FROGCALL

THE FROG AND TADPOLE STUDY GROUP NSW Inc.
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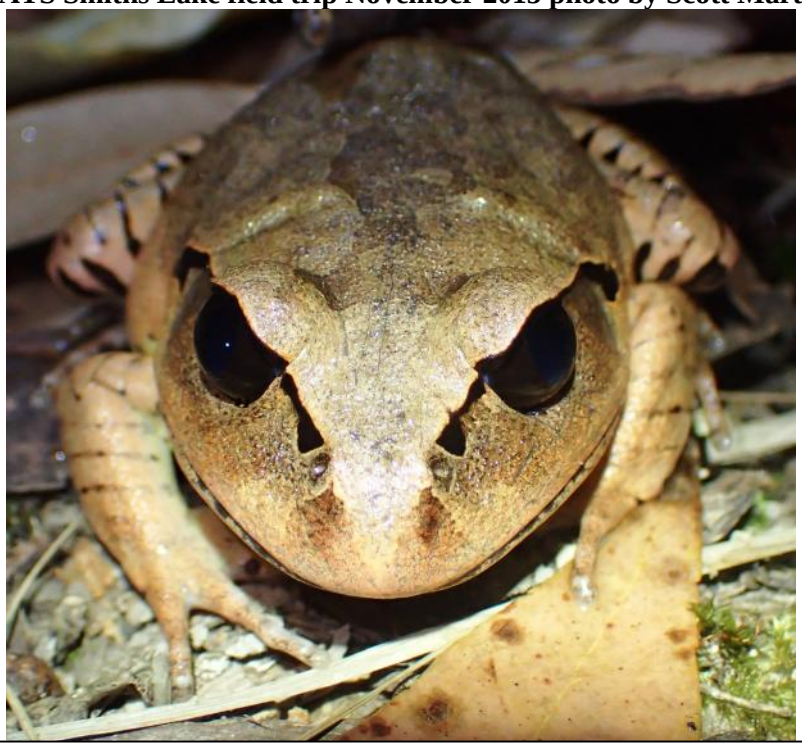
NEWSLETTER No. 148 APRIL 2017

Mixophyes fasciolatus **Great Barred Frog**
FATS Smiths Lake field trip November 2015 photo by Scott Martin



You are invited to our next FATS meeting

Arrive from 6.30 pm for a 7pm start.

Friday 7 April 2017

FATS meet at the Education Centre, Bicentennial Pk, Sydney Olympic Park

Easy walk from Concord West railway station and straight down Victoria Ave.
By car: Enter from Australia Ave at the Bicentennial Park main entrance, turn off to the right and drive through the park. It is a one way road.
Or enter from Bennelong Road / Parkway. It is a short stretch of two way road.
Park in P10f car park, the last car park before the exit gate.

FATS meeting format Friday 7 April 2017

6.30 pm Lost frogs seeking adoption: 2 Green Tree Frogs *Litoria caerulea*, 1 *Lt peroni* and 2 *Lt gracilenta.* First time frog adopters and children have priority. Please bring your FATS membership card and cash $50 donation. Your current NSW NPWS amphibian licence must be sighted on the night. Rescued frogs can never be released. Whilst rescued frogs out of quarantine may appear well, we encourage you to have an experienced herp or "exotics" vet check them over, for worming or other health assessments and possible medication, as soon as possible and annually. Sorry we have no EFTPOS

7.00 pm Welcome and announcements

7.30 pm Main speaker: Arthur White The response of the scientific community in Australia to the decline of native frogs.
Other speakers: Fabian Byers: Smiths Lake Field trip report
Jilli Streit: Adventures in Florida and Costa Rica trip

9.30 pm Show us your frog images. Tell us about your frogging trips or experiences. Guessing competition, continue with frog adoptions, supper, relax and chat with frog experts.

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NEW FROG SPECIES FOUND IN NEWCASTLE

New Australian frog species, Mahony's Toadlet (*Uperoleia mahonyi*), found in Newcastle. *IMAGE CREDIT: Sheena Martin* A tiny species of frog that's new to science has been discovered just 10km from Newcastle Airport.
Continued report from FATS' February 2017 article.

A NEWCASTLE BIOLOGIST has made a remarkable discovery – a species of frog previously unknown to science, found in Port Stephens, just 10km from Newcastle Airport. Dr Simon Clulow, a biologist at the University of Newcastle, said it was the frog's unique marbled black and white underbelly that led him to realise he had found something special.

"The distinctive marble pattern on the frog's belly, along with other features makes it quite different to any other frog species in this part of the world and led us to believe straight away that we had found a new species – it was an incredible moment," said Simon, who first spotted the new frog at a sand swamp at Oyster Cove. Discoveries of new vertebrate species are rare, but particularly so within developed areas like Newcastle, which is the second most populated area in NSW after Sydney.

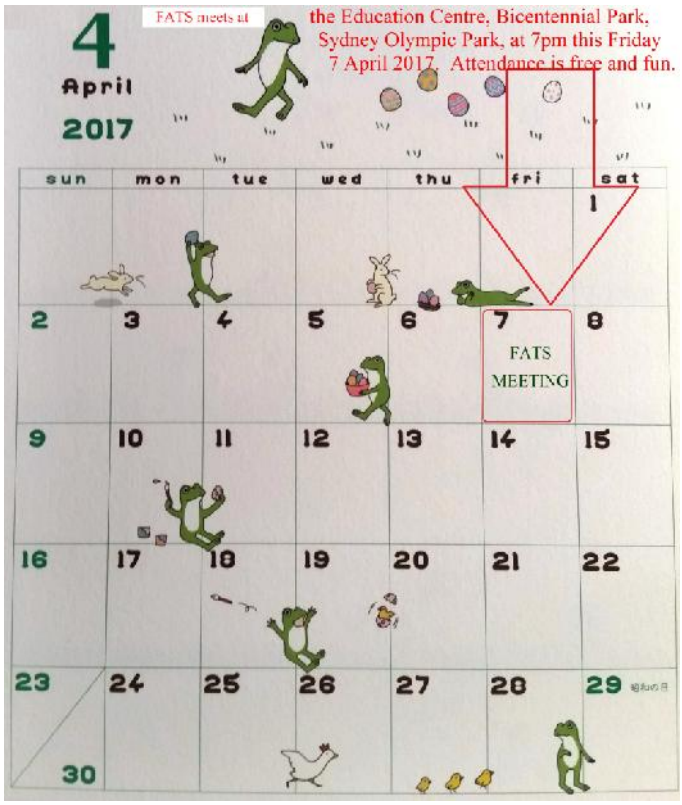
The find is also of significance given most new species 'discoveries' these days are based on differences in genetics uncovered in the lab, Simon explained. "It's almost unheard of to pick up a vertebrate in the field and know instantly, based on appearance alone, that it is a new species," he said.

The new frog is tiny – it fits on a human fingertip – and it is effectively camouflaged, living well concealed under a layer of vegetation or sand, which likely contributed to it managing to evade discovery for so long.

New species discovered by University of Newcastle biologist and frog expert, Dr Simon Clulow, Image: Sheena Martin

The new species has been named Mahony's Toadlet (*Uperoleia mahonyi*) after Simon's supervisor and mentor, Professor Michael Mahony, who is a renowned frog expert and conservationist. Despite the name, Mahony's toadlet is not to be confused with a toad. It is a native Australian frog species named for the glands on its back, which resemble the toads or Europe and America.

The new species is thought to have a highly restrictive distribution, occurring in select coastal sand swamps in the Myall Lakes, Port Stephens and Central Coast. "The frog is a habitat specialist, living exclusively on a particular type of leached white sand substrate, which could make it more at risk from threats such as habitat loss and sand mining," said Simon. **Find out more about the discovery and see the new species in action in this video from the University of Newcastle: by AG staff writer 3/11/2016 Forwarded by Steve Weir**
http://www.australiangeographic.com.au/news/2016/11/new-frog-species-found-in-newcastle
https://www.youtube.com/watch?v=fyOCgc_SMr8
https://www.youtube.com/watch?v=iizdiruBUqQ



LAST FATS MEETING 3 FEBRUARY 2017

Marion Anstis welcomed visitors and members to the meeting. After announcements, Arthur White spoke about the long term changes in the frog community in Myall Lakes National Park, post sand mining. Prior to the 1970's mining companies did not put back the sand they had mined. Some frog species disappeared and others previously not detected, flourished. 16 years post mining, bell frogs died out. Arthur is an entertaining and knowledgeable speaker, who is passionate about frogs and habitat protection. As always, those at the meeting were enthralled by the presentation. **Continued page 11**

2017 FATS FROG-O-GRAPHIC COMPETITION

In 2008 FATS conducted our first Frog-O-Graphic competition. This proved very successful as we have many creative people in the group. So start photographing. We look forward to seeing your entries. New comers to photography are encouraged to submit entries.

FATS members' 2017 Frog-O-Graphic competition opens

1st May and closes 31st August, 2017

Junior and Senior Best Frog Image,
Junior and Senior Best Pet Frog Image,
Junior and Senior Most Interesting Image,
People's Choice.

Category winners to be decided by a panel of judges. **People's Choice** will be decided by everyone present at our 1st December FATS meeting. All entries are by email to **photos@fats.org.au Please state: your name, confirm that you are a financial FATS member, age if under 18, whether the image is of a pet frog, if you are new to frog photography and your contact phone number.** Maximum 6 entries per person. Maximum attachment size 6 MB. Fabulous prizes will be awarded for each category. Entries must be original and your own work. The winning entries may be featured in FrogCall, FATS 2018 calendar and other FATS publications. **Arthur White**

AMPHIBIAN LICENCE RETURNS DUE NOW

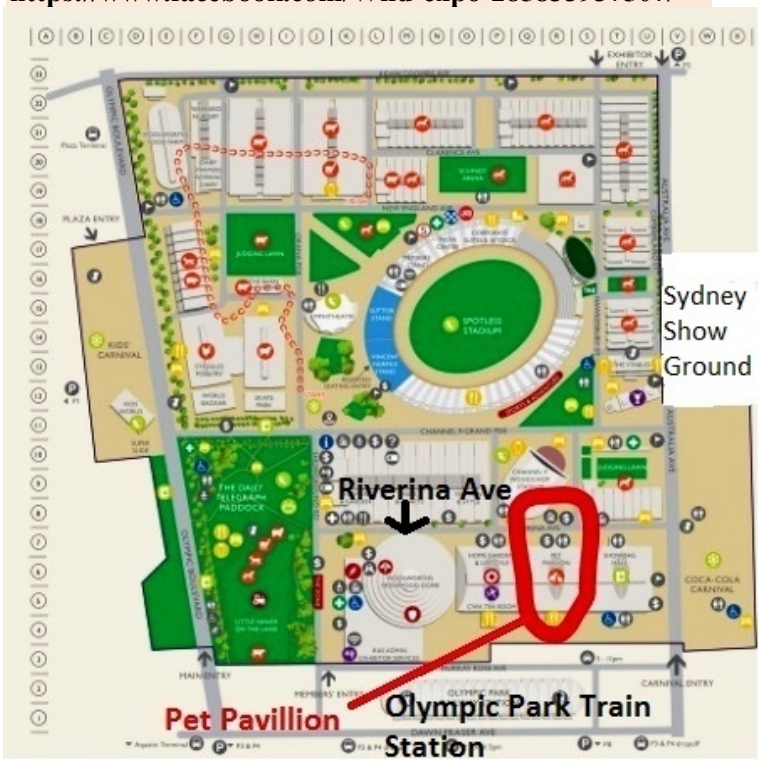
All frogs and tadpoles are protected in NSW under the National Parks and Wildlife Act. It is against the law to take them from the wild to keep as pets. This will ensure that risks to wild populations from illegal collection and key threatening process such as chytrid fungus- Infection of frogs by amphibian chytrid causing the disease chytridiomycosis and other diseases are minimised. Licence holders must keep records of their native animal pets in an electronic record book. If you hold a Native Animal Keeper Licence you must keep records. The e-book, is an **easy-to-use web-based record book.**
http://www.environment.nsw.gov.au/wildlifelicences/frogkeeperslicence.htm
http://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences/native-animals-as-pets/native-animal-keeper-record-book

WORLD FROG DAY WAS ON 20 MARCH 2017

SYDNEY ROYAL EASTER SHOW 17&18 APRIL 2017

The 2016 fantastic judges and organisers Lee Webley, Brad Walker, Fran Grant (Hawkesbury Herp Society), Peter Birch, Ernie Chan and Anthony Stimson.

Visit FATS at the Sydney Royal Easter Show 9.30 am to 5 pm, 17 and 18 April at the Home, Garden, Lifestyle (and Pet) Pavilion P6 on show map, Riverina Avenue. Frogs, lizards, small monitors, dragons and snakes will compete for prizes and be on display.
http://www.wildexpo.com.au/default.htm
https://www.facebook.com/Wild-expo-285833937507/



FATS AGM 7PM 4 AUGUST 2017

The FATS Annual General Meeting will be held during the August meeting on Friday 4 August 2017 at the Education Centre, Bicentennial Park. At that meeting, all positions on the FATS' executive become vacant. We are seeking nominations for the following positions: President, Chairperson / Vice-President, Secretary, Treasurer, Membership Officer, Website and Facebook Manager, Field Trip Convenor, Frog Help Coordinator, Editor, general committee members and Events Co-ordinator. **Arthur White President**

AUSTRALIAN SCIENCE SUPERHEROES JODI ROWLEY

During National Science Week in August 2016, Australia's Chief Scientist launched the #5ScientistPledge to recognise Australian Scientists. Now, we're shining a light on some of these Australian science superheroes with a new tag #AusScienceHeroes.

Jodi Rowley Curator, Amphibian & Reptile Conservation Biology, Australian Museum Research Institute and UNSW Sydney, NSW @jodirowley

1) What is your science superpower?

I'm a frog detective. I spend my time searching the swamps, streams and ponds of the world in search of frogs. My goal is to figure out how many species of frog there are, how they are doing and how we can ensure that frogs are around for future generations.

2) The year is 2030. How has life changed as a result of your research?

I will have helped ensure that the chirps, chirrups and croaks of frogs can still be heard calling from our backyards and beyond – that frogs will still be filling their vital role in the environment, helping to support healthy ecosystems. We need them around!

3) What drew you to science in the first place?

Curiosity and passion. I grew up in the city, but once I started getting out and seeing frogs, I fell in love (it's their toe-pads and their amazing eyes!). When I realized how important frogs were for the health of our planet, I decided to do whatever I could to help understand and conserve them.

4) When you're not wearing your science superhero cape, what do you get up to?

I keep my science superhero cape on under my normal clothes most of the time- science is my passion! But I do enjoy growing veggies on a community garden plot, spending time with friends and family, and photography. I also enjoy talking or writing about frogs at any opportunity!

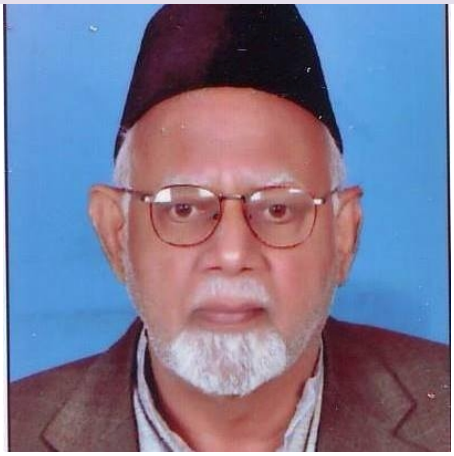
http://www.chiefscientist.gov.au/2017/02/australian-science-superheroes-jodi-rowley/

FATS FACEBOOK FRIENDS FROM ALL OVER THE WORLD

Prof. Dr. Muhammad Sharif Khan (see page 5) one of our newer FATS Facebook friends, who has been posting regularly to our page, received the life time achievement award, given by the Zoological Society of Pakistan (ZSP), for the year 2014. The award was conferred during the 34th Pakistan Congress of Zoology (international) held at Bahauddin Zakariya University Multan, on 25th February, 2014.

Dr. Khan pioneered the study of herps in Pakistan. Dr. Khan has searched almost every corner of Pakistan for reptiles and amphibians and discovered 34 new species, which include 11 snakes, 15 lizards and 8 amphibians. Dr. Khan has worked on different research projects with WWF-Pakistan and Pakistan Science Foundation. He has supervised a number of M.Sc theses. After his retirement, he donated all his collection to the Natural History Museum, Government College University, Lahore, which includes a countless number of different species of amphibians and reptiles. Dr. Khan has trained a number of young scientists, which are forwarding his mission. In recognition of his contribution to the field of Herpetology Dr. Khan was also awarded the Zoologist of the year award in 2002.

The Zoologists, who gathered in Dacca in 1968 on the occasion of the Annual Conference of Pakistan Association for the Advancement of Science, decided to form a society for promotion of science of zoology and an all branches of science, both pure and applied. In order to promote science by organizing seminars, symposia and conferences throughout Pakistan, moreover, providing facilities for publication of the research work being done in the country. The Society has existed since 1968.



FATS is very fortunate to have such a diverse international membership on Facebook. Whether you are a scientist, member of a family, a student, photographer, pet owner or just enthusiast, we all share the love of amphibians. **MW**

Amphibians of Pakistan, Reptilia European Herp Magazine No56 2/2008. The full article is in the files on FATS Facebook page.

One of our newer 2,040+ FATS Facebook members is Prof Muhammad Sharif Khan. Here are some extracts from his article.

Pakistan is generally an amphibian-poor country because of its prevailing arid environmental conditions. However, with the humid riparian conditions in the Indus Valley, torrents and streams in the northern Himalayan sub-mountainous region, and the subterranean water channels in the western Balochistan highland, there are 25 amphibian species known from Pakistan (KHAN, 2002, 2004, 2006). They belong to four families: Bufonidae, Megophryidae, Microhylidae, and Ranidae.

This article is an overview of the amphibian fauna of Pakistan, with notes on their morphology, distribution, and habits.

CANE TOAD HAVOC NOT BAD NEWS FOR ALL NATIVE ANIMALS, SOME OF WHICH ARE THRIVING

Cane toads have unleashed havoc in Australia but many species are adapting and fighting back for survival. (photo ABC News: Mitchell Denman Woolnough)

As the cane toad continues its march across Australia, travelling up to 60 kilometres a year, it is not bad news for all animals in its path.

The black-headed python, which is found across northern Australia, appears to be increasing in numbers and is one of the winners of the toad invasion, Professor Rick Shine from the University of Sydney says. "They used to be very rare, we used to get excited if we saw one every couple of years. These days, we see them every week," he said, adding that was likely because the goanna, which eats the python's eggs, is itself a victim of the cane toad.

Professor Rick Shine says cane toads aren't the worst thing to happen to Australia's environment. (photo ABC News: Mitchell Denman Woolnough)

"When you perturb a system like bringing in cane toads, it may be devastating for some species, but they may actually be a benefit for others," Professor Shine said.

Goannas, king brown snakes, freshwater crocodiles and the northern quoll all seized on the cane toad as a source of food as it arrived in their habitats.

But it caused big declines in their populations, in some places of up to 95 per cent, as the toxin stored in the parotid glands on the toad's shoulders can cause a fatal heart attack for those sensitive to it.

Ecologist and Darwin snake catcher Tom Parkin has reviewed the data collected on snakes in Darwin before and after the cane toad's arrival.

"Prior to toads arriving, on the call-outs in Darwin we'd see 10 or 20 king browns a year; since the toads have arrived that's dropped down to one or two, if we're lucky," he said.

"It seems like the moment the toads arrived in Darwin, the king browns disappeared."

King Brown snakes seized upon cane toads as food when they were introduced to Australia. (photo Darwin Snake Catchers: Tom Parkin)

Animals watching what they eat

However, not all species have suffered equally.

"For the rest of the ecosystem it seems that toads aren't such a big problem after all; most native species stay about the same number they were before and some of them actually increase after toads arrive," Professor Shine said.

Animals like tree snakes and frogs appear to be more careful with their diet.

Matt Greenlees, who also works in the Shine Lab at the University of Sydney, was studying native frogs at Fogg Dam near Darwin before the toad invasion, and said the marbled frog, the giant burrowing frog and Dahl's aquatic frog were three species most inclined to try and prey on toads.

"They're really rapidly able to learn to not eat them, so they must find something about them that's distasteful, whether or not it's recognising the toxin, or the toads just don't taste very good," Dr Greenlees said.

"We see that they're able to learn, particularly if they're encountering small enough toads, that it's not going to give them a fatal dose of toxin."

Dahl's aquatic frog has learned not to eat cane toads. (photo University of Sydney: Dr Matt Greenlees)

That is a behaviour scientists are encouraging in the big predators ahead of the next wave of the cane toad army, which has reached the headwaters of the big Fitzroy River system in Western Australia's Kimberley.

This involves releasing small cane toads or tadpoles ahead of the cane toad front, so that animals which eat them get a smaller amount of toxin. It is enough to make them ill, but not enough to kill them.

And feeding animals cane toad sausages made from minced cane toad and laced with a substance to make diners feel a bit unwell has worked with northern quolls in Kakadu National Park.

"You seem to be able to teach them that these things that look and smell like cane toads and taste like cane toads are going to make you sick, if you accidentally grab one you let go of it, and go and eat your legitimate prey," Professor Shine said.

"We see with some of the little marsupials, before you train them, they jump on anything you throw in the cage to eat.

"But after you train them, they jump over to it, they give it a couple of sniffs to check whether it's a cane toad or not before they grab it. It's just that cautious approach."

Researchers are teaching northern quolls to identify the toads and avoid eating them. (photo Jonathan Webb)

Cane toads not the worst thing to happen. Despite the community alarm about the cane toad, and an obvious initial impact on some species, Professor Shine does not believe it is the worst thing to hit Australia's environment.

"The toad's had a big impact, but probably not as big an impact as the difference between a good wet season and a bad one," he said.

"In my opinion the toad doesn't rank up there with feral cats, for example."

Professor Shine has said that as far as he is aware the cane toad has not caused any species to become extinct in Australia.

In Queensland, where the cane toad has been present since 1935, animals like goannas are recovering in number.

"I'm optimistic that it's a hell of a thump on the head when the toad first hits the ecosystem, but the system does then recover over decades," Professor Shine said.

However he said there was no possibility we would ever eliminate cane toads from Australia.

"I think they'll become much less common; there's plenty of predators out there like rodents and birds and insects that love to eat them that will reduce their numbers," he said.

"We just have to learn to accept that fact and we have to try to help our wildlife deal with the problems that the toads have introduced."

Black-headed pythons are increasing, and are considered a winner of the toad invasion. (photo ABC News: Mitchell Denman Woolnough)

By Helen Pereira
http://www.abc.net.au/news/2017-03-04/native-animals-recovering-after-cane-toad-havoc/8317384

Forwarded to FATS by Marion Anstis and Fred Parker

FINGERPRINT TECHNIQUE SPOTS FROG POPULATIONS AT RISK FROM POLLUTION

Researchers at Lancaster University have found a way to detect subtle early warning signs that reveal a frog population is at risk from pollution. Worldwide, amphibian populations are declining due to habitat loss, disease and pollution which is cited as a major threat to their survival. Scientists publishing in Scientific Reports, have found evidence of stress in tadpoles taken from ponds most impacted by pollution caused by nutrients and pesticides. They say the technique they used to spot these changes could offer an early warning system for populations at risk.

Working over a three-year period they looked at common frog populations in urban and rural ponds subject to varying degrees of pollution. Using a special kind of biochemical 'fingerprinting' detected via infrared spectroscopy, the team looked at tissues taken from tadpoles as well as frogspawn to examine their biochemical makeup -- searching for markers such as glycogen which can vary as the organism responds to stress. The team found strong evidence of higher levels of stress in tadpoles living in those ponds most impacted by pollution, more so than frogspawn embryos, which are protected to some degree by their jelly coat.....

Prof Frank Martin of the University of Central Lancashire who has pioneered biospectroscopy methods in both medical and environmental applications, said: ""What we have is a rapid, cost-effective tool for assessing subtle effects of pollution in a vulnerable species. The next steps would be to establish a database of fingerprint spectra of different tissue types as well as non-affected 'control' organisms to compare to pollutant-affected organisms."

This is the first time we have been able to show that infrared spectroscopy of this kind can pick up on the differences between tadpole populations which have been exposed to low but varying levels of pollution. **EXTRACTS Materials provided by Lancaster University. Journal Reference: Rebecca Strong, Francis L. Martin, Kevin C. Jones, Richard F. Shore, Crispin J. Halsall. Subtle effects of environmental stress observed in the early life stages of the Common frog, Rana temporaria. Scientific Reports, 2017; 7: 44438 DOI: 10.1038/srep44438 24 March 2017 HERPDIGEST - VOL. 19 ISSUE #20 DATE-3/27/17**

GIANT SALAMANDERS, GECKOS AND OLMS: VANISHING SPECIES DIVERSITY IN SIBERIA-STUDY OF THE DEVELOPMENT OF AMPHIBIANS AND REPTILES THROUGH TWELVE MILLION YEARS OF GEOLOGICAL HISTORY

Together with an international team, Senckenberg scientist Professor Dr. Madelaine Böhme studied the development of the amphibian and reptile fauna in Western Siberia during the past twelve million years. In their study, published in the scientific journal Peer J, the scientists demonstrate that the species diversity of both groups of animals was noticeably higher in the past than it is today. Among others, for the first time the researchers discovered an Asiatic representative of the extinct frog family Palaeobatrachidae as well as evidence of a giant salamander with a length of up to 1.80 meters.

The Siberian Salamander, four species of brown frogs (genus Rana), four species of toads, one green frog (genus Pelophylax), two lizards and five species of snakes -- these 17 species represent the entire recent amphibian and reptile fauna of Western Siberia, which therefore counts among the regions with the lowest species diversity regarding these animal classes in all of Eurasia and Northern Africa. "But this was not always the case," explains Professor Dr. Madelaine Böhme, director of the Senckenberg Centre for Human Evolution and Palaeoenvironment (HEP) at the University of Tübingen, who continues, "Our most recent study shows that the number of amphibian and reptile species used to be much higher in the course of geological history."

The international team of scientists around the paleontologist from Tübingen and Dr. Davit Vasilyan of the JURASSICA Museum in Porrentruy examined fossils from more than 40 excavation sites in Western Siberia, spanning the past twelve million years. These fossils were collected during 40 years of research activity by their Russian colleague, Dr. Vladimir Zazhigin. "We were able to identify more than 50 different species -- from salamanders and frogs to scaled reptiles and turtles. This exceeded even our boldest expectations," says an elated Böhme. Among the team's findings was evidence of a giant salamander, a group of tailed amphibians with a length of up to 1.80 meters that today are only found in rainy regions of Japan and China. Equally unexpected were voucher specimens of several crocodile newts, whose surviving relatives live in modern-day China and Vietnam.

"In addition, for the first time we were able to discover an Asiatic representative of the extinct frog family Paleobatrachidae," adds Böhme, and she continues, "And we also rediscovered an 'old acquaintance' among the fossils: The Siberian Salamander already inhabited the region beyond the Ural Mountains as early as twelve million years ago." Modern representatives of this amphibian genus have adapted to the hostile climatic conditions and survive temperatures as low as minus 40 degrees Celsius frozen in the soil.....

"The total of our findings documents Siberia's varied biodiversity and the dynamic climate history of this region: Within a few hundred thousand years, extremely wet regions with four times the current precipitation transformed into areas with an arid steppe climate. The increasingly cooler temperatures likely led to the subsequent loss of numerous species of amphibians and reptiles," adds Böhme. **EXTRACTS 23 March 2017 Senckenberg Research Institute and Natural History Museum Journal Reference: Davit Vasilyan, Vladimir S. Zazhigin, Madelaine Böhme. Neogene amphibians and reptiles (Caudata, Anura, Gekkota, Lacertilia, and Testudines) from the south of Western Siberia, Russia, and Northeastern Kazakhstan. PeerJ, 2017; 5: e3025 DOI: 10.7717/peerj.3025**

WORLD'S FIRST FLUORESCENT FROG

The South American polka dot tree frog gives off an "intense greenish-blue glow" under UV light, scientists say. A new light has been cast on the world of frogs following a dazzling discovery in South America. Scientists announced last week that they'd discovered the world's first known naturally fluorescent amphibian. In a March 13 paper published in the Proceedings of the National Academy of Sciences, researchers described how the tiny and nocturnal South American polka dot tree frog (Hypsiboas punctatus) transforms from a dull chartreuse shade with reddish spots to a striking neon hue when ultraviolet light is shone upon it.....Biofluorescence is found in marine creatures including corals, several species of fish, mantis shrimp, sharks and a species of sea turtle; but the phenomenon is much more unusual among terrestrial animals.....

In the case of the fluorescent frog, a unique group of three molecules — hyloin-L1, hyloin-L2 and hyloin-G1— appear to be responsible for the amphibian's glow, researchers said.

The molecules, found in the frog's lymph tissue, skin and glandular secretions, contain a ring structure and a chain of hydrocarbons — an "amazing" arrangement unlike other known molecules that cause fluorescence in animals, Lopes told NPR.....The polka dot tree frog inhabits the forest of the Amazon Basin of Ecuador, Peru, Bolivia and Brazil, the Orinoco Basin and Chaco of Paraguay, and Argentina. It may be also found in Colombia and Venezuela, Lopes says.

Researchers said it remains unclear why the polka dot tree frog has this fluorescent ability, though communication, specifically for mating purposes, is one possibility.....**By Dominique Mosbergen Huffington Post EXTRACTS 21/3/17**

CLOSE BUT NO CIGAR IN HUNT FOR ELUSIVE FROG PEPPERED TREE FROG

She said it could be one of two species - the Peron's or Tyler's tree frog which look very similar. Dr Rowley, who just returned from an expedition hunting for the peppered tree frog at Glenn Innes said both species were pretty common unlike her more elusive query. "It's actually in many ways easier to identify frogs by recording them," she said. According to the Australian Museum, the peppered tree frog grows to about 3cm, is critically endangered and was last confirmed seen in the 1970s.

Dr Rowley said there was very little known about the species and it could be found outside her area of search, focusing around the rocky streams of the New England Tablelands.

She was unfruitful in her search for the endangered frog this year but said she would continue her hunt next summer which is when the peppered tree frog breeds. Dr Rowley said she suspected a fungus was responsible for the species' decline.

"Amphibians are the most threatened land animal species." Dr Rowley said frogs were highly susceptible to environmental changes due to their absorbent skin. **Keagan Eldern, The Coffs Coast Advocate, Australia HERPDIGEST - VOL. 19 ISSUE #19 DATE 22/3/17**

CLOWN TREE FROGS NEWLY DISCOVERED AND ALREADY THREATENED?

An international team of scientists discovered two new species of clown tree frogs in the Amazon region. Until recently, these colourful amphibians had erroneously been considered part of another species. Now, DNA studies and an analysis of the calls of the examined populations revealed a much higher diversity within this group of frogs. Due to their small distribution areas, it is likely that the newly discovered species are threatened, but the determination of their protection status is currently still pending. In their study, published today in the scientific journal PloS ONE, the scientists from six countries clearly show that a complete species inventory is only possible by means of international cooperation.

In the past decades, more than 810,000 square kilometres of rainforest have been destroyed in the Amazon region, and every day, species from all animal phyla disappear from this area.....Marcel Caminer comments as follows: "Amazonia is threatened by numerous influences. On the one hand, there is deforestation, mining and oil production; on the other hand, the global climate change. Therefore, it is important to achieve a complete species inventory in order to undertake the subsequent steps toward the protection of this biodiversity."

Even the two newly discovered clown tree frog species are likely threatened already: their distributions areas have a very limited extent and are endangered by habitat destruction..... Our study shows that effective protection measures require prior knowledge of the actual diversity of species and the study of their actual spatial distribution. To achieve this, we need a larger number of experts – taxonomic research is in higher demand today than ever before." **phys.org, 8/3/2017 HERPDIGEST - VOL. 19 ISSUE #15 EXTRACTS**

FROGS HAVE UNIQUE ABILITY TO SEE COLOUR IN THE DARK

The night vision of frogs and toads appears to be superior to that of all other animals. They have the ability to see colour even when it is so dark that humans are not able to see anything at all. This has been shown in a new study by researchers from Lund University in Sweden. **Science Daily, 2/28/17- Lund University, Sweeden HERPDIGEST - VOL. 19 ISSUE #13 Journal Reference: Carola A. M. Yovanovich, Sanna M. Koskela, Noora Nevala, Sergei L. Kondrashev, Almut Kelber, Kristian Donner. The dual rod system of amphibians supports colour discrimination at the absolute visual threshold. Philosophical Transactions of the Royal Society B: Biological Sciences, 2017; 372 (1717): 20160066 DOI: 10.1098/rstb.2016.0066**

Theycantalk.com jimmyscraig@gmail.com

Thanks for sending to FATS Marion Anstis, Fred Parker and Justin.

TIMETREE DATING IN THE ABSENCE OF A FOSSIL RECORD IN ASIAN HORNED FROGS

Asian Horned frogs account for approximately half of the ancient family of frogs called Megophryidae. This group was previously estimated to have originated 100-126 million years ago (mya). Frogs of this family hopped alongside the famed Velociraptors and other dinosaurs during the Cretaceous period (145-66 mya). Despite the fact that these animals have been around for a long time, little is known about their evolutionary history. Furthermore, unlike their dinosaur contemporaries, these frogs did not leave behind any known fossils. Methods using information from DNA sequences exist for estimating the age of origin for such groups of animals but these methods rely heavily on fossils of related animal groups, which could prove unreliable for these species.

New research recently published in the scientific journal, Molecular Biology and Evolution, by a team of scientists from Ireland and India resolved a 195-year old confusion regarding relationships between the species of Asian Horned Frogs, an enigmatic group of frogs often with horn-like projections over their eyes. Using DNA sequences, they discovered many potentially new species in this group previously unknown to science. They also estimated the ages of species and groups of species using a method that had previously not been tried on amphibians and inadvertently discovered that until now scientists may have been overestimating the age of many frog families. Their discovery may open a new chapter on how scientists interpret the evolutionary history of many animals that currently have no known fossil record.....The research team was led by Ireland's leading herpetologist, Dr. Stephen Mahony (previously of University College Dublin [UCD], Ireland and University of Delhi [DU], India – **not to be mistaken for our Stephen Mahony in Australia**), and a prominent mammal molecular evolutionary biologist, Prof. Emma Teeling (UCD). A PhD student of Prof. Teeling, Nicole Foley (UCD), and the "Frogman of India," Prof. SD Biju (DU) were co-authors on this research publication.

The scientists demonstrated that a recently developed method called RelTime, that does not require fossil information, provided comparatively better age estimates for frogs. Their results correlate well with current knowledge on prehistoric biogeography -- distribution of animals in space and time, considering tectonic plate movements, the rise of mountain ranges and palaeoclimatic changes -- that may have influenced the evolutionary history of Asian Horned Frogs.

This research project was envisaged by Dr. Mahony in 2006 after he discovered that one widely distributed 'species' appeared to represent several similar but scientifically 'new' distinct species. Six of these species from Thailand, Cambodia and India, were formally described as new to science between 2009 and 2013 from his (and his colleagues) previous research. Since then, Stephen embarked on the most extensive research to have ever been carried out on this group of frogs. He did so by examining and measuring hundreds of specimens from museums in Asia, Europe and the US, and used DNA gene sequences to determine how these species are related. These new results indicate that the Asian Horned Frogs family may have originated as recently as 77 million years ago in contrast to 100-126 mya as previously estimated, and suggest that scientists might have been also overestimating the age of many other families of frogs by up to 35%.

The results have completely changed our understanding of how the different Asian Horned Frog species and their species groups are related. Many of the species that look similar, and so were considered to be closely related, were found to be distant relatives of each other, and those that look different were found to be closely related.

Finally, the results of this research have identified numerous species in India, Vietnam and Laos that are very likely new to science, several of which may be restricted to small distributions in vulnerable habitats. This raises concerns for their continued survival as "having a name" is the bedrock for conservation. "It is well known that Amphibians are one of the most endangered animal groups. Our research further demonstrates that many species remain undiscovered. Sadly, with climate change and continuing habitat destruction, we are losing many species before we can learn anything about them, but the use of molecular techniques is dramatically speeding up the learning process." says Mahony. **Journal Reference: 2/23/17 - Science Daily, Molecular Biology and Evolution (Oxford University Press) HERPDIGEST - VOL. 19 ISSUE #13 Dr Stephen Mahony (Ireland), Nicole M. Foley, S.D. Biju, Emma C. Teeling. Evolutionary History of the Asian Horned Frogs (Megophryinae): Integrative Approaches to Timetree Dating in the Absence of a Fossil Record. Molecular Biology and Evolution, 2017; msw267 DOI:**

FATS MEETINGS commence at 7 pm, (arrive from 6.30 pm) and end about 10 pm, at the Education Centre, Bicentennial Park, Sydney Olympic Park, Homebush Bay. They are usually held on the **first Friday of every EVEN month** February, April, June, August, October and December but not Easter Friday. Call, check our web site, Facebook page or email us for further directions. We hold 6 informative, informal, topical, practical and free meetings each year. Visitors are welcome. We are actively involved in monitoring frog populations, field studies and trips, have stalls at local events, produce the newsletter FROGCALL and FROGFACTS information sheets. FATS attend many community fairs and shows. Please contact Kathy Potter if you can assist as a frog explainer, even for an hour. No experience required. Encourage your frog friends to join or donate to FATS. Donations help with the costs of frog rescue, student grants, research and advocacy.

All expressions of opinion and information in FrogCall are published on the basis that they are not to be regarded as an official opinion of the Frog and Tadpole Study Group Committee, unless expressly so stated.

FATS ON FACEBOOK: FATS has over 2,041 Facebook members from almost every continent. Posts vary from husbandry and frog identification enquiries to photos and posts about pets, gardens, wild frogs, research, new discoveries, jokes and habitats from all over the world. The page includes dozens of information files. https://www.facebook.com/groups/FATSNSW/

RESCUED FROGS are seeking forever homes are at our meetings. Please contact us in advance if you wish to adopt a frog. Cash donation required to cover care costs. Sorry we have no EFTPOS. FATS must sight your current amphibian licence. Licences can be obtained from NSW National Parks and Wildlife Service, Office of Environment and Heritage. http://www.environment.nsw.gov.au/wildlifelicences/GettingAnAmphibianKeepersLicence.htm We request you join FATS before adopting a frog. This can be done on the meeting night. Most rescued frogs have not had a vet visit unless obviously ill. Please take you new, formerly wild pet to an experienced herp vet for a check-up, possible worming and/or antibiotics. Consider having annual checks for your frog pets. Some vets offer discounts.

Thank you to the committee members, FrogCall supporters, meeting speakers, Frog-O-Graphic competition entrants, events participants and organisers David, Kathy, Sarah and Harriet Potter and Ryan Kershaw. The FrogCall articles, photos, media and webpage links, membership administration and envelope preparation is greatly appreciated. Special thanks to newsletter contributors, Robert Wall, George Madani, Jilli Streit, Karen & Arthur White, Andrew Nelson, Michelle Toms, Josie Styles, Jodi Rowley, Wendy & Phillip Grimm and Marion Anstis.

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Continued from page 2 Josie Stokes spoke about and shared photos of FATS field trip to Darkes Forest with "The American", David Price. Many thanks to Arthur White, Robert Wall, Josie and other committee members for making him so welcome in Australia.

Arthur White talked about the invasion of Cane Toads in "The Shire". Using sniffer dogs, bating, radio tracking, community and industry help it appears the toads have been eradicated there. Toads were first reported in 1983 in Sydney. They are often traced to the transport of landscaping supplies, mulch and woodchip from northern Australia. Calling toads were first heard in Sydney in 1998, past McGraths Hill and were successfully exterminated. It is estimated that 50 Cane Toads reach Sydney a year.

http://physicsworld.com/cws/article/news/2017/feb/01/frogs-use-non-newtonian-saliva-to-capture-prey Karen White shared a video demonstrating the high viscosity of frog saliva.

http://www.inaturalist.org/projects/log-that-frog Phillip Grimm demonstrated the "log that frog" online project to record observations. http://fats.org.au/log-that-frog There is an iPhone and Android app. You can register with iNaturalist (free) and use your Facebook or Twitter credentials. The meeting ended with supper and friendly chat. **MW**

FATS FIELD TRIPS RECOMMENCE SEPTEMBER 2017

PHOTOS ON THIS PAGE ARE BY JOSIE STYLES

FATS BI-ANNUAL FIELD TRIP SMITHS LAKE

Eastern Yellow Robin Smiths Lake 2015

Smiths Lake 2016 with low water levels

Pseudophryne bibronii **Josie Styles 2015 above and right**

Litoria tyleri **in amplexus above and left**

Tusked Frog *Adelotus brevis*