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ACTHA Inc. News

Feb - Mar '20

*Newsletter of the
ACT Herpetological
Association Inc.*



A Spencer's Monitor; just one of the beautiful reptiles at this year's *Snakes Alive!* Exhibition. More pictures from page 10!

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Diary date

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

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

Upcoming meeting:

Tuesday, 18 February 2020

Our Guest Speaker: Kristoffer Wild, Ph.D Candidate, Institute for Applied Ecology, University of Canberra.

'Understanding the ecological causes and consequences of sex-reversal in central bearded dragons.'

'I will be focusing on how movement, activity, thermal biology and morphometrics vary across sexes of this species. Recent studies suggest that sex-reversal in wild bearded dragons have increased over the past decade and this could be attributed to high incubation temperatures in response to climate change.'

Your Committee for 2019 - 2020

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ACTHA Reptile Keepers Club - 19 November 2019 meeting

By Margaret Ning

Twenty people gathered at the Canberra Reptile Zoo to listen to **Luke Dunn's** presentation on keeping and breeding lace monitors.

Liam did a great job of introducing Luke and his topic, and supplemented the 'visuals' by bringing along his own stuffed Lace Monitor. This enabled the audience to get detailed 'closeups' that would have been a little more challenging if viewing a live animal. Luke let us know that most of what he was about to tell us, would also apply to keeping other monitor lizards.

The lace monitor inhabits eastern Australian forests and coastal tablelands. Much of its time is spent up fairly large trees, although they usually come down to the ground to forage for food. When disturbed it sprints to the nearest tree and climbs to safety with great speed and agility.

They have a life expectancy of around 30 to 40 years, can grow to 2m total length, and the males are around 30% larger than the females. Courtesy of his slide show, Luke introduced us to his two adult lace monitors, Azari and Grimlock. And then his videos showed them feeding - wow!

Feeding requirements

Young Lace Monitors eat invertebrates, moving on to meat, eggs and grubs as they grow. If they only have a meat-based diet then they need a variety of whole prey animals. Feeding them solely on crickets, which can contain high phosphorous loads, will likely result in less available calcium.

Enclosures

Luke says that wood enclosures containing dens are best as monitors like to hide: they can get stressed in very open enclosures. A plastic kitty litter tray filled with water will enable a monitor to bathe. Luke showed us photos of his animals' enclosures, all of which are indoors.

Being arboreal, it is important to supply enough branches for them to climb and to have access to basking platforms. The temperatures required for basking are incredibly hot, up to 45 degrees for young Laceys, and 55 to 60 for older animals. Basking areas need to be monitored to ensure that animals don't burn themselves. A distance equaling the SVL of the animal away from heat/UVB bulbs is good practice.

When discussing how many animals should be in the one enclosure, Luke stressed that if there were two animals, there must be two basking platforms, otherwise they could fight. Also, only have one male in a single enclosure to avoid fights. Ideally have one male to two females, introducing the latter slowly, and allowing them to have as much personal space as possible.

Sexing

It is very difficult to spot the difference between male and female monitors. Ultrasounds can be done at 18 months of age. Reflecting the age of some of the audience, Luke gave a very sensitive explanation of how the reproductive bits work.

Breeding

Luke's monitors have only been through the breeding process once, and believes they were lucky nothing went wrong. He intervened once when Azari was tired of being chased, but he said Grimlock was very gentle.

Nesting

According to Luke, this is the most important part. A female can lay up to three times a year without a male, but these eggs are infertile, and she can become eggbound. Hatching can take up to 295 days which is a very long incubation time. Luke showed us a baby lace monitor that

was around two months old, which the audience really enjoyed viewing. A clutch of six eggs, hatched into six babies, two of which were of the Bell's variety.

Handling

There are two types of handling, Luke said: 'force' handling and 'trust-building' handling, the second of which he favoured. Trust building is easier, particularly for adult monitors, so starting young is the key. Note that some young monitors still manage to get stressed so observation and patience is the key.

Training

This can be done at maturity, and is helped by monitors possessing good eyesight with full colour recognition. Use positive reinforcement only, or else you will be bitten.

Enrichment

Enrichment is growing in popularity; one of Luke's slides showed a Lacey peering out from a garbage bin, obviously enjoying itself. Luke suggests introducing different objects into the enclosure, even including smells of flowers etc.

Luke summarised the things to consider if wanting to keep a lace monitor

Risk assessment - Potential to be harmed by the animal (considered a hazardous species)

Management - Are you capable of handling a large lizard?

Time to care - Consider life span and time engaging with animal

Space to house - Requires a large amount of space

Cost of feeding - They eat lots!

Cost of electricity - They need to be kept hot

Possible vet care - Will vets in your area see this species?

When writing up my notes for Luke's talk, and having the luxury of being able to check an electronic copy of his presentation, I realised how much more was in his presentation, compared to my shorthand notes.

I'd encourage ACTHA members to come along and enjoy these bi-monthly presentations as they are given by passionate, sincere, knowledgeable people who love the opportunity to share their knowledge with like-minded enthusiasts. Luke's slides were excellent, and my write ups only cover a proportion of what we hear at the meetings; they really don't convey the quality of presentations given.

'Australian Water Dragons' by Lisa Mitchell

- book launched 13 September 2019 at ANBG

ACTHA member Rosemary Blemings recently came across this little gem of a book, and has taken delivery of a number of them for distribution around the ACT.

The book provides a readable overview of the scientific background, history, identification, communication, lifecycle, predators and conservation of these reptiles. Well illustrated with colour photographs, it is aimed at 9+ years, but suitable for young and older readers alike.

The A5 book can be purchased for \$10 from Margaret at any ACTHA meeting, or \$12.50 if postage required.

Please contact Margaret Ning at margaretning1@gmail.com to secure your copy.



Monitor lizards - evolution and biogeography

By Geoff Robertson

At ACTHA's bi-monthly meeting of 15 Oct '19, Carlos Pavon, a finishing PhD student at ANU, gave us a fascinating talk on *Monitor lizards, evolution and biogeography*. All monitor species, approximately 80 in number, belong to a single genus *Varanus*. In Australia they are often referred to as goannas.

The word monitor comes from the Latin *monere* (to warn), likely derived from their habit of standing on the back legs as if to scout and detect any potential threats. Carlos suggested that *Varanus* derives from the Arabic واران *waran*, also meaning warning but also used to refer to a dragon or lizard beast. *Goanna* is a corruption of *Iguana*.

Monitors are recognised by their powerful tails and claws and four well-developed limbs, relatively long neck, long bifid (snake-like) tongue, eyes with movable eyelids, small scales, no elaborate scale or bone ornaments, and external ears. The adult length of extant species ranges from 20cm (Short-tailed Pygmy Monitor, *Varanus brevicauda*) to over 3m in the Komodo dragon - the extinct *Megalanina* (*Varanus priscus*) may have grown to 7m.

Generally monitors are highly intelligent animals and Carlos showed some short videos to illustrate this. There is now evidence that an extinct monitor had an 'extra pair of eyes', referred to as pineal and parapineal organs, eye-like photosensory structures on the top of the head that play key roles in orientation and in circadian and annual cycles. Strong evidence is emerging of their use of venom and its role in killing prey.

Carlos also described some recent x-rayed imaging of the head of the komodo dragon to show the pattern of their osteoderms, the bony deposits forming scales, plates or other structures based in the skin. This may provide biologists with another tool to describe the morphology of reptiles.

Monitors are native to Africa, Asia, and Oceania. Most monitor species are terrestrial, but some are arboreal and others semiaquatic.



Above: Komodo Dragon (*V. komodoensis*).

Image: Damien Esquerré

While most monitor are carnivorous, eating eggs, smaller reptiles, fish, birds, and small mammals, some are vegetarian. Carlos presented images of monitors from various groups or sub-genus - see text box below. The reader might wish to look at images of each of these on the net to see the difference.

For the non biologists in the audience, Carlos explained various concepts to describe his work. *Ontogeny* (also ontogenesis or morphogenesis), for example, is the development of an organism from its inception, usually from the time of fertilization of the egg to the organism's mature form.

Isometry refers to the proportional scaling relationship between two biological traits. When it is not proportional, the relationship between the two variables is said to follow *allometric scaling*. In many, possibly most, species the adults may look very different to the young. This is particularly true of many reptiles and dinosaurs, particularly the adult *T. rex*, which had an enormous head and small front arms compared to its infantile form. Investigating the isometry of heads, limbs, tails etc can be an important way to distinguish the evolutionary processes that have shaped the morphological characteristics of monitors. Carlos showed many graphs of allometric measures of various monitor species.

These measures together with genetic footprints give us insights into evolution of monitors. He introduced, what is now becoming the familiar *cladistics*, in which organisms are categorized in groups (clades) based on the most recent common ancestor. However, it is now recognised that in practice hybridization may blur species boundaries.

Right: Black-headed Monitor (*Varanus tristis*).

Image: Damien Esquerré

This is referred to as *reticulate evolution*.

Carlos illustrated that this has occurred in some monitor species. He suggested that komodo dragons originated in Australia and share genetic material with sand goannas (*V. gouldii* group) through hybridisation.

He also illustrated how physical barriers and isolation can lead to speciation. New Guinea is a good example of this where many species have emerged due to the monitors being historically isolated from one another by mountain formation.

Carlos described his own research on the Spiny-tailed Monitor (*V. acanthurus*) and Black-headed Monitor (*V. tristis*). Within the spiny-tailed he found five different genetic groups and within the black-headed species he found three main groupings.

Carlos finished his presentation with a list of institutions that had supported his research.

He thanked ACTHA for their grant which had enabled his research to add to his genetic research which enriched his project.

It was great to be given another presentation by Carlos. Last time he treated us to a colourful travelogue of many of Mexico's herpetofauna, and this time his presentation amply illustrated how science is greatly and rapidly increasing our understanding of this fascinating group of reptiles. We also learnt how his research in Scott Keogh's lab is going. We are very fortunate in ACTHA to have access to such research. A big vote of thanks to Carlos for his fascinating presentation.



Sub-genus/Species	Distribution
<i>Polydaedalus</i>	Sub-Saharan Africa and Arabian Peninsula
<i>V. albigularis</i>	Central, eastern, and southern Africa
<i>Psammosaurus</i>	Northern Africa and Middle East
<i>V. griseus</i>	Northern Africa and Middle East
<i>Solomonsaurus</i>	Solomon Islands
<i>V. spinulosus</i>	Solomon Islands
<i>Empagusia</i>	Central and southeast Asia
<i>V. dumerilii</i>	Malay Peninsula and western Indonesia
<i>Soterosaurus</i>	Central and southeast Asia
<i>V. rudicollis</i>	Malay Peninsula and western Indonesia
<i>Philippinosaurus</i>	Philippines
<i>V. mabitang</i>	Panay, Philippines
<i>Euprepiosaurus</i>	Indonesian Archipelago, New Guinea, northern Australia, Solomon Islands, and Micronesia
<i>V. yuwonoi</i>	Halmahera, Indonesia
<i>Hapturopsaurus</i>	New Guinea and northern Australia
<i>V. macraei</i>	Batanta, Indonesia
<i>Papusaurus</i>	New Guinea
<i>V. salvadorii</i>	New Guinea
<i>Varanus</i>	Australia, southern New Guinea, and Lesser Sunda Islands
<i>V. spenceri</i>	Barkly Tableland and adjacent parts of Northern Territory
<i>Odatia</i>	Australia, southern New Guinea, and Lesser Sunda Islands
<i>V. glauerti</i>	Kimberley region and Arnhem Land

Frogs! Eavesdropping on our local frogs in the name of science - what has been unearthed so far?

This summary by Mandy Conway

Our Guest Speaker at the August 2019 ACTHA Meeting was **Anke Maria Hoefer**,



ACT Frogwatch Coordinator, who gave a heartfelt talk about her favourite subject: **FROGS!**

First, a little history lesson -

What is Frogwatch?

The thought of a little organisation to pull together like-minded froggy people was brought to fruition in 2002 when a handful of Waterwatch volunteers suggested that as they were undertaking water quality monitoring 'why not include some frog monitoring?' Frogwatch was born: Waterwatch by day and Frogwatch by night.

Frogwatch receives hard fought for funding for its annual Frog Census. The Census was firmly established in 2003 with the help of ACT Government ecologists as an Annual Frog Monitoring Program. Although remote and national park sites were included, the yearly census concentrates more on urban and suburban areas of Canberra.

Frogwatch now relies heavily on funding applications to maintain operation as a predominantly volunteer organisation.

"Typically, every citizen science project tends to gather strength in momentum. However, we are now at the stage of needing to reduce the size of the project to a more manageable level, and hence make the best use of limited funding." Anke Maria said.

Frogwatch's core business

Annual Frog Census

Anke Maria is a driven person, and each year she gathers a large contingent of volunteers who are prepared to be trained in the evenings by her before heading out to listen for frogs each October.



Traditionally the Census would start in the 3rd week of October, in line with Waterwatch activities. Travel forward a few years and the Frogwatch team realised that frog watching in just late October was not enough. The Census is now carried out during the whole month of October.

On Anke Maria's wish list is increased and ongoing funding to enable a frog listening and recording volunteer to go to the same one or two sites every month, which would include logging the data; similar to the citizen science program Waterwatch.

School / Public Education

Over the past few years Frogwatch has developed as a successful community engagement tool, working on different projects and building strong ties with the ANU, UC and CIT. Anke Maria went on to highlight some of these projects in her presentation.



Anke Maria goes to schools to talk to students about the needs of frogs. "While we talk mainly to pre and primary schools, there is also a demand from high schools and colleges to become involved. We have become less an entertainer and more as a chance for kids to talk about frog habitat and climate change issues."

"ACTHA has also taken an active role in frog education, particularly during *Snakes Alive!* week."

Tadpole Kits for Schools Program

"It is illegal for tadpoles to be taken from the wild which makes teachers providing self-sourced tadpole Kits to students near impossible. Frogwatch's involvement significantly reduces the burden of applying for special licenses and ethical approval terms and conditions as well as sourcing actual frogs. To address this issue Frogwatch started the Tadpole Kits for Schools Program as a pilot in 2011, with 5 tadpole kits going out to schools. The program has since increased dramatically, due to its high success.

We now have 120 kits available in Term 4 each year. These have been funded by Icon Water.

This year (2019) applications for the Kits opened online and were snapped up in 3 days!" The Kits are plastic containers furnished with water, plants and Spotted Grass Frog tadpoles which Anke Maria raises for 3 weeks beforehand. A frog's needs, e.g. food, drink, habitat, breathing ability and reproduction are explained and shown to the younger students through puppets and storytelling. "All up a highly successful, fun and hands on environmental activity sought after by many schools." Anke Maria adds. ACTHA has also funded these Kits in past years for ACT schools. In 2015-2017 Anke Maria also ran a NSW pilot with funding from the NSW Environment Trust to set-up a similar scheme in NSW, where schools have a blanket license for 20 tadpoles per year, but teachers are unsure about locating and handling the right frog species for the task.

Frogwatch's Climate Change Project: funded by the ACT Government 2015 to 2018.

To track changes in frog call behaviour in a changing climate, Frogwatch aimed to compare historical frog call data with current findings on frog vocalisation. A wealth of frog call data from the 1980s and 1990s, recorded by Will Osborne throughout the ACT was used as baseline data. Monitoring these sites, or sites in close proximity again, was the first step.

Frogwatch volunteers carried out weekly monitoring from early June to late October for this Climate Change Project. Starting in June resulted in volunteers spending many nights in freezing conditions with no call logs. The primary aim was to identify exactly when local frog species started calling: in a change of climate scenario, with higher mean temperatures, it was expected that frogs would start calling earlier, Anke Maria said.

The mean temperature in 2018 was +1.7. It has been the driest Autumn since 2004 and the driest Winter since 1994; in fact a quarter less average rainfall. The remaining three-quarters of average rainfall occurred at very odd times. Frogs are used to experiencing rainfall in mid to late Winter and early Spring, however it rained in November and December.

"When it rains in Winter the evaporation level is really low; this means that water replenishes

dried areas, staying in the ground and in waterways. Plants are also able to soak up this water.

"When it rains much later in the year evaporation is higher due to rising temperatures, the ground is already warmer. Over the last three years we have seen valuable water disappear as a result. Some ponds have remained dry over the past 2-3 years: even 10mm of rain makes little difference to these dry, cracked ponds. Other ponds are much more ephemeral than in previous years, and do dry out more rapidly in spring. This has negative implications especially for frogs which have a prolonged juvenile or larval stage.

"We expected that frogs would call much earlier. However, so far the preliminary data analysis has shown that frogs are calling later, which does not fit with any of our theories at all. This might indicate that frogs possibly would start breeding earlier, IF there was water available- which is not! Our findings indicate a strong hierarchy of preferences and that water availability may be a much more pressing issue in the evolution and survival of our frogs."

Bio-indicator study 2015, 2018

In 2015 Anke Maria worked with students from ANU, UC and CIT on 30 ponds across the ACT doing an in-depth habitat analysis. "Frogs are an environmental indicator species, but how to measure their "importance/value" is unclear. To better understand the usability of local frogs as indicators for habitat quality, we used a tool called Rapid Appraisal of Riparian Conditions (RARC), which is used in water quality habitat measurement of waterways (a Victorian project that has been modified for use in the ACT). We added a Frog Appraisal of Riparian Condition (FRARC), the results of which have been prepared in a report 'One pond fits all? Frogs as an indicator of urban wetland health', A Final Report to Upper Murrumbidgee Waterwatch."

"A highly significant finding of this report was that ponds with high structural complexity around, such as wide mowing buffer, lots of logs and rocks etc. have much greater number of frog species. Based on these findings the ACT Government has since made changes to their mowing guidelines for wetland areas, to help create and protect frog habitat."



Above: a snapshot of part of Anke Maria's Slide showing some of the blue dots/sites which were studied in 2015 and repeated in 2018. The red and green sites were added in 2018 to look at government made wetlands or broader sensitive urban designs and how they feature as frog friendly habitat. Are they doing well or do they just look nice with minimal habitat value?

"In 2018, the Bio-Indicator study was repeated, but with an increase to 42 study sites to include newer water sensitive urban design features. Preliminary findings have shown a changed situation since 2015 - a third of all ponds were dried out and one of our main observations is that we need to better drought resist our local wetlands. Many ponds and old farm dams are shallow, contain a lot of sediment and easily dry out. A lack of vegetation in and surrounding the ponds is also an issue. Many are also farm dams have very little or nothing in way of native trees in the surrounding area. The need to do something is paramount. We need to drought proof at least some strategic ponds to ensure some permanent water bodies are dotting the landscape to keep our animals ticking over in times of drought."

Frogs don't live in the water constantly. They come to water to predominantly to breed and

often inhabit areas a few hundred metres away to live under bark, loose leaf litter, logs and between rocks, hiding during the rest of the year.



**2015
VS
2018**



This group of images shows the difference in appearance of a pond in the suburb of Duffy between 2015 and 2018. In

2015 the pond was full and had good water flow, but in 2018 it was just sludgy mud and no habitat at all. The third pic shows just how little vegetation is available for frogs to hide under, which makes them very vulnerable to predation and drying out.

The FrogPhone

Another initiative, and literally an innovation by Frogwatch in Canberra, is the FrogPhone. It is based on mobile technology and is a remote survey device. The idea was to have a solar powered device which could be left at a designated frog site which could then be called/ accessed from a mobile phone. Anke Maria and her friend came up with the idea after some thought and good wine; 'wouldn't it be great if we could hear frogs calling at Namadgi National Park?'

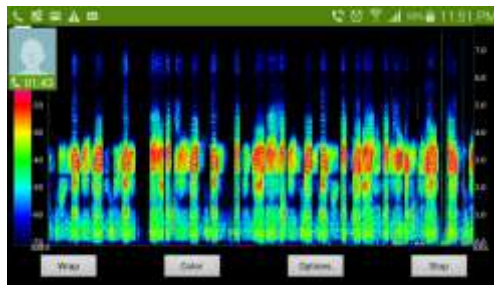
Other benefits of the new device when compared to traditional, automated recording devices, are real-time observations instead of big data back logs, much less travelling time to and from observation sites, and highly reduced project costs. "If data can be directly received then you have the opportunity to react straight away." Anke Maria added.

"The initial budget to produce 3 prototype units was \$3000 for materials, with people giving their time for free to get it up and running. "Our team of three hailed from Spain, Italy and Germany and our supervisor was Sri Lankan; we had heaps of fun!"

"It took a lot of time and effort to develop the unit, writing scripts and fool proofing it after testing it onsite. Sponsorship and further



Above: the device is shown at a site in West Belconnen, which was left in situ for 6 months. This gave Anke Maria the chance to do a little survey whilst being at home "after dinner".



(Eavesdropping on our local frogs, cont'd...)



engagement. Acquiring such valuable data and determining how best it can be used is a welcome outcome. For everyone interested in using the data-all of it is now situated on the Canberra Nature Map's portal.

Future directions

Anke Maria cites fundraising efforts, particularly funding and grant applications and awareness raising, as her biggest tasks. Ongoing funding allows to better plan ahead and develop and reach long-term goals. Future plans for Frogwatch include to better align the program with Government reporting requirements, further increase

Frogwatch's profile. In addition, reducing the size of Frogwatch's current program has become necessary to ensure the fundamental aims can be carried out and completed to a high standard.

On her career wish list is the creation of a Special Frog Task Force which could work with volunteer organisations such as ACTHA and others, as well as collaborations with UC and ANU, to work on species of frogs such as Bibron's toadlet, *Pseudophryne bibronii*, Dendy's Toadlet, *P. dendyi* and other frogs which have not been seen in the wild for a long time, likely affected by climate change and the Chytrid fungus. With good weather conditions, when rain is predicted, volunteers could conceivably go out in small groups to sites, where these frogs had previously been found, even 20 or 30 years ago. "People could be given the opportunity to get out and about, during specific times of the year to see what frogs could indeed be found."

In a pilot for this endeavour, a previously known habitat site for *P. bibronii*, in the lower Cotter region, was recently revisited in favourable conditions and within 5 minutes a breeding adult had been found. These frogs are considered extinct in the ACT, with just a small population known to exist near Uriarra. The big question here is: Why do we not have recent observations for these frogs, are they gone from their previous distribution range or is simply nobody looking??

Once Anke Maria had ended her presentation her audience asked to hear the calls of just some of the frogs she is familiar with: she complied, outstandingly so!

funding could see this device used in many other areas of research in remote areas."

Analysing the data from the device is currently being done by Anke Maria, who listens to the recordings to determine which species of frogs are calling. Proofing recordings captured by census volunteers is also being done, on a smaller scale.

Anke Maria explained further, "I called the device and compared what I could hear in real time and compared this to frog recordings taken by volunteer on their mobile phones (the latter is the general practise when running frog surveys for the FrogCensus). The current chain of hearing goes from the frog to the device, then to the mobile phone and lastly to the ear, so to speak. We checked the bands and the frequencies for mobile phone frog recordings, and for the FrogPhone recordings. They were extremely similar, which shows that eh FrogPhone works a treat!"

The FrogPhone comes with additional feature of sending a SMS to the calling mobile phone, containing the current air and water temperature at the field site as well as the status of the solar-powered battery.

Anke Maria describes herself as the most stubborn Frogwatch Coordinator in Frogwatch history! People have tended to leave Frogwatch when funding has become an issue, which is also heart breaking for her volunteers. More and more researchers have become interested in citizen science data, fledging through community



SNAKES ALIVE! 2020

13 - 19 January 2020

By Margaret Ning

Well done ACTHA members for your participation in and support for *Snakes Alive!* 2020. We had 3300 visitors pass through our doors, which was our best number since 2011 (we had 3800 then). We were lucky to have near-perfect weather (especially after last year's furnace temperatures), and good publicity in local media, on social media and websites.



© Andrew Zelnik



© Andrew Zelnik

We exhibited forty species of reptiles and frogs, spread over the normal three rooms in the Crosbie Morrison Building, with a similar layout to last year, but we did receive many suggestions that it was as good a display as we have ever put on. New species on display this year included Luke's Black headed Monitor and Stripe-tailed Pygmy Monitor, Angus' Panther Skink, and the Canberra Reptile Zoo's Rough-scaled Snake and Pygmy Freshwater Crocodile.

Once again Peter Child and the Canberra Reptile Zoo did all the heavy lifting when it came to *Snakes Alive!* set up. From the moment we decided to go ahead with the event, enclosures started arriving, along with enclosure substrate and fittings, and ACTHA members swung into gear cleaning and preparing them for their new inhabitants. It was during set up that not many ACTHA members were to be seen however, so special thanks to Dennis, Graham and Jay, Kelly, Liam and Angus.

A total of 38 ACTHA members (from 26 memberships) contributed their time volunteering at *Snakes Alive!*. This included helping out at lunch time or feeding times, right up to being there for the whole event. Sixteen members volunteered more-or-less for the whole week, and, amazingly, half a dozen of our younger volunteers (approximately aged 20

or under) were part of that number. There were so many different volunteer roles and tasks, and we had no shortage of members to fill them. We kept the 'venomous' room and threatened species rooms fully 'manned' at all times, and most

times the main room absolutely hummed with volunteer activity. We displayed four venomous species this year - thank you Peter Child.

To avoid the overcrowding that used to occur at *Snakes Alive!* feeding times, the ANBG allowed us to hold **all** the feeding sessions in the nearby Banks Building. We also ran the general feeding



Striped-tailed Pygmy Monitor
© Andrew Zelnik



Pogona barbata - Eastern Bearded Dragon



Morelia spilota cheynei - Jungle Carpet Python



Varanus acanthurus - Ridge-tailed Monitor



Visitors getting up close to a *Tiliqua rugosa*
Shingleback lizard

mid-week party, as a sort of hump day celebration. The party was a fun evening, held indoors, with our younger members in particular excitedly exchanging *Snakes Alive!* stories.....

times separately from the holiday program feeding times which resulted in 26 feeding sessions in the Banks Building, as well as a handful of supplementary feeding sessions in the main venue. I am glad to report that we received many compliments from the general public as well as the holiday program educators, for having made the change. Using the second room obviously enabled us to more easily manage the visitors during the peak times too. We also received many compliments from visitors as to how informative the feeding presentations were, and how the volunteers were so very pleasant and helpful.

Holiday program attendance was higher this year which contributed nicely to our bottom line. We really appreciate these groups coming along year after year, as they are well behaved and guided well by the accompanying educators. They are also a good source of 'publicity' as many returned with their parents at the weekend. Our other direct publicity was on Facebook, and included a Facebook 'boost' which appears to be worth spending money on. Thank you Alisdair for handling our Facebook presence.

ACTHA sends a huge thank you to the record number of members, including Peter and the Zoo, who brought in their animals for full-time display this year. These included Alex, Allie, Anam, Angus, Dennis, Greg, Iris, Jake, Lainey, Liam, Luke D., Roy, and Shahzad.

Indeed, to conduct so many extra feeding times, some members brought in extra animals solely for a feeding session. This meant some animals were only seen at their feeding session, for example, Luke D's Green Pythons, and also animals from Hunter, Luke R., Greg and Iris.

Threatened species on display once again included the ACT government's Northern Corroboree Frogs; a generous 13 individuals which only became extremely cryptic in the final couple days of the display. They also provided us with a couple of Striped Legless Lizards and a Grassland Earless Dragon (courtesy of Uni of Canberra). Anke Maria of Frogwatch provided us with a couple of Green and Golden Bell Frogs, and Peter and the Zoo delivered the Pygmy Freshwater Crocodile with much fanfare. All these species generate a lot of discussion, as well as diligent searches by the younger kids, especially for the frog species.

The ANBG was immensely helpful with publicity for *Snakes Alive!*, once again promoting the W is for Wiradjuri - Colouring Book competition, and providing us with media contacts that were remarkably fruitful. Ric conducted three timely radio interviews just prior to *Snakes Alive!*, including taking his woma, Precious, into 666 for yet another visit. A WIN TV News report on Tuesday evening gave us a big boost on Wednesday, especially as Wednesday also saw some *Snakes Alive!* photos in that day's Canberra Times.

And of course on Wednesday evening we always have our



© Andrew Zelnik

Essentially we were the same old *Snakes Alive!* volunteers, with virtually everyone available from previous years and often for longer than normal. We did welcome four newcomers to the team however, Di, Graham, Kelly and Stacie.

Lucinda has been the welcoming face of *Snakes Alive!* for many many years now, although one could argue that Rosemary is often the first ACTHA volunteer visitors meet, as her nature table attracts a lot of attention from engaged youngsters. Young visitors also had an opportunity to colour in the reptile/frog themed drawings from the W is for Wiradjuri colouring book outside in the shade. Because of the uncertain lead-in to the *Snakes Alive!* week, we decided to keep things as simple as possible, so held no raffle this year..... As a result, entry to the exhibition was more speedy, but we lost an income source that was previously donated to the Amphibian Research Centre's Southern Corroboree Frog research.

Our volunteers are an impressive lot for many reasons.

- Shahzad refused to miss out on any of the action, and caught a bus in from Tuggeranong on at least two occasions.
- William gets the prize for coming the furthest (from Newcastle) to volunteer at SA!
- Younger members, Angus, Lainey, Peter and William, volunteered for virtually the whole week.....
- Members who brought in their own enclosures impressed heaps with their imaginative fit outs (Alex, Angus, Lainey, Liam and Luke).
- Jake managed to combine his ACTHA volunteering with his parenting duties on occasions.

Given that the decision for the final go ahead for this year's display was only made on the Wednesday prior to *Snakes Alive!*, the success of this year's display is even more remarkable. The smoke and the heat wave abated, and things started to improve, and eventually fall into place. The *Snakes Alive!* team took it from there. And of course we were so very well supported all the way by the ever helpful ANBG rangers and other employees.



A very close encounter with a *Morelia spilota bredli* - Centralian Python



Greg with 'Denise' a *Morelia spilota* X - Diamond x Jungle Python



Iris with 'George' the Murray Darling Carpet Python - *Morelia spilota metcalfei*



Above: *Tympanocryptis lineata* - Earless Dragon
Left: blue-tongue feeding station

The Australian & International Scene

An assessment of funding and publication rates in Herpetology

Bruno Oliveira Ferronato, Ginninderra Catchment Group

This manuscript talks about funding allocation and knowledge in herpetofauna groups. Bruno has reviewed the literature and funding bodies during 2008-2018, from 14 research journals, 5 research funding agencies and 6 on-ground conservation agencies.

He shows that over the last 10 years an immense number of grants and publications has gone to frogs, owing to the emergence of chytridiomycosis. Lizards and turtles also received considerable grants. However, relative to the number of threatened and data deficient species within each group, Bruno demonstrates that caecilians, frogs, worm lizards, lizards, snakes and salamanders are in most need of knowledge and on-going funding for their conservation and survival. The manuscript also discusses groups with restricted distribution such as tuatara, and gives a breakdown in the findings of the turtle group, considering marine and freshwater turtles and tortoises results. Other priorities for research are also discussed, in addition to how the funding for herpetofauna conservation and biology should increase as a whole.

<https://www.thebhs.org/publications/the-herpetological-journal/volume-29-number-4-october-2019/1980-09-an-assessment-of-funding-and-publication-rates-in-herpetology>

The article was published in 'Herpetological Journal', October 2019.

A full-text PDF can be downloaded from:

https://www.researchgate.net/publication/336198117_An_assessment_of_funding_and_publication_rates_in_Herpetology

How the rockstacking Instagram trend is putting endangered species at risk

ABC News, 17 January 2020



Above: They look nice, but one ecologist says the stacks are a problem.

Image: Instagram @alisoncari.

It may seem like harmless fun and makes for a great picture, but experts are warning the rock stacking trend is putting endangered Australian animals at risk.

Rock stacking is when people go to rivers, beaches or national parks and collect rocks to make sculptures.

There are more than 70,000 posts using the #rockstacking tag on Instagram, often taken in pristine environments.

Yet a senior ecologist at the Victorian Government's Arthur Rylah Institute, Nick Clemann, said the trend could have a devastating impact on some endangered species.

"It's a global phenomenon ... anywhere there is rocks, this trend is really taking off," he said. "I get it. I've got an Instagram account myself and I like to take photos of nature as well.

"[But] last year we started finding it within the habitat of some of the endangered species we work on. "That really started to ring alarm bells."

Mr Clemann said the threat was real because some animals are entirely reliant on rocky habitats that have formed over hundreds of thousands of years.

"That's what the animals live under and any disturbance to that can mean that the animals are pushed out," he said.

"So some of the endangered species we work on occur in tiny colonies in little rock outcrops, and a bit of stacking in that area can rapidly mean that colony is no longer viable."

Mr Clemann does a lot of work in the Victorian Alps.



Above: The Guthega Skink is relatively rare in Victoria. Image: Supplied Zac Atkins.

He said one species — the Guthega Skink — was particularly vulnerable because there were only a dozen colonies in the state, and last year he started seeing rock stacks in their habitat. "That destroys the burrow system for those lizards and it can knock those colonies out," he said.

Damaging, disturbing or destroying wildlife habitat is illegal in Victoria, and carries a maximum penalty of more than \$8,000.

Victoria's Department of Environment, Land, Water and Planning has urged anyone with information about disturbances or destruction of wildlife habitat to report it on 136 186.

Mr Clemann said he didn't think there was any ill will on the part of people doing rock stacking. "People are out in nature because they love nature. I think there is no evil intent here," he said.

"I think if they knew they were potentially causing a major problem for endangered species, they probably wouldn't do it. Even if the rocks are put back, even if you are quite diligent in replacing them, the seal is kind of broken and predators like snakes, for example, can get in access animals trying to shelter there. And the animals will often just abandon them at that point."

It's not the first time rocks have become a point of frustration.

In 2018, about 200 tonnes of rocks were moved in Noosa National Park's Granite Bay so people could write their name in the sand with them and create stacks.

It prompted a furious backlash from environmentalists, who spent hours removing them by hand and then posted signs telling people to stop.



Above: Signs have appeared urging people not to remove the rocks in Noosa National Park. Image: Facebook Dennis Massoud

Rosenberg's goannas surviving in freezing weather without a crucial breeding requirement

By Rachel Hayter, ABC News Canberra,
23 November 2019



Above: Rosenberg's goannas are usually found in much hotter climates. Image supplied.

Deep in a valley in the ACT's Namadgi National Park, ecologists are puzzling over how a population of goannas are surviving against the odds.

Far from lurking by the BBQ at a summer campground, these reptiles are brushing through snow grass in sometimes freezing conditions.

"They're just not reptile kind of places, particularly not goanna places," researcher Don Fletcher said.

But, according to Mr Fletcher, the even bigger question for scientists was how the lizards were even able to reproduce without a critical part of the landscape.

A few years ago, a population of Rosenberg's goannas was discovered in the Naas Valley near the southern-most tip of the ACT border, much to the confusion of scientists.

The Rosenberg's goanna is the most southerly species of goanna on mainland Australia, usually found in open forests and woodland.

So Mr Fletcher said it was a surprise to find them in a subalpine environment, which could occasionally be covered with snow.

"This location may well be the coldest of the coldest for Rosenberg's goannas," Mr Fletcher said.

But he said, more puzzling still, was that the national park was also missing a particular kind of termite mound needed for the goannas to reproduce.

"The most interesting thing about their reproduction is that, in common with some other goannas, the female tunnels into a termite mound and lays her eggs there," he said.

He said the hatchlings then tunneled out to forage for food in the surrounding area before returning to the termite mound for a final farewell.

"They go back home and eat the termites to say thanks to their hosts before eventually making their way out into the world," Mr Fletcher said.

He said, without the requisite termite mounds, ecologists were left unsure where the goannas at Namadgi had been laying their eggs and how the hatchlings were surviving.

Goanna numbers are declining across mainland Australia, in part due to predators like foxes and dingoes. But Mr Fletcher said their own importance as predators was sometimes underestimated.

He said giant goannas — estimated to be 7-metres long and weighing 650 kilograms — once lived in eastern Australia.

"Indeed it did disappear not long after the first humans arrived."

Now, with the help of University of Canberra students, more is being discovered about their (much smaller) cousin, the Rosenberg's goanna.

"They all have unique faces," environmental science student Lisa Jokinen said. "So when we



Above: An adult Rosenberg's Goanna, wearing a tracker behind its hind legs in Namadgi National Park. Image: ABC News, Rachel Hayfer

do manage to locate them or capture them, we're able to identify them through facial features."

Ms Jokinen said most of the time the lizards were dark, with white colouring across their noses that almost looked like teeth.

"They also have what appears to be a long division symbol just in front of their eye, and we can tell the goannas apart by how white or how dark the features are on their faces," she said.

Mr Fletcher said the tagging and tracking work was important to determine how the goannas sustained themselves in an unusual environment — something that could help to conserve goanna numbers across Australia.

"Here in the ACT, in this valley, we've got an exceptionally high abundance of them. So why is that? Something's going right for them here. What is it? And how can we apply that to the other reserves?" he said.

Extinction threat against Pygmy Blue-tongue Lizard lands Flinders researchers \$400k grant

By Shannon Corvo and Paul Culliver, ABC North and West SA, 26 January 2020

Below: Pygmy Blue-tongue Lizard needs to move to cooler climes in SA's south. Image: Mike Gardiner.



Researchers at South Australia's Flinders University will have more than \$400,000 to spend in their effort to save native lizard species from extinction, after landing an Australian Research Council Linkage Projects grant.

Associate Professor in Biodiversity Mike Gardner said climate change was putting pygmy blue-tongues in South Australia's north at risk.

"We think that the populations, particularly in the north, are probably going to go extinct within about 50 years or so," he said.

"The climate modelling suggests that those areas aren't going to be suitable for them, so we need to know how to move them south.



Above: the Pygmy Blue-tongue Lizard usually live in spider burrows, but researchers are putting in these wooden cylinders for them instead.

Image: Zoos SA/Phil Ainsley

Tarlee had been chosen because of its cooler climate.

"There's a few degrees difference in the maximum temperatures, so the far-north gets a lot hotter than Tarlee does," he said.

"We want to know a few things about which ones are the best to move, what sort of combinations are best ... and whether the ones from the far-north are going to cope with being moved south."

Importance of spiders

Pygmy blue-tongue lizards often choose to live in spider burrows.

Associate Professor Gardner said to ensure the survival of the relocated lizards, spiders living in the mid-north may have to be relocated to Tarlee as well to increase the number of burrows.

"We're also thinking about the potential of translocating some spiders to make the habitat more suitable for them, but what we'll do initially is put in artificial burrows," he said.

"We get hard wooden dowel burrows that we put into the ground and they exist in the ground for about five years or so.

"It's not a long-term prospect because obviously there's cost involved and time.

Arid Recovery general manager Katherine Tuft said it was good to see detailed research being done into the impact of climate change on lizards.



Above: Ten enclosures will house around 16 pygmy blue-tongue lizards each on a sheep property at Tarlee. Image: Mike Gardiner.

Relocation, relocation, relocation

Associate Professor Gardner said the trial site for the five-year-long project was at a sheep farm at Tarlee, about 90 kilometres north of Adelaide.

"We're probably going to move around about 100 or so visits in this first instance," he said.

"Very kindly, a farmer has allowed us to use their property to build an enclosure that we're going to put lizards into.

He said the enclosure was not predator-proof, because the skinks spend about 98 per cent of their lives in burrows.

"We want these things to survive without too much manipulation," Associate Professor Gardner said.

"I think it should be a success in building our understanding of how some species might be able to adapt to climate change and how humans can assist in that," Dr Tuft said.

"I think we'll see more and more of this in future as we need to develop strategies for different species and this could be a great test case."

Defence force flies experts to Kosciuszko in Corroboree Frog rescue mission

By Lisa Cox, The Guardian, 30 January 2020



Above: Australian Defence Force has flown a team of experts to Kosciuszko National Park to rescue the endangered southern corroboree frog after protective enclosures were destroyed by bushfire.

Image: Australian Defence Force.

The Australian defence force flew threatened species experts into remote parts of Kosciuszko National Park after bushfires burnt enclosures for the southern corroboree frog.

Three out of four enclosures that protect the critically endangered frogs from the deadly chytrid fungus were burnt in recent fires and the fourth is still threatened by an active fire.

The NSW environment minister, Matt Kean, said experts were flown in to assess the impact of the fires. They found several of the frogs had died.

Habitat inside the enclosures, as well as the irrigation equipment, has been damaged, but the fences themselves remain intact.

Kean said the team of experts had begun work to ensure the surviving animals had adequate refuge and food.

"Sadly, a number of the frogs perished and so all our efforts are now focused on protecting the remaining frogs by reinforcing moist habitat refuges in the enclosures and checking there's enough food for the colourful but tiny amphibians," he said.

Kean said it was a setback for the critically endangered frog, which is one of the species environment groups have said they hold immediate concerns for as a result of the fires.

He said the species was still secure because of captive breeding programs at Taronga Zoo, Melbourne Zoo and Healesville Sanctuary.

Experts warned weeks ago there could also be concern for the critically-endangered northern corroboree frog if fire moved into the Namadgi national park, which has now occurred.

Namadgi National Park is not far from Ginini Flats, where the Northern Corroboree Frog is found.

Deon Gilbert is a threatened species biologist with Zoos Victoria. He said the Southern Corroboree Frog lived in the sort of environment where fires occur and should be able to respond to a certain amount of fire in the landscape.

"The compounding issue here is there are repeated fires over the short-term destroying habitat," he said.

ACTHA 2019 Annual General Meeting, Tuesday, 15 October 2019

Jason Spurr gave an overview of the year that was, including the role that members play in maintaining ACTHA as an association held in high regard by many in local government and the community.

Of note, **Margaret Ning** who, along with a Treasurer's general day to day business, has spent many hours keeping the Association's books in order as well as ensuring the bi-monthly meetings always have a great guest speaker.

Incumbent Committee members were thanked for their work during the year before Scott Keogh declared all positions open. The Committee for 2019 - 2020 is given on the first page of this Issue of ACTHA's Newsletter.