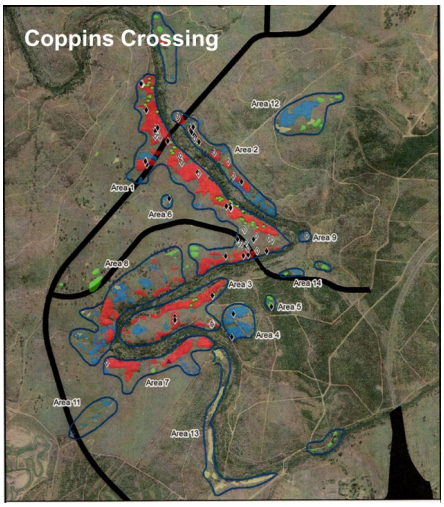
specific: particulars of the lizard, was it found in an ant burrow, were any ants present. Signs of skin sloughs are also recorded, as well as details of other reptiles and fauna encountered.

The slide below shows the locality of populations of PTWL (circled areas) in horse paddocks on Mt Taylor, down through Molonglo Gorge, along the Murrumbidgee River and Casuarina Sands, Kambah Pool and Point Hut Crossing.



The ACT Government has investigated recordings of the PTWL in the Weston Creek area, Lower Molonglo Valley and West Belconnen. PTWL have also been recorded along the slopes of Stromlo pine plantations (not within the trees themselves) and near the proposed Molonglo Parkway, which would run behind the National Arboretum. There are extensive areas of high quality habitat in the Lower Molonglo Valley, prime PTWL habitat which includes outcrops of volcanic rock.

Molonglo arterial road

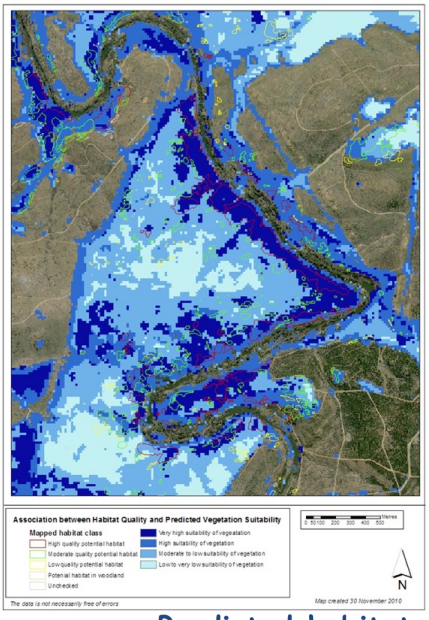


Molonglo Parkway original proposal

The ACT Government was provided with PTWL colony locality data in 1994. Incredulously, planners and engineers proposed that the four-lane Molonglo Parkway would go through one of the largest patches of high quality habitat for the PTWL in the Molonglo Valley. Due to community input and special interest groups like ACTHA expressing their outrage, the Parkway route has now been moved closer to Coppins Crossing, where impact is much reduced.

GIS model: field mapping (D. Wong)

David Wong, a PhD student of Will, has been working on a GIS model which can predict PTWL habitat, without setting foot in the field. Vegetation is assessed by looking at its colour (kangaroo grass has a clear signal) and given a score by comparing it to known PTWL habitat vegetation, then geology etc. This information is entered into the model. Twelve variables were pared back to six or seven, with habitat disturbance a key factor. David will be analysing how his modelling actually compares to on-ground direct mapping of habitat.



Predicted habitat

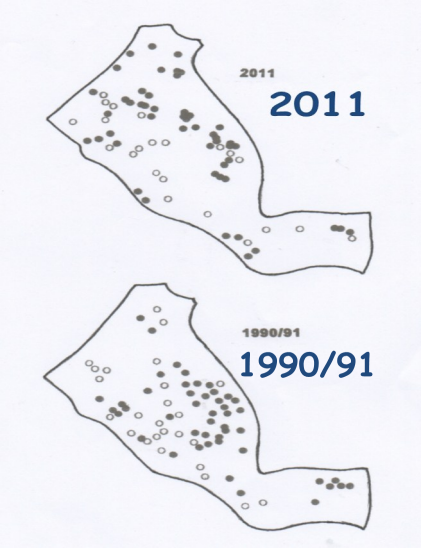
Mount Taylor – an urban case study

Mt Taylor makes a good case study because it has been subject to human interference for some time. It's buried in suburbia, traversed by the Tuggeranong Parkway and has had 28 deliberately lit fires in fifteen years. The big fire of 2003 had a large impact on the landscape, and last summer some PTWL habitat was burnt during fuel reduction burns undertaken by the ACT Government.

Mt Taylor 1960's

and in 2011

In a 1990-91 survey the PTWL was widespread on Mt Taylor's reserve. In 2011, a mapping project, funded by ACTPLA, was undertaken in



extensive areas of habitat which is still present today. Twenty years on and the PTWL is still abundant, even in quite disturbed areas and its relative density appears to not have changed over the two time periods (20 years). A site is 'proven' when up to 500 stones are turned and lizards are found. Specimens were not found close to backyards – all were greater than 100m away from the nearest urban edge. However it appeared that stones had been removed from areas closer to the edge, perhaps to allow for grass slashing, or illegally by people collecting rocks. Beyond 100m lizards remain common, even though rubbish has been dumped and stones have been turned at some sites. The buffer zone concept would seem to be supported by these findings.

Many concerns are facing other near-urban PTWL populations. For example:

- tree planting and the return of woodland over grassland habitat is minimising the open grassland areas that the PTWL prefers. Humans, eg hikers and picnickers also favour open areas for recreational use, Will added;

- scalded ground (*above image*), which occurred with the fire of 2003, has people asking why the actual soil/ground has not recovered? this needs to be investigated further;
- the poor condition of walking and fire tracks, and erosion issues: is this due to government staff shortages alone?
- on the Kambah side of Mt Taylor there are many disturbed sites, mainly involving rocks that have been turned and left. Will spoke to a student who collected scorpions from the reserve for sale and suspects that a lot of the turned over stones that he saw may be down to activities like this. There is also a rumour that someone has been collecting skinks for a pet snake. Will has seen two rock fortresses built in the area by kids (*below*);

- poor planning for new walking tracks was one major concern highlighted by Will, who cited this example. The zig-zag track was repaired after the 2003 bushfire, a new bit of track runs along a slope in the form of a shelf (*below*), but this site is also PTWL territory. Since it was built, many rocks

which would have been suitable for the PTWL, have been thrown over the edge. Some PTWL have colonised these accumulated areas of loose rocks.

- Regarding the disturbed rocks seen on Mt Taylor, Will stated that "At the very least, rocks should be replaced exactly as found. I find it hard to believe that any herpetologist would leave an area looking like that." An education program in schools seems timely.

Weeds have thrived around the edges of the Reserve but other than that and the above issues Mt Taylor seems to be in good condition.

Frequent biomass reduction burning: is this really necessary?

The Bush Fire Protection Service is bound by Fuel Reduction Burning codes in the ACT and an important point is that you do not burn PTWL habitat or rocky outcrops. A site in the the Mount Taylor Reserve was re-surveyed after a fuel reduction last summer. Five specimens were found before the fire and none after the fire (they were likely down in their ant burrows due to the disturbance as no dead ones were found either). Moist grounds help so season timing is imperative. After the 2003 bushfire though, Will found 2-3 dead specimens. Obviously a hot fire can kill the lizards. However Will and his colleagues are worried because burning is proposed along Cooleman Ridge, Urambie Hills, around Mt Taylor and presumably up and down the Molonglo River in the asset protection zones. Some areas of Mt Taylor do need fire management however burning an area that is predominantly rock and supports a cover of low kangaroo grass is not needed.

On a positive note, after 20 years, Mt Taylor still has one of the largest known populations of the PTWL in Australia. It also harbours a high diversity of reptiles including bearded dragons, the Cunningham Skink, blue-tongue lizards, rock skinks, the Shingle-back Lizard, striped grass skinks, blind snakes and *Delma inornata*.

Will finished his talk by recalling his youth when, aged five, he rode his bicycle into bushland near Benalla and Mansfield in Victoria where he lived as a child and caught blue-tongue lizards and the Cunningham Rock Skink. He highlighted the need to ensure that our young herpetologists maintain their passion and direct contact with our local reptiles whilst also respecting the reptiles and their environment. Best place to start? *Snakes Alive!* Of course!

A detailed summary of Will's 'Conservation of the Grassland Earless Dragon' presentation at ACTHA's April 2012 meeting will appear in the next Issue of the Newsletter.

ACT Herpetological Association Inc.
2012 - 2013 Membership Renewal now due

Membership renewal runs from 1 July 2012 to 30 June 2013 and costs **$10** for a single or family membership.

Payment by our August meeting would be appreciated.

OR please make your cheque out to ACTHA Inc., fill in your details below and send it to:
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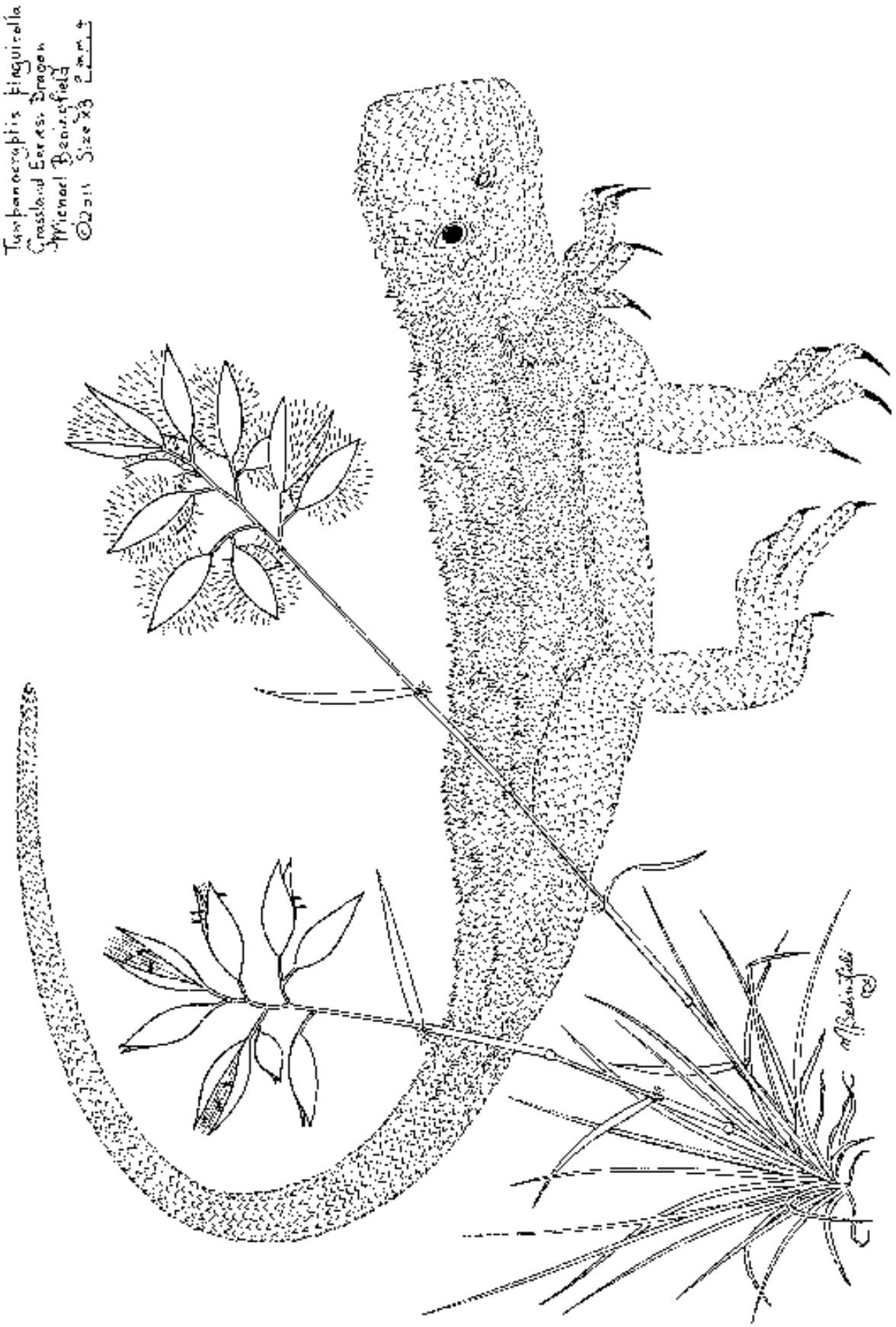
Queries? please call Margaret on 02 6241 4065 (h).

A beautifully detailed drawing of a Grassland Earless Dragon, *Tympanocryptis pinguicolla*, by Michael Bedingfield, 2011.



Workshopping & Herping in the USA

Article by Mandy Conway, with all images and much assistance from Dave Hunter.

In March 2012, ACTHA member Dave Hunter visited the USA to attend a workshop and catch up with an old friend from Canberra. The workshop, which was held in Atlanta, aimed to develop management guidelines addressing the implications of amphibian diseases for threatened frog captive breeding and reintroduction programs. On his return, Dave gave a small presentation to ACTHA members at its April 2012 meeting on what he got up to at the workshop, and also in his leisure time whilst there.

The amphibian genus Atelopus, an incredibly spectacular group of species, have been decimated throughout their range in Central and South America, with chytrid being the cause. The Panamanian Golden Toad, of this genus, has disappeared from the wild and now only exists in captivity in various zoological institutions. To put this dire situation in context, a lot of Atelopus species, particularly through areas like Colombia, haven't even been described and they're already presumed extinct. Every mountain top in the Andean ranges seems to have its own Atelopus species and population numbers are decimated, if not totally gone, Dave informed ACTHA members.

Delegates toured the Atlanta Botanic Gardens, which is entirely funded through philanthropic funds. These gardens are similar in size to Canberra's Australian National Botanic Gardens. Dave was able to view a very diverse range of amphibian fauna, including the image (*right*) of a frog with round pupils, beautiful markings and spines all over its neck. There are several fauna and flora conservation programs which operate from the Gardens.

One such program, which is now overseen by Dante Fenolio, was established by Ron Gagliardo, originally a plant man who worked with frogs when the wave of chytrid first went through Central America. The Aim of this program is to secure some of the Panamanian frog species before they are deemed extinct due to the chytrid fungus. Watching the fungus spreading south through Costa Rica and Panama, Ron and Joe Mendelson, who both established the program, tried to salvage a representative range of amphibian species which they thought would be impacted and brought many live specimens back to North America. They were heavily criticised for this action, although other people thought that this was unjustified. At the time, papers proliferated about the world-wide decimation of frog species due to chytrid and yet no-one seemed to be taking a pro-active measure to see if they could salvage anything from this devastating loss.

Rabb's Fringe-limbed Tree Frog (*Ecnomiohyla rabborum*) (*right*): this male is the last individual of its species in existence. (Its male counterpart recently died and was placed in deep-freeze, perhaps for the time cloning is technologically advanced.) About the size of a large human hand, it has webbing between all of its toes and fingers and lived in the canopy, gliding from tree top to tree top. It was only found in a couple of mountain top areas in Panama and was easy to locate due to its big, booming call. Dave commented that when this frog comes up in general discussion a comparison is made with our Tasmanian Tiger.

Dave described the workshop as upbeat and found the experience encouraging, in that so many people were actively involved in trying to deal with the potential loss of so many amphibians.

A highlight of going to this workshop was when Dave caught up with Sean Doody, who is now living in North Georgia. (Sean lived in Canberra for over 15 years where the study of water

dragons kept him busy). This was an opportunity for some herping over a few days in South Georgia. "The big, fast and feisty snakes were great to catch because, unlike here, they aren't poisonous. They were mostly Rat Snakes (*Elaphebella*), which are harmless colubrids." Dave said. "While sometimes you feel lucky to find one snake in Australia, in North America it's not uncommon to find a dozen or more snakes of many different species in a day – which makes for fun herping." Dave added that there is a huge diversity of snakes in the US, with numbers to match.

Sean, Dave and Mike McFadden took a trip to a wetland area to investigate a Gopher Frog (*Rana sevosa*) colony, also a threatened species receiving conservation efforts. They also found a burrowing frog in the genus *Scaphiopus (left).* Most of the literature on the biology of desert burrowing frogs is due to research on these *Scaphiopus* species and Dave enjoyed seeing at first hand the species he has read so much about.

The Cotton Mouth Snake (*Agkistrodon piscivorus*) was quite common in the places Dave and Sean visited. At this point Dave commented that here in Australia, where venomous snakes abound, you are fairly safe walking around in the bush. Our species usually see you from a distance which gives them the opportunity to make a getaway. The US snakes, however, seem happy to sit there and let you, often unintentionally, walk right up to them: inevitably striking at you. Dave found the difference between the two continent's snakes quite a challenge, requiring a mindset shift.

At one point during their herp hunting they found a large 'poo', which was tentatively identified as coming from a snake because of the hair contained within. Sure enough, a search found the owner, a colourful and very big Eastern Diamondback Rattlesnake (*Crotalusada manteus)*. Dave relates that it is always satisfying to see tracks in the Top End that lead to an animal, and this was no different. Gopher Tortoises and their big burrows were in the area and it just so happened that Sean had been doing a survey of Gopher Tortoise burrows to see if this particular rattle snake utilised them.

Slides of local lizards followed and Dave made the observation that our lizards don't have much blue colouration on them compared to the US animals. The Western Fence Lizard (*Sceloporus occidentalis*) is relatively plain on top but a striking blue underneath. The Blue-tailed Shinning Skink (*Cryptoblepharus egeriae*), on Christmas Island, and lizards on other continents have a similar blue tail however there are none on mainland Australia.

Mike McFadden couldn't believe his luck on this trip. On their last day, the trio went looking for the Hellbender Salamander (*Cryptobranchus alleganiensis*), a large, well-camouflaged salamander that is fully aquatic and lives in very cold rivers. Hellbenders have similar habitat concerns to our Booroolong Frog (*Litoria booroolongensis*). For example, sedimentation filling the rock crevices they utilise for breeding purposes. In seepage line areas, all along the roads, lots of little salamander heads would be poking out, half a dozen species in just one little area, Dave commented. The Smokey Mountains, which are located further up the continent in northern Georgia, has the highest diversity of salamanders in the world.

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PO Box 160
Jamison ACT 2614