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**ACTHA Inc. News**

**Apr - May '19**

Newsletter of the  
ACT Herpetological  
Association Inc.

*The dates are set for Snakes Alive! 2020*  
**Monday 13<sup>th</sup> to Sunday 19<sup>th</sup> January**



**Who would like to see their own herp pic  
on our 2020 *Snakes Alive!* flier?**

We are looking for a suitable image to go on our flier,  
which will also be our 20th year at the ANBG!!

Please send your picture to [margaretning1@gmail.com](mailto:margaretning1@gmail.com)  
and the person whose pic is chosen will receive one  
year's free ACTHA membership!

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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, 16 April 2019**

**Our Guest Speaker:**

**Don Fletcher** will be our Guest Speaker at this  
meeting, talking about his favourite subject:  
**Researching Rosenberg's Goanna in the ACT**

ACT populations of the two local goanna species  
have attracted little attention from researchers. Now  
a citizen science project in Namadgi National Park is  
hoping to reveal new information about one of the  
species. Having retired from the ACT Government,  
ecologist Don Fletcher is leading a small team of  
other volunteers studying the movements and  
breeding behaviour of Rosenberg's Goanna.

Definitely a meeting not to be missed!

**Your Committee for 2018 - 2019**

President	Jason Spurr
Vice President	<b>Ric Longmore*</b>
Secretary	Dennis Dyer
Treasurer	Margaret Ning
Newsletter Editor	Mandy Conway
Webmaster	Angus Kennedy
Public Officer	<b>John Wombey *</b>
Excursion Officer	
Conservation Officer	Joe McAuliffe
Committee Members	Scott Keogh
	Iris Carter
	Greg Flowers
	Roy Chamberlain
	Peter Child
Youth Representative	Liam Thornton
	<i>* Denotes Life Members</i>

## **ACTHA Reptile Keepers Club:** ACTHA members initiative

To my fellow ACTHA members,

For a while now I've been wanting to have a go at husbandry talks in the form of a club within the ACTHA umbrella, to try and get the younger generation of reptile lovers into a group.

Well it has finally happened! Inside ACTHA we will be forming a club called 'ACTHA Reptile Keepers Club', which will meet in the off month to ACTHA's more formal meetings and which I'm sure after a little while we will think of as more of a family.

Meetings of the new club will be held at the **Canberra Reptile Zoo**, O'Hanlon Pl, Nicholls (aka Gold Creek).

We will be doing talks on keeping different species of reptiles and amphibians, eg. blueys, bearded dragons, pythons, frogs, etc. As well as that, we will have guest speakers.

All this great new news, and there's even more!!! We will be going out on walks to see these beautiful animals in their natural habitat, as well as contributing photos to Canberra Nature Map (<https://canberra.naturemapr.org>). We will add some new and interesting species from the local area.

The ball is rolling folks, and I'm very excited to see what we can all do to spread our love for these beautiful animals.

Member signup will be at the start of the meeting. All new members will get a free years membership, with a \$10 member fee for student and \$20 member fee for standard members after that first year

This email will be sent to all members of ACTHA, after this email only members of the Keepers Club will be emailed.

Hope to see you all there!

Kind regards, Jake McAuliffe

### **Inaugural meeting**

*By Alice Bauer*

The first Reptile Keepers Club meeting took place at 6pm on Tuesday the 19<sup>th</sup> of March. Fresh faces assembled at the Canberra Reptile Zoo, where Jake McAuliffe introduced us to this new club within ACTHA.

Jake wishes to create a group where people come together to share knowledge, information and passion. Ideas raised by guests included: the possibly of having pet show-and-tell sessions, talks from licensing personnel, nature walks and more.

In total there were approximately 40 people. One obvious success was the presence of young people (from 4 years old – teens)- which far outweighed the adults in the room.

This first meeting was deemed an outstanding success! The next meeting is already being planned for May. Stay tuned!

## ACTHA's bi-monthly meeting Tuesday, 19 February 2019

By Margaret Ning

### Meet a reptile!

Liam opened the evening by introducing his audience to his **Scrub Python**, Australia's largest snakes, which still has a lot of growing to do. Scrub or Amethystine pythons, *Morelia amethystina*, from Far North Queensland, generally grow to 5m, with reports of a specimen up to 8m some time back. There is another scrub python species found in Papua New Guinea (PNG), the Bar Neck Scrub Python which is similar to our Australian scrubby. Liam took his snake around the room for everybody to have a pat if they wanted to.

Next we heard from **Justin** from the United States, who is in Canberra for a few months because his wife is also over here on a transfer with the US military. He did seven years in the US Marine Corps and after that graduated with a wildlife conservation degree. Because he is not allowed to work while he is in Australia, Justin is looking for volunteer work, especially if it involves working with herpetofauna. Members of the audience came up with a few suggestions!

### Our Guest Speaker:

Dr Stephanie Courtney Jones,  
Conservation Wildlife Officer,  
Tidbinbilla Nature Reserve

### Tales of Herpetofauna in Sulawesi

By Margaret Ning

Corroboree Frog. Steph has previously worked on conservation and biological research projects from the arid zones of Australia and Africa to the tropical rainforests of South East Asia, with a wide range of animals both in captivity and in the wild. Steph's topic was 'tales of the herpetofauna found in the remnant lowland rainforests on Pulau Buton, south-east Sulawesi', where she worked as a researcher.

Steph introduced us to the country of Indonesia: with around 17,500 islands (6000 of which are not inhabited), 250 million people (which is the fourth largest population in the world) with 60% of the population living on mainland Java. Importantly, Indonesia has the second largest number of animal species in the world, following Brazil. This makes it a biodiversity hotspot, with many species found there and nowhere else in the world.

Steph's Pulau Buton research project was part of an NGO operation known as Operation Wallacea (Opwall), and the work has spanned 20 years with different participants. Most of the work carried out in the past 20 years has been done on the largest of Sulawesi's offshore islands, Pulau Buton (*small red circle on map below*). The island is 100 km long and 42 km wide with geology that influences the type of habitat you have and therefore the type of species you see.

The Wallacean Region (*broadly bound by the pink line on the map below*) is named after Arthur Russell Wallace, who, independently of Charles Darwin, also developed a theory of natural selection and was a co-author of the theory of evolution. Steph proceeded to give us an excellent detailed background as to why the species in the Wallacean Region are so unique.



An audience of twenty assembled for ACTHA's April meeting, which was a very pleasing rollup.

Our main speaker was Dr Stephanie Courtney Jones, *at left*, who is a Conservation Wildlife Officer at Tidbinbilla Nature Reserve working on threatened species recovery, including the Northern





The species that arrived there became geographically isolated from both Asia and Australia by the lack of a land bridge in the ice age and huge sea currents: high endemism was thus created. Islands in the Wallacean Region are the only places in the world where you will ever see a primate and a marsupial in the same tree.

The high rate of endemism in the area covers 83% of mammals, 49% of birds, 34% of herps and 55% of butterflies. Other reasons to study herpetofauna on Pulau Buton are that new species of vertebrates continue to be discovered: it contains the largest block of lowland forest remaining in Sulawesi, with many threatened species of herpetofauna, birds and bats there.

The aim of Steph's research program was to quantify the biodiversity of Pulau Buton in order to determine how climate and land use change could impact local biodiversity. Pulau Buton forests are in relatively good condition and thus it is critical to maintain them. Steph's survey methods were discussed, including nocturnal scan searches, stream surveys and pitfall traps. And after that the colourful parade of fascinating Sulawesi herpetofauna began.

#### Summary of Wallacean herpetofauna

222 reptiles and 48 amphibians (99 and 33 spp. respectively endemic,) (44.6% and 68.8%).

Eight of the amphibian species are threatened, seven of which are endemic.

The most well known local reptile is the Komodo Dragon, the largest extant lizard in the world.

#### Wallacean Snakes

52 species occur in Sulawesi, of which 22 (42%) are endemic.



**Brown Tree snake**  
(*Boiga irregularis*)

There are 29 known species of snake on Buton. Three new species of Colubridae were recently discovered by the program.

#### Wallacean Lizards

118 lizard species, 60 are endemic.

Includes the amazing  
Gliding Lizard,  
*Draco beccarii*, right.



**Brown Mabuya**  
(*Eutropis rudis*)

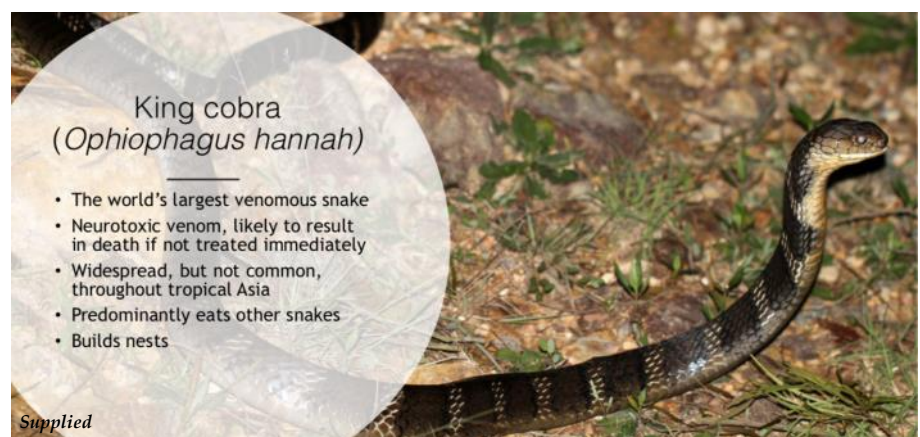


**Blue-tailed skink**  
(*Eomoia cyanura*)

#### Wallacean amphibians

Includes *Limnonectes grunniens* - a very large frog found from Sulawesi to Papua New Guinea that is abundant and widespread, despite it being hunted for food.

Steph's talk was punctuated by lots of questions from the enthusiastic ACTHA audience, resulting in interesting diversions. One such conversation was on whether reticulated pythons could be sustainably harvested. Steph was obviously very proud of the work she had done to contribute to the mammoth Opwall team effort, and stressed the very inclusive nature of the program.



#### King cobra (*Ophiophagus hannah*)

- The world's largest venomous snake
- Neurotoxic venom, likely to result in death if not treated immediately
- Widespread, but not common, throughout tropical Asia
- Predominantly eats other snakes
- Builds nests

Conservation efforts and education are ongoing, often up against obstacles such as corruption and the low standard of living of the surrounding population. Steph believes that education will help to protect the forests if a punitive approach is not adopted. Barriers are being broken down, and kids in the area were seeing things they had not previously, due to the program.

Other challenges covered by Steph included how even getting access to the area can be a slow, tedious, bureaucratic process for scientists, with six months to get the paperwork through. There are also lots of unnamed species in the area, with the finding, for example, of 13 new snake species over the last ten or so years. There is no Indonesian Government funding, but it was all worth it because of the obvious need to protect what is in the area before it is gone. Hopefully the on-going research will contribute to the most cost effective way to conserve the Sulawesi/Buton forests.



Supplied

### *Limnonectes grunniens*

- Very large frog found from Sulawesi to Papua New Guinea
- Listed as **Least Concern** as it is abundant and widespread
- Hunted for food in Sulawesi and New Guinea - "Hutan Ayam"



Joshua Phangurha



Joshua Phangurha



Justin Clause



Justin Clause

Lots of variation in colouration and multiple species co-occurring

Likely new species



Hi Margaret and Geoff,

Firstly, I wanted to repeat my thanks from last night for the opportunity to talk to the ACTHA about the herpetofauna of Sulawesi, I had a really lovely time and hope that everyone enjoyed learning more about the Wallacea region, a place very close to my heart. If anyone has any other questions that they might not have wanted to ask in front of a crowd, please send through an email!

A few people were asking about volunteering or work placement/experience opportunities within Tidbinbilla and other places in the ACT, I just wanted to pass on the links for anyone that might be interested, certainly a great way to gain experience and a wider skillset relevant for a career in herpetology. Here is the link to join the Park Care Hub with some additional information on the website: <https://www.environment.act.gov.au/parks-conservation/parks-and-reserves/get-involved/the-ParkCare-initiative> the Wildlife Assist is specific to our wildlife team. Volunteer spots are in high demand, so get your name in early is my best advice. In terms of work placements and work experience on the wildlife team, these are usually limited to enrolled ANU or UC university environmental science (or similar) students, for high school students I would recommend getting onto the Park Care Hub.

Other organisations worth investigating are the universities, "friends of..." groups and landcare groups. There are regularly posted research volunteer opportunities on Facebook and Twitter through the research groups, just takes a little investigating to find them but there are many!

Of course, I should mention that the upcoming expedition out to Sulawesi are looking for herpetologists (<http://jobs.opwall.com/job/herpetologist/>), herpetologist requirements include an undergraduate degree (or equivalent) and experience handling venomous snakes (for handling the snakes I had shown at the talk). You can pass on my email if anyone might want more information, if not email directly the Opwall team.

Hopefully that is a good starting point for people to gain experience and further their interest and careers in herpetology.

Happy herping!

Dr. Stephanie Courtney Jones  
Conservation Wildlife Officer  
Tidbinbilla Nature Reserve  
ACT Parks and Conservation Service  
P: 02 6205 3908 | W: [www.tidbinbilla.act.gov.au](http://www.tidbinbilla.act.gov.au)

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## The Australian & International Scene

### Newly discovered snake can strike you with venom without even opening its mouth

*By Carly Cassella, Science Alert, 19 March 2019*

Hidden in the evergreen forests of Guinea and Liberia, scientists have discovered a new species of snake that can deliver a venomous stab all without even opening its mouth.

It's an unusual skill that belongs solely to stiletto snakes, which have long fangs they can stick in and out of the corners of their mouths, allowing these creatures to stab sideways.

Match that with their ability to lunge great distances and you have a wily opponent, even for a herpetologist. As experts from Berlin's Natural History Museum found out, picking up and putting down a stiletto snake requires special care.

When the researchers first stumbled upon this nocturnal species in Liberia, crawling along the dark slopes of an evergreen forest, they tried to wrangle it in the usual way, gripping the snake behind the head with their fingers.



*Rodel et al, Zoosystematics and Evolution 2019*

That was not, as it turns out, the best idea.

"In this head position, the snake repeatedly tried to strike," the authors write.

"Either it tried to move slowly away from the human observers or it abruptly coiled and uncoiled, often jumping distances equalling almost its entire body length, similar to wolf snakes of the genus *Lycophidion*."

In the end, no one was hurt, but even if someone had been struck by the stiletto, it wouldn't have killed them.

That's not to say a bite wouldn't be dangerous. A stiletto snake's venom is potentially cytotoxic (damaging to cells), causing severe pain, swelling, blistering and sometimes even major tissue damage. Without a known anti-venom, victims can even lose their fingers.

The team went on to safely collect another two specimens, found among coffee and banana plantations in southeast Guinea, roughly 27 kilometres apart (16.7 miles). Together, all three specimens were described by the researchers as slender, with moderately robust bodies and rounded heads.

The new species was dubbed *Atractaspis branchi* or Branch's stiletto snake. Today, it joins at least 21 other known stiletto snakes - or burrowing asps, as they are also sometimes known - most of which, like this new one, are found in sub-Saharan Africa.

In fact, the researchers think Branch's stiletto snake is actually endemic to the Upper Guinea rainforests, a diverse and unique region of northwest Liberia and southeast Guinea that is currently endangered by deforestation, agriculture, logging, mining and, of course, climate change.

The discovery suggests that this region is a centre of rich and endemic biodiversity, which is, unfortunately, facing many threats. Even the forests that are still standing have almost all been disturbed by humans, and in all likelihood, that includes the stiletto snakes' habitat as well.

For now, however, it's impossible to tell how threatened these creatures truly are. Apart from these three specimens, there is no other data on the biology or the ecology of this new species.

"Further surveys are needed to resolve the range of the new snake species, and to gather more

information about its ecological needs and biological properties," write the authors.

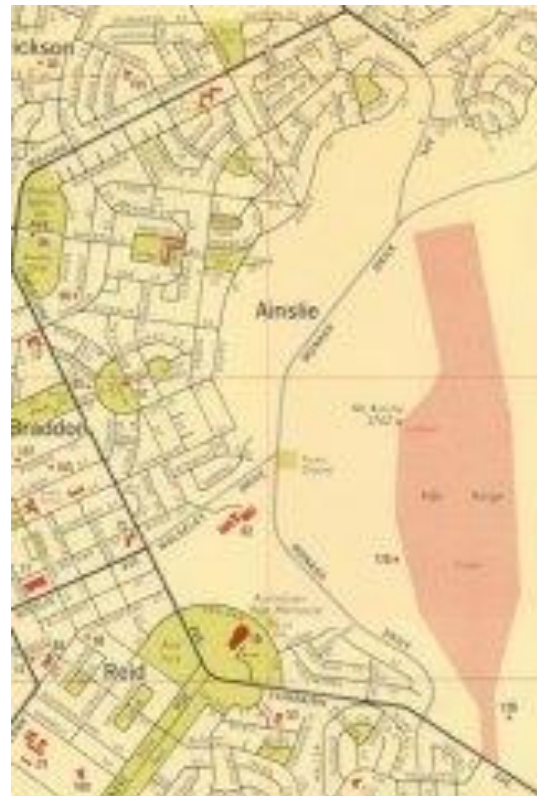
The paper has been published in *Zoosystematics and Evolution*.

## Ghost road to stay in National Capital Plan for now

By Katie Burgess, *The Canberra Times*, 13 March '19

The National Capital Authority has refused an ACT government request to remove a ghost road from the blueprint for Canberra for now, saying the future bypass may yet be needed.

The territory government wrote to the authority in November asking for a corridor preserved for Monash Drive to be removed from the National Capital Plan.



1965 tourist map of Canberra featuring Monash Drive. The road was pencilled in as a future bypass for the inner north but is yet to be built. Credit: Courtesy of Leith Bade.

The corridor was pencilled in during the early 1960s as a bypass for the inner north of Canberra and would connect Antill Street with Fairbairn Avenue by cutting through Canberra Nature Park on the eastern side of Hackett, Ainslie and Campbell.

The four-kilometre trail is currently used for walking, cross-country running, horse-riding and mountain biking.

It is home to 40 threatened species listed under the Environment Protection and Biodiversity Conservation Act, including the little eagle, superb parrot, glossy black cockatoo, hooded robin and painted honeyeater.

Building the road would also require the removal of 30 hectares of endangered Yellow Box and Red Gum Grassy Woodland, and cost \$104 million according to the ACT government.

Transport Canberra and City Services director-general Emma Thomas told National Capital Authority chief Sally Barnes last year the benefits of the proposed road no longer outweighed the loss of this habitat and the cost, and the road was rendered unnecessary with the Majura Parkway and light rail.

However, Ms Barnes replied that it would be "premature" to remove the road from the blueprint until it was clear how "a number of current metropolitan planning initiatives that will impact on metropolitan traffic movements are finalised and implemented".

This includes not only both stages of light rail but the ACT government's new transport strategy, which could include tolls or a registration pricing structure that rewards people who drive less, as well as the projected increases in density that will come with Draft Amendment 91, which will increase building heights along the Northbourne corridor.

"Once the impacts of all these matters are fully understood and realised, a revised impact assessment report incorporating long-term policy settings and describing full environmental impacts can be prepared. The authority would be in a better position to consider the proposal at that time," Ms Barnes' letter to the ACT government said.

Leaving the road in the National Capital Plan did not commit the ACT government to build the road, Ms Barnes added.

"The retention of the Monash Drive alignment within the plan does however provide future proofing of the arterial road network if required at a later date," she wrote.

However Roads Minister Chris Steel called on the federal government to "protect the bush capital" and overturn the authority's decision.

"While we are in government we will never build Monash Drive and we want to prevent future territory and federal governments from doing so by removing this fictitious road from the map," Mr Steel said.

"This is an environmentally damaging, unnecessary, and expensive road and it should never be built."

Member for the electorate of Kurrajong, in which the proposed bypass sits, Rachel Stephen-Smith said residents of the inner north wanted certainty that the road would not be built in the nature reserve behind them.

"The residents of Watson, Hackett, Ainslie, Campbell, and Reid have a strong connection to Mount Majura and Mount Ainslie and value the bush right on their doorstep. Those who live near the proposed corridor have also expressed concern about noise and extra traffic causing disruption to many suburbs," she said.

## **Geckos walk on water - we filmed them to find out how**

*By Jasmine Nirody (University of Oxford), The Conversation, 7 December 2018*

Anyone who's seen a gecko will likely know they can climb walls. But these common lizards can also run across water nearly as fast as they can move on solid ground. Yet while we know how geckos scale smooth vertical surfaces using countless tiny hairs on their feet called setae, how they manage to avoid sinking into the water has been something of a mystery – until now. My colleagues and I recently completed research that explains how geckos use a combination of techniques to perform this amazing feat.

The ability to walk on water has been recorded in smaller animals such as the water strider, which are light enough to be held up by the water's surface tension, the force between the water molecules at the surface. Meanwhile, larger animals such as the grebe, can walk on water because they are powerful enough to slap the surface with their feet as they run. The fast



movement pushes down the water beneath the foot, creating a pocket of air around it. The upwards force generated when this pocket is pushed under the water is what keeps the animal briefly suspended on the surface.



Above: No bridge? no problem.

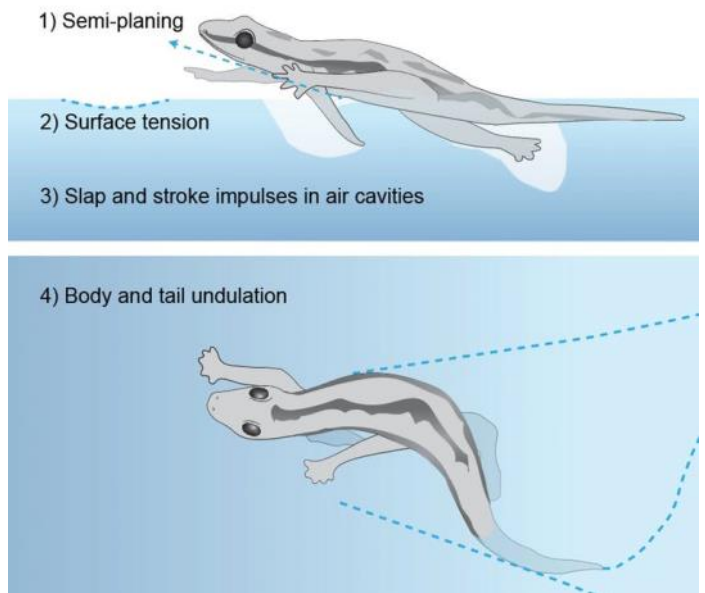
Image: Pauline Jennings.

But geckos are typically a size that falls in between these two categories. They are too weak to hold themselves up using surface slapping alone and too heavy to leave the water's surface unbroken. Yet their relative water running speeds approach those of another well-known water running lizard, the basilisk (or "Jesus lizard"), which does rely on the slapping technique.

Initial calculations hinted, and video analysis confirmed, that unlike other species that move at the water's surface, geckos use a combination of techniques to move faster on top of the water than they can by swimming through it. By analysing videos of geckos moving across the water, we found that their gait was similar to that of the basilisk. Each step involves retracting the foot through the air, slapping the surface, and stroking beneath the water.

But unlike basilisks, which aren't affected by changes in the water's surface tension, our experiments showed that geckos' speed and head height were cut by half when we added detergent to the water, reducing the surface tension. This suggests that they are at least partly using the forces between the water molecules to stay above the surface.

We also found that geckos crucially use a combination of hydrostatic force (the upwards push of the water known as buoyancy) and hydrodynamic force (the lift created by movement across the water's surface like in a surface-skimming motorboat). Together, these forces generate additional lift for the gecko, a condition known as semi-planing.



Above: The gecko combo. Image: Current Biology

For all the ingenuity of this multi-tasking approach, geckos can only keep their head and torso fully above the water, leaving their tails dragging underneath. Being able to move almost as fast as on land when almost half of your body is underwater and facing more resistance and drag forces is quite a feat – just ask Michael Phelps.

Geckos manage this by using their tail, which has already been shown to help them manoeuvre around obstacles, jump and escape predators. Seen from above as it travels across the water, the gecko can resemble a crocodile, moving its body and tail with a wavelike motion to create propulsion to balance the backwards pull of the water.

Our research shows that for medium-sized animals to move quickly along the surface of water a complex and clever combination of physical mechanisms is required that previously was thought only to occur in larger and smaller animals. But it could also feed into better designs for animal-inspired robots.

Previous studies on geckos have inspired several such "biomimetic" endeavours, from better adhesives to an agile (and pretty adorable) tailed robot car, aptly named Tailbot. Better understanding of how animals travel across complex terrains will hopefully lead to robots that can harness these techniques to move on both land and water with the high performance seen in geckos.

## Why we fear snakes - and it's not because they kill us

By Steve Evans, *The Canberra Times*,  
19 February 2019

It seems an unlikely combination. Gavin Smith is a sociologist, buried in data and learned journals - but at any time, faster than the flicker of a snake's tongue, he can pull on the garb and gaiters of a snake catcher.

Out he heads, if not to save the world, then to save a patch of his university campus from an eastern brown.



*Above: Gavin Smith, ANU sociologist and snake catcher, with an eastern brown. Credit: ANU*

The associate professor is from the far north of Scotland, but is now deputy head of the Australian National University's School of Sociology. He's one of those global academics who has worked at prestigious universities on three continents.

His sideline from sociology is wherever the most venomous red bellied blacks, eastern browns or tiger snakes turn up. His non-academic business is called ACT Snake Removals.

But he's about to merge the two by conducting sociological research into the way humans perceive snakes - or misperceive them, as he sees it.

"Snakes are incredibly communicative," Dr Smith says. "People see them as dumb and inert, but they are curious when they become calm. They have a softness."

He thinks he may even have won the affection of one, an eastern brown whose bite can kill a human within a few hours.

"I've seen amazing things like a snake resting its head on my boot when I'm releasing it, almost like a gesture of gratitude for not harming it," he says.

But it's as a sociologist - a student of the way humans operate in society - that he is really interested in snakes. His speciality at the moment is "surveillance studies". Dr Smith studies the fear of crime and criminals, the way we perceive and misperceive them, and where machines like CCTV cameras fit in to that equation. It's a recognised field of sociology.

He thinks it resonates with snakes and the way humans perceive them or misperceive them - and he says snakes have had a bad press for thousands of years.

It may go back to the Book of Genesis, with the devious, cunning serpent persuading innocent Eve to taste of the Tree of Knowledge and so bring sin into the world.

Dr Smith also wonders if snakes' bad image comes from colonialism. Snakes intrude on land that white humans believe they own.

"Snakes don't respect land ownership," he says. "'Who is this creature?' we think. 'How dare it be here?' But actually it's been here for a long, long time."

On top of that, snakes are depicted as aggressive and evil in popular culture - just think of the Disney movie *The Jungle Book*, where Kaa, the hungry python, tries to devour Mowgli, the boy hero. Not nice.

And Dr Smith points out that snakes do not have the classic, humanoid "two-eyes-separated-by-a-nose-above-a-mouth" look, shared by the animals which get the oohs and ahhs for their cuteness. Bush babies, they ain't. Or as Dr Smith puts it: "They aren't cuddly."

"They are very much a pariah species, not a fluffy species like cats and dogs."

But, you point out, they are pariahs because they can kill us.

He accepts that. "I don't want in any way to suggest they aren't dangerous," he says.

"But almost all these situations can be defused, rather than trying to hit them with a tool.

"They aren't interested in us. We are just big predators. It's us that have to be trained to understand snakes."

But there's a long history of fear. There is academic debate about whether our phobia about snakes is something we are born with, or something which we learn. Do babies fear snakes? All kinds of academic experiments have been conducted, to no definite conclusion.

Dr Smith's view is that we may not be born with the fear, but it's now so hard-wired into our make up that it will take some shifting.

Dr Smith has a three-year-old daughter, Sylvie, and he has drilled into her the danger of approaching snakes.

But already she is curious. She is not allowed out with him when he catches them, but she has viewed from afar as he released a captured eastern brown.

"I've warned her about snakes, but she is starting to understand her dad's passion for scaly creatures," Dr Smith said.

"Dad, when I'm big can you train me?" came the response from the three-year-old, he says.

He will train her one day - there's little doubt of that - and teach her about what he believes passionately to be the wider worth of snakes.

He doesn't really separate the two roles, of sociologist and snake catcher. "Sociologists never switch off," he says.

He now finds himself increasingly musing on the relationship between snakes and humans, and particularly on why we demonise them as the lowest of the low.

They can kill us - but do they deserve such bad press?

## **Goanna attacks Queensland man then turns on paramedic who came to help**

*By Toby Crockford, The Canberra Times,  
14 February 2019*

Attacks by an aggressive goanna have landed a man and the paramedic who came to help him in a Queensland hospital.

It was the second goanna attack in the state's south-east in the past three weeks, after a "very nasty and savage" reptile attacked an eight-year-old girl while she walked through a South Stradbroke Island camp ground on January 24.

In the most recent incident, Paul Smallhorn suffered deep cuts and scratches to his leg after he was attacked on his property in Toogoolawah, 120 kilometres north-west of Brisbane. The responding male paramedic suffered scratches on his arm after the reptile also went for him.

Mr Smallhorn grabbed the goanna when it cornered a family of peacocks on his property.

"Usually, the best thing to do is keep away from them, but in this case the animals were just boxed in, so I had to step in," he told Channel Nine.

"I picked him up by the back of the neck and carried him out at arm's length. "I walked about 50 metres to let him go and he threw his tail around my leg, pulled his body into me and dug all his claws [in].

"He brought me to the ground because his back leg was stuck in mine down low.

"The ambulance officer that treated me had to go in [to the hospital] too because of lacerations."

In the attack on the girl on January 24, it took two people to pull the reptile off the child.

"A young eight-year-old girl, whilst walking through the camping ground, was attacked by a goanna that has made quite a nasty laceration in her foot," Queensland Ambulance Service senior operations supervisor Jayney Shearman said.

"At the time it was quite difficult to get the goanna off the child; it needed a couple of people to become involved to actually remove it from her foot."



A Volunteer Marine Rescue boat helped take the girl off the island to Gold Coast University Hospital, where her condition was described as stable.

Experts say goanna bites can be dangerous because the carnivores feed on carrion, and toxic bacteria in their mouths can cause pain, swelling and prolonged bleeding.

### **Nocturnal cane toads perform 'extremely rare' phase switch, becoming diurnal in Kimberley gorges**

*By Ben Collins, ABC Kimberley, 22 January 2019*



*Above: Gorges in the Kimberley can be deep and narrow, cool and wet - ideal for cane toads during the day. Image: Dr Simon Clulow*

**Most animals are biologically locked into being nocturnal or diurnal, but cane toads are proving they have super pest powers and can switch when conditions are right.**

The surprise finding was made by researchers studying the invasive toads as they advance across the Kimberley region in Australia's remote north-west.

Simon Clulow, an environmental biologist from Macquarie University, and lead author Sean Doody from the University of South Florida, published their findings in Scientific Reports last week after studying the impacts the poisonous toads have had on native wildlife in the past 10 years.

Dr Clulow had been accustomed to observing toads at night as the introduced amphibian

would hide from the hot Australian sun during the daytime.

But when he ventured into some of the Kimberley's deep and rocky gorges, he found cane toads behaving in a very unusual manner.

#### **Rare example of phase shifting**

The daytime toads Dr Clulow found were not just a one-off sighting; the cane toads had reversed their normal 24-hour cycle.

"It's extremely rare. It's a phenomenon known as phase shift," Dr Clulow said.

"So when I say they're now active in the day, I don't just mean they're out at night and they come out a bit in the day also.

"We've quantified their activity patterns, and they're only out in the day."

Dr Clulow said there were only a few other known examples of nocturnal animals becoming day-active, or diurnal animals.

He said the reason it was so rare is because it was a very difficult biological change to make.

"If you've ever jumped on a jumbo jet and flown halfway around the world ... we've all suffered jet lag," Dr Clulow said.

The cane toads that have made the leap to becoming diurnal are living in deep gorges where they are protected from the hot sun.

While this appears to explain how the moisture-loving toads survive being active in the day, Dr Clulow said his team did not understand why the toads made the change.

"We can hypothesise [that] perhaps there is a more abundant food source, or something like that, that they prefer out in the day," he said.

"But we need more research. We don't really know [so] we can only guess at this stage."

#### **The ultimate pest**

Australian scientists have been studying cane toads since they were introduced in a failed attempt to control the cane beetle — a pest of sugar cane crops — in 1935.

They have found the amphibians have a range of exceptional abilities, including rapid rates of evolution, high toxicity, and incredible rates of reproduction.

This latest finding further demonstrates the toad's potential to conquer new territory.



Above: Dr Simon Clulow with a Magnificent Tree Frog, a native frog potentially impacted by the arrival of cane toads. Image: Dr Clulow

"We already have a firm understanding that they're very successful because they're a generalist in terms of habitat requirements," Dr Clulow said.

"But we've never really understood that perhaps being behaviourally flexible may also be lending to them being such a successful invader."

#### **Adaptable predator must not be underestimated**

Conservation biologist Mike Letnic from the University of New South Wales is an expert in how cane toads have invaded increasingly arid parts of Australia. He agrees this latest research demonstrates that cane toads are among the most adaptable of animal pests.

"Cane toads across most of the country — where they live and certainly where they're from — are strictly nocturnal animals, so it's amazing that they're active during the day," Dr Letnic said.

He said this finding was further warning not to underestimate how much of Australia could be impacted by cane toads.

"When you read the literature from 30 years ago, people were doubting that they could ever make it into the desert country," he said.

Cane toads are now found halfway across the remote Kimberley region where Dr Clulow has been documenting their impact on native animals.

"It's quite heartbreaking at times being a researcher up in that system," he said.

"After toads arrived, we basically moved from seeing four or five goannas a day to one or two in a four-month period, so the impacts can be quite devastating."

## **The first known case of eggs plus live birth from one pregnancy in a tiny lizard**

By Melanie Laird and Camilla Whittington,  
*The Conversation*, 3 April 2019

For most animals, reproduction is straightforward: some species lay eggs, while others give birth to live babies.

But our recent research uncovered a fascinating mix between the two modes of reproduction. In an Australian skink, we observed the first example of both egg-laying and live-bearing within a single litter for any backboned animal.

This suggests some lizards can "hedge their bets" reproductively, taking a punt on both eggs and live-born babies to improve overall survival chances for offspring.

### **Making reproductive leaps**

Most vertebrate species (animals with a backbone) fall neatly into one of two distinctly different reproductive categories.

Oviparous species are egg-layers. These eggs may undergo external fertilisation — such as in spawning fish — or are fertilised and shelled internally, like those of reptiles and birds. Oviparous embryos rely on egg yolk as a source of nutrition to continue development until hatching.

In contrast, viviparous species are live bearers that carry their young to term. Some live-bearing species, including humans, support embryonic development internally via a placenta. Egg-laying is ancestral, meaning that modern live-bearers have descended from egg-laying ancestors.

Physiologically, the evolution of live birth from egg-laying is no mean feat. This transition requires a whole suite of changes, sometimes including the evolution of a placenta — an entirely new specialist organ — as well as loss of the hard outer eggshell, and keeping the embryo inside the body for a longer time.

Despite these complex steps, reptiles, particularly snakes and lizards, appear to be unusually predisposed to making the leap to live birth. This capacity has evolved in at least 115 groups of reptiles independently.



### Having it both ways

It's easy to see why reptiles, as a group, are fascinating models for studying how live birth evolves from egg-laying.

Of particular interest are two Australian skinks that have both live-bearing and egg-laying individuals (known as being bimodally reproductive). These lizards are incredibly valuable to evolutionary biologists as they offer a snapshot into evolutionary processes in action.

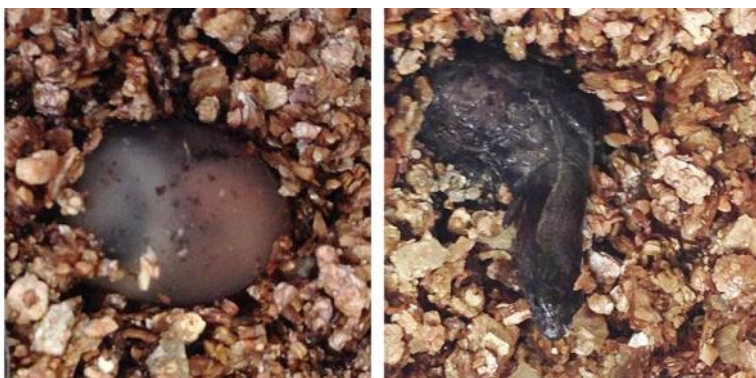
The three-toed skink *Saiphos equalis* is one such species. Reproduction in *S. equalis* varies geographically: populations around Sydney lay eggs, while those further north give birth to live young.

Whether individuals are live-bearing or egg-laying seems to be genetically determined: when researchers swap their environmental conditions (by moving them from one site to another), the females retain their original reproductive strategy.

### Mothers know best

Our latest research shows this lizard is intriguing in another completely unexpected way.

We observed a live-bearing female that laid three eggs, and then gave birth to a living baby from the same litter weeks later. We incubated two of the eggs, one of which hatched to produce a healthy baby.



Above: A live-bearing female *S. equalis* in our laboratory colony laid three eggs, one of which hatched to produce a healthy baby.

Credit: Camilla Whittington

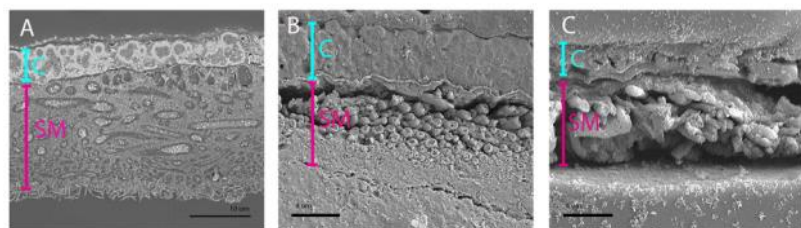
This finding is remarkable for two reasons. First, as far as we are aware, this is the first example of both egg-laying and live birth within a single litter for any vertebrate.

Second, in some cases, individuals may be capable of “switching” between reproductive modes. In other words, as laying eggs and giving birth each come with their own advantages and disadvantages, individuals may be able to “choose” which option best suits the current situation.

### Closer look at eggshells

To better understand this reproductive phenomenon, we investigated the structure of the egg coverings of these unusual embryos in minute detail (using an advanced technology called scanning electron microscopy).

We found that in this litter, the egg-coverings were thinner than those of normal egg-laying skinks and had structural characteristics that overlapped with those of both egg-layers and live-bearers (which have thinner coverings that are greatly reduced).



Above: Egg coverings of *S. equalis* consist of an outer crust (C) and an inner shell membrane (SM). We compared the structure and thicknesses of these layers of both egg-laying (A) and live-bearing (B) *S. equalis* to identify similarities with our ‘unusual’ embryos (C). Credit: Melanie Laird

### How evolution works

We still don't know the trigger that caused this female to lay eggs and give birth to a live baby from the same pregnancy.

However, our findings suggest that species “in transition” between egg-laying and live bearing may hedge their bets reproductively before a true transition to live birth evolves.

Being able to switch between reproductive modes may be advantageous, particularly in changing or uncertain environments.

Right: The three-toed skink lives in eastern Australia.

Credit: Doug Beckers / flickr, CC BY





For example, extreme cold, drought or the presence of predators can be risky for vulnerable eggs exposed to the environment, meaning that mothers that can carry offspring to term may have the upper hand.

In contrast, lengthy pregnancies can be taxing on the mother, so depositing offspring earlier as an egg may be beneficial in some situations.

We suggest that other species in which live birth has evolved from egg-laying relatively recently may also use flexible reproductive tactics.

Further research into this small Australian lizard, which seems to occupy the grey area between live birth and egg-laying, will help us determine how and why species make major reproductive leaps.

### **Snake travels 18,000km from Australia to Scotland in woman's shoe**

*By Auslan Cramb, Traveller, 26 February 2019*



*Above: Moira Boxall discovered the spotted python hidden in a shoe in her luggage.*

*Photo: Scottish SPCA*

A woman accidentally packed a snake in her luggage after visiting her daughter in Australia and brought it all the way home to the UK.

Moira Boxall discovered the spotted python hidden in a shoe, the day after she arrived back in Scotland having caught three flights from Queensland to Glasgow, on a 40-hour, 18,000 kilometre journey.

The snake survived the trip, shedding its skin in the process, and Mrs Boxall initially thought it was a toy her family had planted as a joke.

The 72-year-old grandmother said she got the "biggest shock" of her life when she "pulled at it" and the non-venomous python moved in the slip-on shoe.

Mrs Boxall, from Bridge of Allan, had been visiting her daughter and family at their home in Mackay, Queensland.

Three weeks before the end of her seven-week trip, she was woken at 5am by a crashing sound. She said a 60 centimetre snake had found its way into the room and knocked over a plant on a bedside table.

Her family called a snake catcher but when he arrived there was no trace of the animal. The widow believes it must have slithered into her shoe and spent the next three weeks hibernating. It was then put into her luggage for a journey home via lengthy stopovers in Brisbane and Dubai, more than 40 hours in total.

An officer from the Scottish SPCA arrived at Mrs Boxall's home to collect the python.

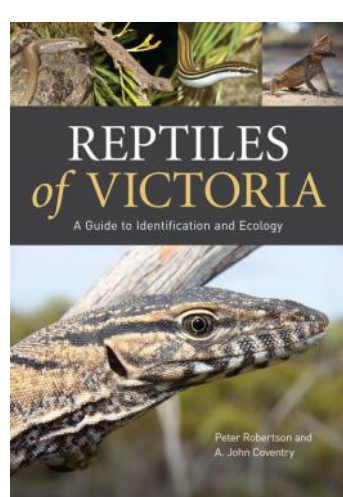
The animal is now in quarantine at the SSPCA's rescue and re-homing centre in Edinburgh.

**[Stock ID:27519] Field guide to reptiles of Victoria.** Robertson, Peter and A. John Coventry. **AU\$50.00**

Melbourne: CSIRO Publishing, 2019. Octavo, paperback, 332 pp., colour photographs, other illustrations, maps.

We are pleased to offer copies SIGNED by the senior author, plus a free bookmark by William T. Cooper. Illustrated descriptions of the 123 native, introduced and vagrant reptile species in the state. 'Reptiles of Victoria' is the first regional guide to all reptiles known to occur in Victoria. It contains keys and illustrated descriptions to allow identification of the 123 native, introduced and vagrant reptile species and describes their biology, ecology, distributions and the habitats in which they live. It also indicates the level of risk that the venomous snakes pose to humans and includes a brief section on first aid for snake bites. Natural history enthusiasts and professional and amateur herpetologists will find this an essential guide. This book is also a fitting tribute to the late John Coventry, curator of reptiles at the Museum of Victoria.

To purchase go to: <https://www.andrewisles.com/details.php?record=27519&jump=1>



## How indigenous expertise improves science: the curious case of shy lizards and deadly cane toads

By Georgia Ward-Fear and Rick Shine,  
*The Conversation*, 9 April 2019

It's a common refrain – western ecologists should work closely with indigenous peoples, who have a unique knowledge of the ecosystems in their traditional lands.

But the rhetoric is strong on passion and weak on evidence.

Now, a project in the remote Kimberley area of north-western Australia provides hard evidence that collaborating with Indigenous rangers can change the outcome of science from failure to success.

### Fighting a toxic invader

This research had a simple but ambitious aim: to develop new ways to save at-risk predators such as lizards and quolls from the devastating impacts of invasive cane toads.



*Above: Cane toads are invasive and highly toxic to Australia's apex predators. Image: David Nelson*

All across tropical Australia, the arrival of these gigantic alien toads has caused massive die-offs among meat-eating animals such as yellow-spotted monitors (large lizards in the varanid group) and quolls (meat-eating marsupials). Mistaking the new arrivals for edible frogs, animals that try to eat them are fatally poisoned by the toad's powerful toxins.

Steep population declines in these predators ripple out through entire ecosystems.

But we can change that outcome. We expose predators to a small cane toad, big enough to

make them ill but not to kill them. The predators learn fast, and ignore the larger (deadly) toads that arrive in their habitats a few weeks or months later. As a result, our trained predators survive, whereas their untrained siblings die.

### Conservation 'on Country'

But it's not easy science. The site is remote and the climate is harsh.

We and our collaborators, the Western Australian Department of Biodiversity, Conservation and Attractions, decided at the outset that we needed to work closely with the Indigenous Traditional Owners of the east Kimberley – the Balangarra people.

So as we cruised across the floodplain on quad bikes looking for goannas, each team consisted of a scientist (university-educated, and experienced in wildlife research) and a Balangarra Indigenous ranger.

Although our study species is huge – a male yellow-spotted monitor can grow to more than 1.7 metres in length and weigh more than 6kg – the animals are well-camouflaged and difficult to find.

Over an 18-month study, we caught and radio-tracked more than 80 monitors, taught some of them not to eat toads, and then watched with trepidation as the cane toad invasion arrived.

Excitingly, the training worked. Half of our trained lizards were still alive by the end of the study, whereas all of the untrained lizards died soon after toads arrived.

That positive result has encouraged a consortium of scientists, government authorities, conservation groups, landowners and local businesses to implement aversion training on a massive scale (see [www.canetoadcoalition.com](http://www.canetoadcoalition.com)), with support from the Australian Research Council.

*Below: A yellow-spotted monitor fitted with a radio transmitter in our study. This medium-sized male was trained and lived for the entirety of the study in high densities of cane toads.*

*Image: Georgia Ward-Fear, University of Sydney*





### Cross-cultural collaboration key to success

But there's a twist to the tale, a vindication of our decision to make the project truly collaborative.

When we looked in detail at our data, we realised that the monitor lizards found by Indigenous rangers were different to those found by western scientists. The rangers found shyer lizards, often further away from us when sighted, motionless, and in heavy cover where they were very difficult to see.

We don't know how much the extraordinary ability of the rangers to spot those well-concealed lizards was due to genetics or experience – but there's no doubt they were superb at finding lizards that the scientists simply didn't notice.

And reflecting the distinctive "personalities" of those ranger-located lizards, they were the ones that benefited the most from aversion training. Taking a cautious approach to life, a nasty illness after eating a small toad was enough to make them swear off toads thereafter.

In contrast, most of the lizards found by scientists were bold creatures. They learned quickly, but when a potential meal hopped across the floodplain a few months later, the goanna seized it before recalling its previous experience. And even holding a toad briefly in the mouth can be fatal.

As a result of the intersection between indigenous abilities and lizard personalities, the overall success of our project increased as a result of our multicultural team.

If we had just used the conventional model – university researchers doing all of the work, indigenous people asked for permission but playing only a minor role – our project could have failed, and the major conservation initiative currently underway may have died an early death.

So our study, now published in *Conservation Letters*, provides an unusual insight – backed up by evidence.

Moving beyond lip service, and genuinely involving Indigenous Traditional Owners in conservation research, can make all the difference in the world.



*Above: Georgia Ward-Fear (holding a yellow-spotted monitor) with Balanggarra Rangers Herbert and Wesley Alberts. David Pearson, WA Department of Biodiversity, Conservation and Attractions*



Tweet from Andrew Mock at Kununurra in far north Western Australia on 31 December 2018: "68mm just fell in the last hour at Kununurra. Flushed all the cane toads out of my brothers dam. Some of them took the easy way out - hitching a ride on the back of a 3.5m olive python."



## Spotted!

*At Right & below:* Our Pres. **Jason** sent in these pics taken by his brother-in-law who found the gecko in Scullin.

Jason has set it up with some protective hidey tubes for use as habitat, to extend its further existence. The pic was shown to Peter Child and everyone at the zoo reckoned it was no longer a baby, given its size.



### Janet and her pregnant Shingleback

*Right:* About 5 hours old, 133g, and independent.

"As the nights were getting cold, I had the pregnant female shingleback on a warm hot water bottle (monitored with an infra-red thermometer at 31 degrees) to keep up her metabolic rate. I was worried that she might not pop them for another couple of weeks and would have problems in the colder temperatures."

About 10 times the weight of a newborn blue tongue, but then there are 10 times as many blue tongue babies in a womb!"

