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ACTHA Inc. News
June - July '14

Newsletter of the ACT Herpetological Association Inc.

ACT Herpetological Assoc. Inc.
2014 - 2015 Membership Renewal NOW DUE, *pls see back page.*

Your Committee for 2013 - 2014

President	Dennis Dyer
Vice President	Ric Longmore
Secretary	Chris Harrison
Treasurer	Margaret Ning
Newsletter Editor	Mandy Conway
Webmaster	Angus Kennedy
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Conservation Officer	Joe McAuliffe
Committee Members	Iris Carter
	Greg Flowers
	Peter Child
Student Representatives	Angelique Harrison
	Sophie Sloane

* *Denotes Life Members*

From this

To this.

This Newsletter has it all!

In this issue

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, 17 June 2014

Bruno Ferronato, PhD candidate,
Institute for Applied Ecology, UC

Uses and conservation of freshwater turtles by Ashaninka Indigenous people, Central Peru

"In this talk I will comment on my experience in working with Amazonian freshwater turtles and indigenous communities in Selva Central, Peru.
I will talk about the project I was involved in documenting ecological traits of turtles in this region and gathering information on how locals use turtles, what is their view on the causes of low levels of abundance of turtles in their territory nowadays, and document any beliefs or taboos they have that could help to conserve turtles.
I will discuss on the goals achieved during the project, local involvement, challenges, and how was like to work in remote areas in the Amazon."

Frogwatch 2014

Tata - Winter already! Hope you are all well and warm!!

your Frogwatch Coordinator,
Anke Maria Hoefer

Our Projects:

FW Ephemeral Revegetation Project

Funded through an ACT Environment Grant, this project is going great guns towards revegetating 34 ponds and creek lines in the ACT. Light wooden debris has been put in place at Mt. Majura, Wanniassa Hills and Farrer Dams with the help of students from Marist College and Lake Tuggeranong College.

Proposed plantings so far:
13.06., Telstra volunteers will get into the dirt along Long Gully Road and Mugga Lane.
15.06., Planting day at Uriarra Village ponds.
18.06., Marist College students will work on three Farrer Hills dams.
25.06., Wanniassa Hills Primary School students will test their green thumbs around Wanniassa Hills Dam.
During Term 3 students of the Orana Steiner School, Weston will improve the plant life in and around 3 dams in the Kowen Forest as part of their Duke of Edinburgh Award.

Tadpole Kits for neighbouring NSW communities

Funded through a NSW Heritage Grant for Environmental Education, this program will see an extension of the ever popular Tadpole Kits for Schools Program, beyond the ACT borders. This is particularly important as NSW schools have recently been licensed to keep up to 20 tadpoles for educational purposes. Frogwatch will provide the necessary instructions and supervision for teachers and will educate about negative implications of removing and displacing tadpoles and frogs from the wild.

Upcoming events

Workshop: Building a Frog-friendly Habitat

Tuesday, 26 June, 6pm - 8pm @ the Canberra Environment Centre, Acton Peninsula.
Interested?? Just book here:
http://www.ecoaction.com.au/events/
or ring 62480885.

We now have DGR status!!

After much waiting our patience has finally been rewarded!! Ginninderra Catchment Group is now an endorsed **Deductible Gift Recipient**. The benefit of having DGR status is that donations made to GCG (and Frogwatch) are tax deductible!! Therefore, every kind donation can be deducted from your taxable income when you lodge your tax return!! Since the end of this financial year is only a few weeks away **this might be just the way for you to save on tax AND make a long-lasting and valuable contribution**!!
For more information on how to make a tax-deductible donation send us an email or give us a call!!!

ACT and Region Frogwatch
Post: PO Box 446, Holt, ACT, 2615
Office: Kippax Health Centre, Kippax Place, Holt
Phone: (02) 6278 3309
Fax: (02) 6278 3926
Email: frogwatch@ginninderralandcare.org.au
Web: www.ginninderralandcare.org.au

Cryptic Crypto's: Speciation & Biogeography in *Cryptoblepharus* skinks

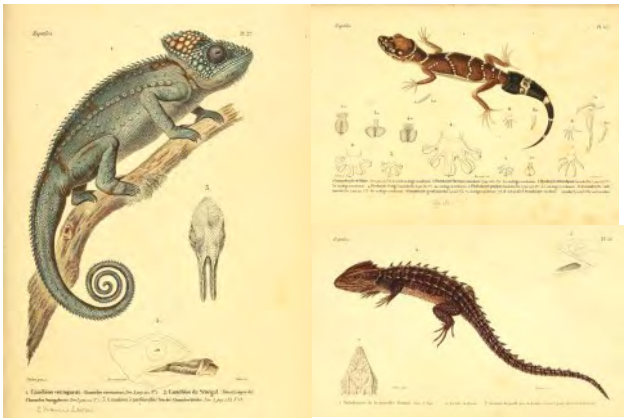
This summary of ACTHA's April '14 talk by Mandy Conway, all images provided by Moos.

Mozes Blom, Moritz Lab, ANU, was ACTHA's guest speaker at our 15 April 2014 meeting, where he spoke passionately about the *Cryptoblepharus* genus of skinks. *Murphy's Law prevailed on the night and for the first time in many years our Meeting was moved to a smaller room. Thirty-one members and guests turned out to hear Moos speak, which meant we were all squeezed in like cryptic sardines. Moos presentation was well worth the cosy atmosphere though!*

The origin of species

Born in the Netherlands, Mozes (Moos) Blom arrived in Australia one and a half years ago to begin his thesis at ANU's Craig Moritz Lab. Moos opened his talk with a brief history of speciation research.

The first slide, below, shows several pages from one of the earliest reptile guides, published in 1834, which provides a good example of reptile

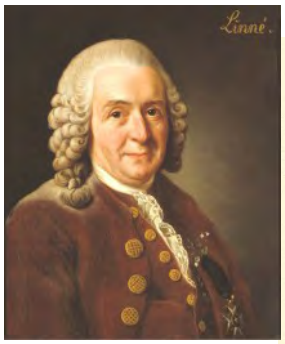


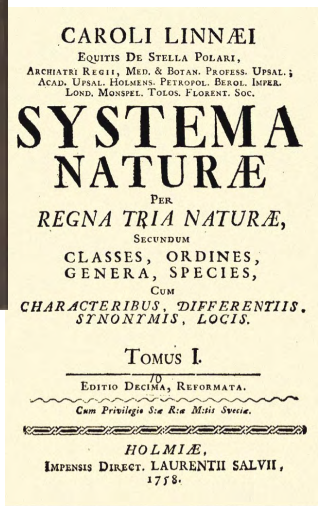
diversity which has had a long standing interest and has occurred over a long period of time. The habitats occupied by each species was described in great detail and drawings of the intricate features of many specimens were included.

Moos listed just some of the baffling issues which arise when studying many of the earth's species: what are the processes that promote and sustain diversification? how do new species arise and adapt to their habitat? how do we describe diversity? and what defines a species?

Species *"God created, but Linnaeus ordered"*

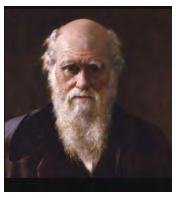
Carl Linnaeus (1707 – 1778) introduced the world to the speciation / taxonomic system when he published 'Systema Naturae' in 1758.





The book covered classes, orders, genera and species of many of the world's fauna. "He wrote that species were fundamental entities of groups of organisms that belonged to each other, building blocks of nature." Moos said. "He introduced a taxonomic system of certain relatedness within nature, where some groups are more related to others. He wasn't, however, saying that those natural processes bring about speciation."

Speciation



About 100 years later Charles R. Darwin (1809 – 1882) *at right,* and Alfred R. Wallace (1823 – 1913)

at left, agreed that species came from fundamental building blocks however there are natural processes which then act on individuals. The processes of natural selection can change populations, which result in more species emerging. "What I think is most important to realise when we talk about species is that they are just a snapshot of a continuous process, be it speciation or natural selection, and changes occur all the time. We are not only talking about species, but discrete entities which are still important to describe. By describing and analysing them, for example looking at characteristics, you can learn by looking at and

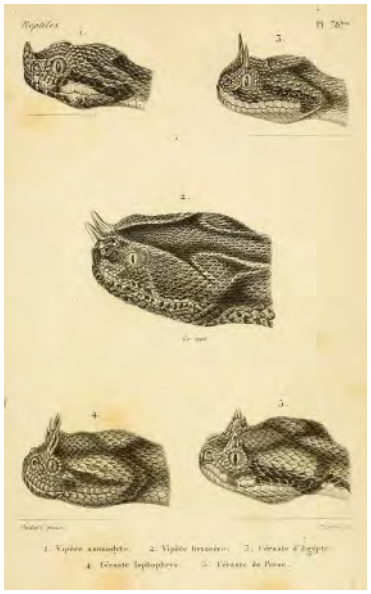
(Cryptic Crypto's cont'd...)

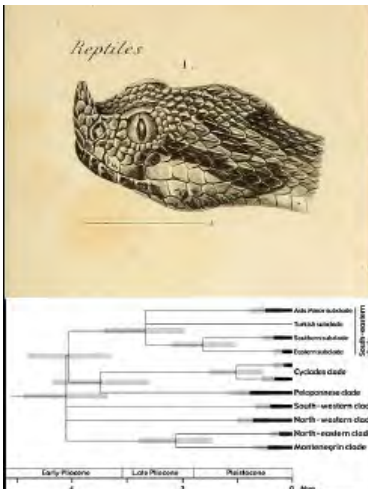
comparing them and learn when comparing them, the evolutionary history.

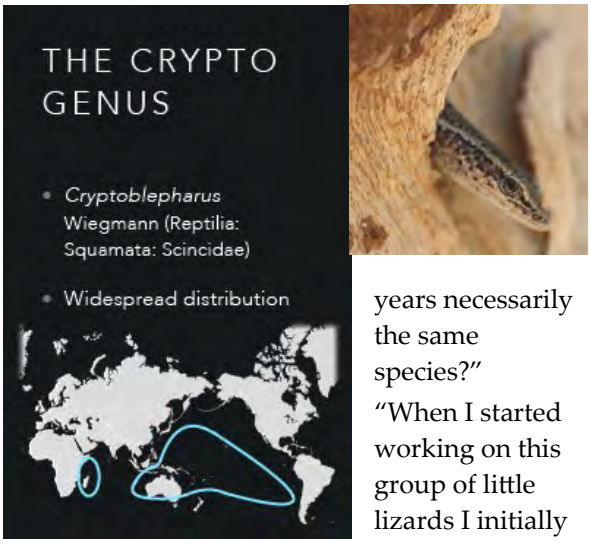
A biological species concept was introduced by Ernest W Mayr (1904 – 2005) and basically stated that 'Species are groups of potentially interbreeding natural populations, which are reproductively isolated from other such groups.' "What this means is that if animals cannot interbreed any more, like goats and sheep for example, then they can be considered a different species," Moos explained. "However, if they can still interbreed, then they might belong to the same species. As human beings, who have genes which originated from the Neanderthal era, we are realising that species do not necessarily live separate lives."

Species identification

How do we then identify species? Traditionally, a species identity has always been based on morphology. "With advances in genetic work over the past five years, we have been able to look more closely at animals within species. Tissue samples are taken from these animals, DNA is extracted and the DNA code is examined. Everybody has a DNA code, this is universal. The code is a combination of letters which stand for chemical entities, similar to a very long book. By comparing these sequences we can try to understand why some organisms are different from one another. The Eurasia vipers in this image look to be of the same species based on morphology, however the viper at top left has actually been isolated from the other vipers for a very long period of time. The question must be asked, are different geographic entities which look exactly the same and have been separated for millions of years necessarily the same species?"







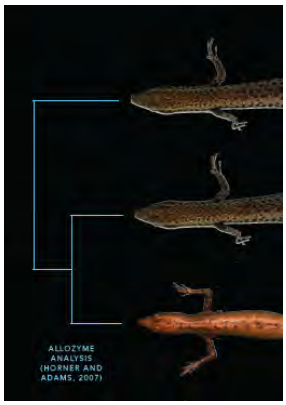
"When I started working on this group of little lizards I initially thought that perhaps I had picked the wrong genus for my thesis! The first couple of papers I read were very, very sad: '..this is a taxonomic nightmare..' '..stay away from this genus..' '..you should not come close to this genus..' But the more I read about this little lizard the more fascinated I became and the more I thought they would be an excellent species to use in my thesis study." Moos said, courageously.

Cryptoblepharus is a genus of small lizards, with the largest species measuring 55mm in length. They are sun loving and can be readily found during the day on trees and rocks. Interestingly, they have a very large distribution: on the east coast of Africa, all over Indonesia and Papua New Guinea, on many Pacific islands almost towards Chile, in Hawaii and also in Japan. There are about 25 species in Australia, which Moos has been working on to date.

Cryptoblepharus in Australia inhabit three distinct habitats: trees, rocks and the beach. Within these habitats the different species look exactly the same, however as soon as they move between habitats they seem to diverge rapidly in their phenotype. "Those found on trees are more brownish and stripy with short limbs,

whereas those found on rocks are more reddish and speckled with long limbs. When you look at these lizards side-on, the ones who live on

rocks are flatter than the ones who live on trees. The rock species tend to live on the red sandstone escarpments of Australia, and being so flat they are able to hide in the smallest of cracks." Moos explained.



Looks can be deceiving, however! An extensive study conducted in 2007, by Horner and Adams, using both morphological characters and allozymes (genetic markers), has revealed that some of the species which look very similar are actually more closely related to the ones that look totally different. The question is, how does this occur?

Within this *Cryptoblepharus* group, only 52% were identified as species based on both morphology and genetics. Remaining taxa were either cryptic or there was no genetic differentiation. "So when we say cryptic they look exactly the same but are genetically different. Then sometimes you see them as morphologically different but genetically they are identical. This is all very confusing." Moos said.

***Thesis Component Part 1*: Phylogenomics**

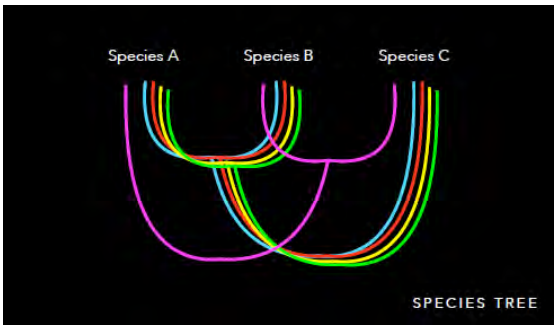
In the first part of his thesis, Moos wanted to test the 2007 studies and try to identify the relationship between species groups (which is still ongoing). The first step was to take some DNA samples and sequence them, in other words making the DNA code visible and comparing the similarity of the DNA from different species.

"What we assume is that things that have the same letters are more similar to one another and more related than the ones that have differences. In this slide, species A and species B have the same code, whereas species C has a different letter at the end. This is how researchers traditionally talk about genetics: we sequence one gene and the relationship between those species is based on this. However, we now have more and more techniques available to us which allow the sequencing of more and more genes. This slide shows that when I sequenced the same gene, the results remained the same. However, when I sequenced a third gene (pink line) it says something completely different. It doesn't mean that there is a mistake, it just means that some genes tell a different story. In the past, relying on the sequencing of just one gene may have resulted in wrong conclusions. So by sequencing more and more genes you can more confidently say that 'this is more closely related to this species' 'these two species are sister groups to one another'. And then we can more accurately describe the evolutionary history of the species examined."

Species tree

The aim of this part of the study was to ask:

- are there 25 Australian species?;
- assess the true relationships;
- did rock types evolve once or did this happen multiple times over the evolutionary history?



Preliminary outcome

There appear to be two major *Cryptoblepharus* groups within Australia; which might highlight two separate radiations of species. "Even though *Cryptoblepharus* is just one genus in Australia, there may have been different processes going on that may have led to different instances of diversification or that there have been two separate introductions into Australia and then subsequent radiations. This is very interesting from a biogeographical perspective." Moos said.

(Cryptic Crypto's cont'd...)

"The second thing I want you to notice is that there are repeated evolutions for similar eco-morphs. The red lines are the rock type whereas the black ones are all the arboreal ones. You would expect that these dramatic changes in phenotype would only happen once, however it seems to have happened multiple times over evolutionary history. Although this is all still a work in progress, these are quite interesting results from a preliminary analysis."

Thesis Component Part 2: **Phylogeography**

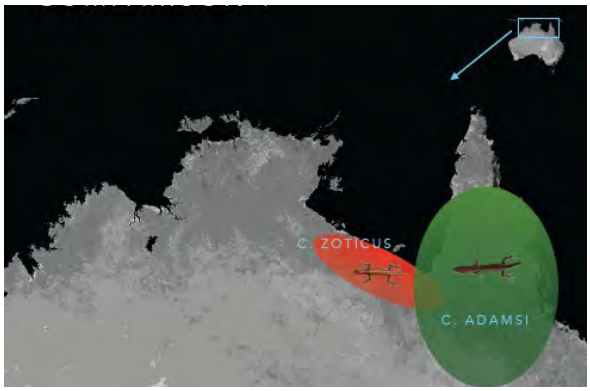
Moos went on to describe what he specifically wanted to do in this part of his thesis, and that is to look more closely at specific groups where species were very closely related to one another but looked totally different. "To do this I focused on two comparisons: two independent evolutionary events which were situated on different sides of Australia. The first area was in north-west Queensland, bordering on the Northern Territory (Comparison 1) and the second in the Kimberley's (Comparison 2)."

"To achieve this I needed a bigger sample set, which meant collecting more lizards in the field. So last year we went on a massive one month field trip. We started in north-west Queensland and drove all the way down into the Northern Territory, into Kakadu, and then on through the Kimberley in the West. During this field trip we collected lizards along the way, driving by four-wheel drive through a lot of monsoonal tropic and arid country; initially through very dry territory with boab trees and sometimes civilisation, and from the sandstone rocks in east Kakadu into Kakadu's beautiful green and lush areas."

"Along the way you see many other critters. This pic, *at left*, is of the Oenpelli Python, *Morelia oenpelliensis*, a Kakadu species, which is one of the largest pythons in Australia, reaching lengths of 4 - 5m. We also saw many spiny tailed monitors (*Varanus acanthurus*) and what I love about them is their spectacular back pattern, this beautiful honeycomb structure, they are just fascinating creatures.

We also encountered a lot of geckos, like this Northern Spiny-tailed Gecko (*Strophurus ciliaris*) with beautiful spines above its eyes."

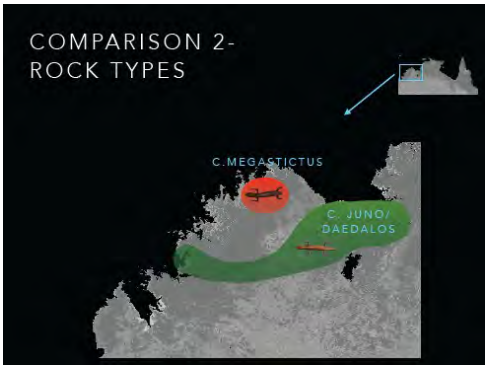
"We finally get to the rocky type of habitat where we know there is likely to be *Cryptoblepharus*. Finding them is one thing, but trying to catch them is another! We see them, we get close and then they dive under these rocks: and they are very big immovable rocks. In my first field season I took along my fishing rod. I must've looked rather funny walking through this very arid country with a fishing rod, without a single watering hole within a 100 km. radius. But I had a little piece of bacon on the end hoping to get the lizards to bite. But I had a little problem; they would nibble at the bacon but they would not bite onto it. So I looked at some lizard Youtube videos where people were able to entice lizards with a laser pointer. You basically point the light in front of their face and they frantically lick at it, thinking it is a little insect. They are so obsessed with it that they will follow it out of the rock crevice where I can then actually fairly easily catch them."



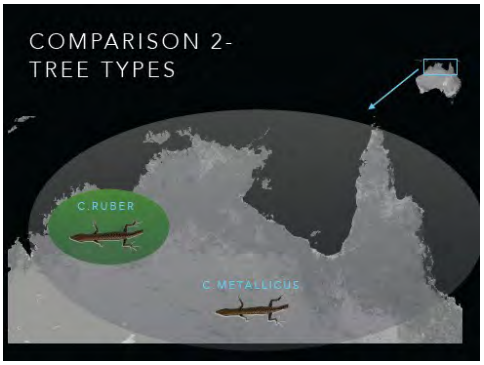
Comparison 1: *(above)*

"I succeeded in collecting both the arboreal *C. adamsi* and *C. zoticus* rock types, 80 lizards in total, and found *C. zoticus* to be a single group, with one transition from tree to rock habitat. There is likely to have been one colonisation event which has then gone on to colonise a whole area. So the differences are more of a geographical nature; a north and south clade (NT and QLD) of one species which are very isolated from one another due to a lack of rocky habitat between them."

(Cryptic Crypto's cont'd...)

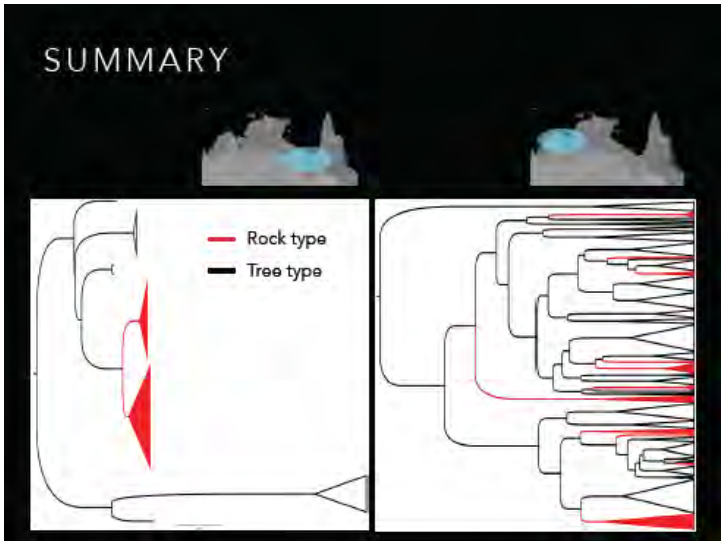


Comparison 2: Rock types
Lizards from the Kimberley clades, that is *C. megastictus* and *C. juno/daedalos*, were collected and their DNA sequenced.



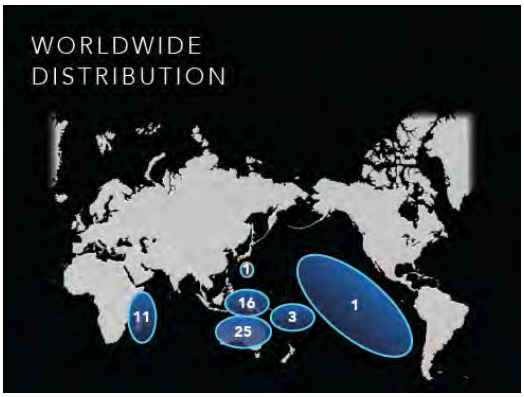
Tree types: Lizards from the cryptic Kimberley clades, *C. ruber* and *C. metallicus*, were collected. Moos emphasised that when he had them in his hands he could not tell them apart. Their DNA was also sequenced.

"Even though *C. metallicus* and *C. ruber* are morphologically exactly the same, they are very different genetics wise. A different story emerges with *C. juno/daedalos* and *C. megastictus* which occur multiple times within their respective arboreal species groups. So it seems as though they have developed multiple times from trees to rocks over time or have had ongoing individual exchange between morphologically different (trees and rock types) populations. This is fascinating because the morphological differences are staggering and leads to further questions involving the functional mechanisms promoting speciation. The evolutionary wheel spins really fast I think."



Thesis Component Part 3:
Global Biogeography

Members of the *Cryptoblepharus* group are still relatively young in evolutionary history; that is, they aren't lizard groups that have been present for millions and millions of years when continents were still connected. So how could they have colonised such a large area of our globe post continental-shift? Looking at species numbers it is even more staggering: Africa has 11 of these species, Australia has 25, PNG has 16, Fiji, New Caledonia and Vanuatu have 3 different species, there's 1 species in Japan and supposedly there is 1 species which exists from Hawaii all the way down to Easter Island and everywhere in between.



Perhaps undescribed diversity has occurred within the Polynesian distribution; it could be that we have never looked far enough. Could natural dispersal have occurred, or, as has been recorded in other literature, has this small lizard been able to survive on 'rafts' moving across the globe. Human assistance: another possibility is that they have been introduced through human colonisation, particularly in the Polynesian island region. "By looking at the genetics and amount of diversity within these groups you can actually try and estimate the timeline of arrival to those different places. The more difference there is then the older this group may be."

(Cryptic Crypto's cont'd...)

"To begin trying to understand how this *Cryptoblepharus* could have colonised such a large area of our globe, I started a collaboration effort with some other research units overseas. We now have collaborators in Africa who are conducting similar research."

Perspective

"To summarise my talk this evening I can honestly say that looks can be deceiving! Two things in the hand that look very similar can be very different. Similarly, things that look very different can actually be very similar. Secondly, these little lizards have evolved in a classic way, in the sense that they have been able to colonise different habitats very rapidly. Lastly, you can make inferences about the natural or human dispersal of these lizards just by looking at their genes.

Much remains to be discovered…

If you would like any further information on Moos' research then please feel free to contact him at:

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Australian National University
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Email: mozes.blom@anu.edu.au

Aussie lizards spreading salmonella to US kids

By Mike Stobbe
in New York

Australia's bearded dragons have joined the list of pets in the United States that can give you salmonella poisoning.

In the past two years, 132 people in 31 US states have been infected with a rare form of salmonella bacteria.

Thirty-one answered detailed questionnaires about their illnesses; of those, 21 said they'd handled bearded dragons - the popular lizard native to Australia.

Health investigators also found the rare bacteria in the terrarium of a bearded dragon tied to the outbreak.

They're calling this the first US salmonella outbreak caused by this kind of pet.

"We are confident bearded dragons are the source of the outbreak" said Casey Barton Behravesh of the Centres for Disease Control and Prevention, which released a report on the outbreak on Thursday.

Bearded dragons are desert animals that can grow to be about 50 centimetres long. Some of the lizards are cream and brown, others are red, orange or yellow. Some sell in pet stores for about $US70 ($A75.60) to $US100.

They may appear clean and healthy but still can be shedding bacteria, experts say.

The Centres for Disease Control officials warned that owners should wash their hands thoroughly after handling the bearded lizards and keep them out of kitchens, sinks and bathtubs.

They also should be kept away from small children.

There have been no deaths in the outbreak, but 42 per cent of patients have been hospitalised, an unusually high proportion.

This is probably due to the fact that a large number of the infected were children aged two or younger, who are more vulnerable to the bacteria, said Barton Behravesh, a veterinary epidemiologist.

The bearded dragons came from several pet stores, and no single chain or supplier has been identified as the source of the salmonella-infected lizards, she said. An investigation is continuing.

Other pets that carry the salmonella bug include frogs, toads, turtles, snakes, hedgehogs, chicks and ducklings. AP

THE CANBERRA TIMES Saturday, April 26, 2014
canberratimes.com.au

Fungus-chomping micro predators could protect amphibians from deadly skin disease

By Jennifer Frazer, Scientific American, 28 April 2014

Microbes that thrive in lakes happily consume the pandemic fungus that has caused declines in more than half the planet's amphibian species.

In 2012 a team of temperamental donkeys picked their way down the French Pyrenees carrying a payload of voracious protists. Donkeys wouldn't ordinarily be required to ferry single-celled microbes, but these tiny organisms happened to be inhabitants of the several hundred pounds of lake water that the donkeys were also carrying, whether they liked it or not. "It's kind of funny," says Dirk Schmeller, the scientist whose team hired the donkeys, "because it shows donkeys can help save amphibians."

What makes that unlikely scenario possible is the microorganisms' appetite for an equally minute chytrid fungus—a group of fungi with a swimming stage that resemble the ancestors of all fungi—called *Batrachochytrium dendrobatidis*, or Bd, which is wiping out amphibians worldwide. It turns out that a diverse collection of single-celled protists and tiny multicellular animals naturally hunt down and eat Bd in lakes, preventing the killer fungus from infecting frogs and other amphibians. Although Bd is an introduced fungus, similar fungi are abundant in lakes and a natural part of these micro predators' diets, so their ability to prey on Bd is not unexpected. What was unexpected was the gusto with which they can eat the invasive fungus in the wild. Scientists had previously shown in experimental lab containers that a few micro predators would eat swimming Bd spores, but a new study indicates that the hunt happens in real-world mountain lakes, and seems to be taking place on a scale large enough to significantly reduce amphibian infections and deaths in those lakes.

Schmeller, of the Helmholtz Center for Environmental Research in Germany, and colleagues published these conclusions in January '14 in *Current Biology*.

***Above**: This tree frog Hylomantis lemur (recently named Agalychnis lemur), was photographed in Cerro Azul, Panama, in 2007, before the chytrid fungus arrived. The fungus appeared at the site in 2009 and this tree frog species has likely become locally extinct. First noted when the golden toad and about half of the frog species disappeared in Monteverde reserve in Costa Rica in 1987, the killer fungus has been spreading eastward through the Central American highlands and also through a large portion of the Andes Mountains (likely from a separate introduction) ever since. Image: Justin C. Touchon, Smithsonian Tropical Research.*

The promising implication is that capitalizing on native microorganisms' Bd-feasting ability could cut down the pandemic fungus enough to boost amphibian survival, without relying on the iffy introduction of foreign bacteria or deployment of ecosystem-disrupting antifungal chemicals—two methods that have been proposed. Rather, protecting amphibians may be as simple as promoting the health and survival of the microbes that already live in a lake or introducing them where they've been lost or suppressed.

Bd was discovered killing amphibians globally in 1997. Theories abound regarding its origin and dissemination. One popular version is that the fungus was spread primarily via the international trade in frogs used for laboratory studies and early pregnancy testing (which makes it apparent how peeing on a stick was an Earth-shattering advance).

Schmeller had noticed that the lakes sampled in the high Pyrenees by colleague Matthew Fisher, of Imperial College London, were generally positive for Bd, whereas those closer to him were negative. He decided to see if he could

find out what might be driving the difference. He first suspected water quality, but their initial water analysis revealed little. So Schmeller and his colleagues started counting the number of predatory microorganisms in their samples. These include both active predators that seek out prey as well as filter feeders who prefer to let their dinner come to them.

When the team counted the number of these microorganisms in water from lakes with high and low prevalence of Bd, a striking difference leapt out: the lakes with lots of Bd were impoverished in microbial predators.

This wasn't enough to prove that the microbes were responsible for the scarcity of disease, however. In a series of further experiments, Schmeller and a team of colleagues in Germany, France, Belgium and the U.K. showed that introduced Bd zoospores survived far longer in water brought back (by the donkeys) from high-prevalence lakes than in water from low-prevalence lakes. They also showed that filtering water from low Bd-prevalence lakes significantly reduced its ability to kill Bd zoospores—presumably because the microbial predators had been filtered out.

Furthermore, tadpoles housed in Bd-spiked water from low-prevalence lakes had lower rates of infection and less severe infections than those residing in similarly spiked water from high prevalence lakes or in heat-treated (and presumably sterilized) water from low-prevalence lakes. The same effect persisted when the tadpoles were housed with individual species of a microscopic predatory animal, one of which was isolated from a Pyrenean lake.

The striking ability of the microorganisms to eat fungal spores and protect amphibians—and the fact that this protection did not rely on a combination of environmental factors—was a great surprise to the scientists. "We expected a reduction but not to this level," Schmeller says, "[but] every pattern we can see in the wild can be explained by the microorganisms."

It's been long known that native micro predators will target prey in the size range of Bd. What has been lacking, however, is finding out whether enough of that predation is happening to matter, says Pieter Johnson, associate professor of ecology and evolutionary biology at the University of Colorado Boulder, who has studied the role that predators of parasites and parasite alternate hosts can play in disease dynamics, but who was not involved in this study. That was something this study directly addressed, he says, and the strength of the connection between the predators and patterns of infections surprised him.

In principle (although such a practice requires much further testing), these results point to a simple, relatively natural solution to ponds plagued with Bd: boost native micro predator populations. This could be accomplished by maintaining the natural state of pristine lakes and preventing invasive species from getting in. In other lakes it could take the form of removing introduced species such as fishes (often stocked for anglers in mountain lakes that were originally fishless) that eat micro predators. In lakes where Bd is a problem, once the conditions that suppress micro predators have been reversed or removed, ecologists could even try lake water microbial transfusions, similar to the way faecal bacterial transplants can help re-establish ecological balance to human guts ravaged by antibiotics or infection. Because a threshold of Bd density is needed to infect any particular frog, it is probably not necessary to wipe out the fungus to protect amphibians. "In most cases its either not possible or not even practical to really try to eradicate disease from a system," Johnson says. "But if you can figure out ways to manage the system that actually keeps disease levels at some desirably low level, then that could actually be a really cost-effective way to approach certain diseases."

Andrew Blaustein, a professor of integrative biology at Oregon State University who has also studied micro predators' effect on Bd and their possible use as a biocontrol agent (and was not involved in this study), agreed that the paper study was both well conducted and ground breaking in its probing of complex, real-world lake communities.

In retrospect, Blaustein says, past difficulties with experimental ponds that were stocked with zooplankton (which include many micro predators) Bd and amphibians could have offered a clue to the tiny predators' surprising

lethality. In these artificial environments it has traditionally been hard to build up sufficient quantities of Bd for experiments. The reason, he said, may be that the micro predators were so good at eating it.

Spotted Quoll, *Dasyurus maculatus*, sighting

By Margaret Ning, ACTHA, April 2014

Crawling along Gungahlin Drive in two slow lanes of traffic at 8.45am early in April, I looked out the driver's window in time to see the carcass of a road-kill quoll. Because it was in the middle of the two lanes of traffic it was still in good recognisable condition, ie I saw a foot or so of rusty brown undamaged side/flank with cream coloured spots. (No sign of head, feet or tail, but the undamaged side was sufficient for a confident ID.) Within forty five minutes of my calling Geoff and asking him to pass on the information to TaMS rangers, Murray Evans of ACT Conservation Planning and Research had possession of the carcass and was back in his office letting me know that its entrails had been eaten earlier (a raven perhaps?), and that a lane-changing vehicle had damaged it a bit more. DNA tissue samples were taken and it has been lodged in the CSIRO Wildlife Collection.

Apparently it is one of only a handful of Spotted-tailed Quolls to be found in the Canberra region in the last five years. I had heard of another quoll road kill in Tuggeranong a year or so ago, and friends have told me of a newspaper report of one up a tree in Charnwood some years back. Google 'quoll Charnwood tree' to read more on that one. Murray told me it is normally dispersing males that come to our attention. They are normally found in forested country, and are active climbers.

The Spotted-tailed Quoll (previously known as the Tiger Quoll) is an endangered species as numbers have declined seriously over the last few decades. In a Department of the Interior booklet released in 1968 '*Wildlife in the ACT*' two quoll species were listed as being in the ACT; the Spotted-tailed Quoll and the Eastern Quoll, *Dasyurus viverrinus*, which is now considered extinct in mainland Australia.

I do wish I was reporting a live quoll sighting at our Nimmitabel property, rather than Canberra road kill, but hopefully the poor little thing is an indication that there is an enduring population not too far away from here.

Below: ★ marks the location of where I found the quoll on Gungahlin Drive, roughly between Gungahlin Cemetery and the ephemeral lake near Gungahlin Homestead.

ACT Herpetological Association Inc.

2014 - 2015 Membership Renewal now due

Membership renewal runs from 1 July 2014 to 30 June 2015 and costs **$10** for a single or family membership. Herpetofauna is an additional **$12** for two issues.

Payment by our August meeting would be appreciated.

OR please make your cheque out to ACTHA Inc., fill in your details below and send it to:
ACTHA Membership Officer, PO Box 160, Jamison ACT 2614.

Surname: ***Given name(s):***
Address:
State/Territory: ***Postcode:***
Telephone (h): ***Telephone (w):***
Email:

OR you could make a direct deposit to ACTHA's bank account:
St George Bank, BSB 112-908, A/c 040003311

PLEASE! *Don't forget to note your name so we can identify whose payment it is on our Bank Statement.*

Queries? please call Margaret on 02 6241 4065 (h).

Plenty more frogs in the gene pool?

Genetic Impacts of Chytridiomycosis in Alpine Tree Frogs

Amy Macris, ANU Fenner School, will be giving a talk on the above subject on
Thursday 19 June, 8pm, at the Uniting Church Hall,
corner of Scrivener/Brigalow Streets, O'Connor.

Chytridiomycosis has been labelled the "worst wildlife disease", and threatens hundreds of frog species worldwide. Amy's project investigates whether genetic diversity is lower in populations of Alpine Tree Frogs exposed to this fungal disease, compared to unexposed populations.

This talk has been organised by Graham Scully from the National Parks Association.

All welcome, entry free, supper served

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