THE AUSTRALIAN SOCIETY OF HERPETOLOGISTS INCORPORATED

NEWSLETTER 53

Letter from the editor

The 2018 ASH newsletter was compiled shortly after our 43th Annual General Meeting to give you those of you who missed out on attending, the chance to catch up on research and shenanigans.

It was a hectic meeting as we paused between field work and Christmas cheer to head over to SE Queensland to admire Glenn's latest collection of tights.

Andrew Amey, world's most dapper herpetologist, worked tirelessly to organize the conference of a lifetime. With DJ Mixophyes acting as strategic director of all things party, we were sure to have a blast.

Herpetology conferences have been making the international headlines and not in a good way, so it was fantastic to see new opportunities arise such as grants for care givers to attend ASH and an inclusivity statement introduced.

Glenn Shea is the new president!

Back legs first,
Deb Bower
Editor

THE AUSTRALIAN SOCIETY OF HERPETOLOGISTS INCORPORATED

History of Office Bearers

Formation Committee (April 1964):- MJ Littlejohn (Convenor); State Reps IR Straughan (Qld), FJ Mitchell (SA), HG Cogger (NSW), G Storr (WA), RE Barwick (ACT), JW Warren (Vic), AK Lee (Editor).

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International

OULALAB

Station d'Ecologie Théorique et Expérimentale du CNRS, UMR 5321

The ECTOPYR (European funded) project is in full flight (https://www.facebook.com/ectopyr/) although Post-docs Dr Audrey Trochet and Dr Andreaz Dupoué have recently finished their contract with us. Audrey will move on to an ANR (ARC equivalent in France) ISOLAPOP looking at more climate change stuff in the Pyrenees, while Andreaz will be moving to Melbourne very shortly for more lizard work I believe. Dr Rebeca Martin Garcia from Madrid joined the team early 2018 to work on paleo-biological aspects and decipher past climate variations using speleothems records. Dr Romain Bertrand will join us towards the end of the year to finish the modeling job on the project and tell us bad news about the future.

Marie-curie funded Post doc Eric Gangloff has entered his second year into the PODARCIS project. Check out http://lezardsdemontagne.blogspot.com/

Eric, while working like a dog, is loving his new life in the South of France. He is developing collaborations with Dr Antonio Cordero, Dr Rory Telemeco, and PhD Brooke Bodensteiner to understand the role played by altitude related hypoxia on range shifts dynamics using a bunch of eco-physiological proxies.

I am myself back into the Tiger snake business, looking at potential links between plasticity, genetic assimilation and epigenetics using Reduced Representation Bi-sulphite Sequencing in collaboration with ARC funded Dr Vicki Thomson (Adelaide Uni), Dr Christoph Grunau (Uni of Perpignan), and Benoit Pujol (Uni of Perpignan/UPS Toulouse). My role is to catch snakes.

On the PhD front, Jérémie Souchet is now in his 3rd year looking at the combined effects of temperature and air oxygen levels on the hatching success of water snake eggs. Damian Lettoof just started looking at habitat degradation, parasite load and overall fitness in urban vs not so urban Tiger snakes in WA (Curtin Uni). Marine Deluen is currently starting her project looking at thermal adaptation versus plasticity in a french salamander (Calotriton asper) along an altitudinal gradient.

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Tasmania

University of Tasmania
Beer Group
www.beergrouputas.wordpress.com

The BEER group is in full swing as summer approaches and many of us start (or start to plan for) another busy field season. We have an active website which contains plenty of extended updates on the group and our research to date (www.beergrouputas.wordpress.com). But for those of you who would prefer the brief version…

Erik Wapstra continues to build the snow skink model system with his students on a range of questions from climate effects and climate change modelling, telomere and life history dynamics, sex allocation and sex determination. Erik was recently part of a hugely successful global working group focused on examining the indirect consequences of climate mediated changes in species distributions for a host of biological and anthropomorphic processes, the outcomes of which have recently been published in Science and Biological Reviews. Erik has also maintained his work with Sand Lizards in Sweden, recently undertaking his 18th field season with Mats Olsson. Erik is currently on annual leave sampling many of Australia's herpetological treats as he makes his way across central Australia in a caravan.

Geoff While is expanding his work on the Egernia group. Geoff, along with Martin Whiting (Macquarie), Tobias Uller and Charlie Cornwallis (both at the University of Lund), were recently awarded an ARC Discovery Project award to examine the role that social plasticity plays in mediating the evolutionary origins of family life. As part of project, Geoff's long-term natural population of *Liopholis whitii* population moved into its 13th season of sampling this year and has begun to uncover interesting insights into the long-term social dynamics of *Egernia*. Geoff also continues to spend time at the University of Lund, working on the wall lizard system he developed with Tobias. Indeed, Geoff recently returned from his 7th field season in Italy, where he, Tobias and their team are aiming to uncover the evolutionary origins and introgressive spread of the "Tuscan" phenotype that has spread so rapidly among wall lizard's lineages via selective hybridsation. Geoff is actively pursuing keen students and post-docs to begin projects on these topics in 2019.

The BEER group has had a couple of important PhD completions in the last 12 months. Both Kirke Munch and George Cunningham submitted their PhD theses and have recently received excellent feedback for reviewers. George's PhD examined the ecological drivers of transitions between sex determining systems in the snow skinks. This involved lots of field work across multiple snow skink populations as well as a fair bit of time in front of the computer working on simulation models in collaboration with Lisa Schwanz at the University of New South Wales. Kirke's project was focused on developmental plasticity, cognition and the mechanisms of information transfer and acquisition in *Liopholis whitii* (co-supervised by Dan Noble from the University of New South Wales). This involved running several monster experiments in the laboratory, all of which have already resulted in fantastic outputs. Both Kirk and George are currently working on several additional projects within the BEER group as well as looking for post-doc opportunities.

Lu Fitzpatrick and Tom Botterill-James will hopefully be joining George and Kirke in the Doctors lounge soon. Tom has just returned from a five-month stint at the University of Edinburgh as part of an Endeavor scholarship working with Per Smiseth, Geoff and Dan Noble on a large meta-analysis examining how hatching patterns mediate family conflict in birds. This will compliment much of Tom's empirical work on the *Liopholish whitii* system which has focused on the mechanisms mediating family conflict in our skinks. On the *Niveoscincus* side of things, Lu is continuing her work using Erik's long-term data set as well as some neat experimental approaches to examine telomere dynamics and senesce in the *N. ocellatus*. As part of this project, Lu spent time last year in Sweden at the University of Gothenburg as part of an Endeavor scholarship, where she is busily generating data on snow skink telomere biology with Mats. Next cabs off the PhD rank are Peta Hill and Mara Ruiz Minano. Peta continues to develop her PhD project, working with Erik, Chris Burridge and Tariq Aziz, utilizing both field, experimental and molecular techniques to uncover the molecular mechanisms underlying sex determination in *N. ocellatus*. Mara, has just returned to UTAS from her winter sojourn in Sweden and Italy. Maras PhD is focused on understanding the role that climate plays in mediating the introgressive spread of the Tuscan phenotype/genotype in the Wall Lizards.

In addition to the BEER group mainstays, we have added several new members to the group. Alix Halle has joined us as a PhD student all the way from France. Alix's PhD will examine how offspring sex mediates various aspects of family life within the *Liopholis*, making the use of sex specific markers recently developed in Lund. Shruti Sengupta has joined as a PhD student working on physiological responses to temperature in the snow skinks. Specifically, in the context of heat shock proteins. Both Alix and Shruti are just about to begin their first full field seasons. We also have a busy and active cohort of honors students in the group. This includes Deirdre Merry who is examining the physiological and molecular mechanisms underlying birthing asynchrony in the *Liopholis* (in collaboration with Camilla Whittington at USyd), Barnaby Freeman who is examining burrowing behaviour in the *Liopholis*, Mary McVarish who is examining how the thermal environment mediates cognitive development, and Beck Schrober who is working on the decline of the Forty Spotted Pardalote.

The Comparative Endocrinology and Ecophysiology Group is the other area of herpetological research at UTAS. Ashley Edwards continues her work on examining key components of the reproductive physiology of the blue tongue lizard, *Tiliqua nigrolutea*, and has also had an increase in focus on teaching and learning directives at the university level.

Munch, K.L., Nobel, D.W.A., Budd, L., Row, A., Wapstra, E. and While, G. M. (In press) Maternal presence facilitates plasticity in behaviour and learning: insights into the early evolution of parental care. Behavioral Ecology.

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Cunningham, G.D*., Fitzpatrick, L.J*., While, G.M. and Wapstra, E. (2018) Plastic rates of development and the effect of thermal extremes on offspring fitness in a cold-climate viviparous lizard. Journal of Experimental Zoology, Part A (invited contribution) 329: 262-270. *Joint first authors.

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S.E. (2017) Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being. Science, 355:eaai9214.

Western Australia

Western Australian Museum

Paul Doughty has been busy finishing off three big taxonomic revisions of *Gehyra*, based on a gaggle of ANU geneticists as well as some home-grown WAM genetics. Australia really needed 16 new species of *Gehyra*, right?? Paul and his co-authors joined the dubious "junior homonym" club with a reuse of an old *Gehyra* name, picked up by Ryan Ellis one day after the paper was published, d'oh! Gehyra *finipunctata* was proposed by Ryan as the replacement, welcomed by Paul as he is feels he is "finished with *punctata*"! Also described with Sven Mecke was a reddish gorge-dwelling *Eremiascincus* from the Pilbara (= Paul's favourite skink). Indications from genetics so far suggest this has been a rapidly-evolving species, and a follow-up genetic paper is in the works. And because there aren't enough *Ctenotus* either, two more stripey ones got added, one from the Pilbara and one from the northern deserts area.

Ryan Ellis has again been working across multiple projects, often being distracted sorting out loans, tissue requests and various other collections stuff, there's always an excuse. He finally published the *Anilios leptosoma* revision in 2017, along with a short note on an observation of copulation in *Anilios australis* (blindsnake sex…weird). Having finally finished the *leptosoma* revision, his attention has moved to yet more blindsnake projects with another couple on the go, including a pretty rad (his words) new species via an international collaboration on its way. Types upon types, upon types, and all the misplaced specimens and errors that go with the 8,000+ in the WAM collection. The frog and gekkonid (inc. pygopods) type lists have been published and next up are the varanids (submitted), agamids (nearly there) and skinks (oh dear god, don't ask).

Bec Bray continues to tame the massive herpetology collection, including reorganizing storage systems including the freezers of valuable tissues as well as sorting turtle specimens from the Legler collection with Jodi and Stephen from the AM earlier in the year.

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The University of Western Australia
Mitchell Lab

Nicki Mitchell and her lab members have recovered from hosting the ASH meeting in 2017, and thank delegates for their graciousness when the beer and wine ran out at the conference dinner. The lab has plenty of herpy projects on the go, but is slowly being invaded by people working on mammals - including numbats - much to the chagrin of numbat-obsessed former lab member Stewart MacDonald (now at JCU in the Schwarzkopf lab). While on postdocs, Daniel White joined the lab in July 2017 from the land of the long white cloud to work on population genetics and viability of translocated mammals, and Nina Marn from Croatia joined on an Endeavour Fellowship in 2018 to train those of us interested in/terrified by Dynamic Energy Budget Theory. As a result of Nina's efforts, we have DEB models in train for a modest range of WA reptiles, from sea turtles to heath dragons. Jamie Tedeschi landed a postdoc at UQ in David Booth's lab, where she'll be working on the causes of nest failure in green turtles nesting on Raine Island, and Ruchira Somaweera published a book on the herpetofauna of Bali, and continues to study freshwater crocs and sea snakes in the Kimberley.

On the PhD front, in 2018 Sophie Arnall completed her PhD on the assisted colonisation and physiological ecology of the western swamp turtle, and is now working in consultancy and running projects on Christmas Island. Blair Bentley completed his PhD on the impacts of climate change on Kimberley populations of sea turtles, then took off for Florida for an Endeavour Fellowship in Jeanette Wyneken's lab. Tabitha Rudin-Bitterli completed her PhD on assisted gene flow in

terrestrial-breeding frogs, and notably explained why she left after Day 1 of the 2017 ASH conference (when the rain started) to drive eight hours north to Geraldton, as she managed to pull off some incredibly tricky population crosses. Malcolm Soh is writing up his PhD focused on understanding how land-use change and climate change is affecting the bird and frog communities of Malaysian cloud forests, and Jess Stubbs is also on the home straight for her PhD on the foraging ecology of green turtles at Ningaloo Reef.

New PhD students since last reporting include JP Emery, Emily Hoffmann, Sian Thorn and Malindi Gammon. JP joined us in 2017 from Queensland and started a project on the two Extinct in-the-Wild reptiles on Christmas Island: blue-tailed skinks and Lister's geckos – co-supervised by (the fabulous) Leonie Valentine, John Woinarksi and Hal Cogger. JP's is exploring translocation options for captive bred populations on Christmas Island, including soft release on the island, and assisted colonisation to the Cocos-Keeling Island group. JP spends a lot of time playing with scary-sounding lizard predators (wolf snakes, giant centipedes, crazy ants) and enjoying the island lifestyle, including hash house runs (sometimes in a red dress) through Pandanus thickets. Speaking of thickets, Emily Hoffman (hailing from SA) is spending a lot of time in wet and swampy thickets hoping not to tread on her study species – the Critically Endangered white-bellied frog. Emily is trying to pin down why some populations have gone extinct while others 100 m away have not. Together, JP and Emily keep the lab amused by their pact not to cut their hair until they submit their PhD's. Sian and Malindi (both from New Zealand) started in Sept 2018 and are developing projects on numbats and flatback turtles respectively, each in partnership with the WA Dept of Biodiversity, Conservation and Attractions.

Other projects led by MSc/honours students include the trial assisted colonisation of the western swamp turtle to wetlands on the southern coast of WA. Alexandra Bouma spoke about the 2016 trial at the ASH conference and came away with the Murray Littlejohn Prize for the best honours/MSc talk, and is now back working as a research assistant – along with former honours student Nick Rodriguez – on a second (longer) trial across three sites that should allow us to contrast thermoregulation/foraging trade-offs over 400km latitude (data to be analysed by new honours student Siobhan Paget). Deanne Cummins analysed reams of SNP data to study population genetics and local adaptation in crawling frogs (*Pseudophryne guentheri*) and detected a cryptic species that Stewart collected for Tabitha's PhD project in 2016. Hence naming rights are unclear. Hamish Burnett did a PhD-sized project in an honours year trying to develop mechanistic understanding of thermoregulation behaviour and fitness of heath dragons in sand plain habitats restored after mining. We don't think he left the lab for nine months solid, so he was rewarded with some research assistant work on Christmas Island immediately afterward, and is now in Norway starting an MSc project on reindeer genomes. Finally, Zahra Aisya is finishing an honours project on the population viability of island dibblers.

Nicki mostly just tries to keep on top of everything, but highlights have included hosting an IUCN Red Listing workshop at UWA for 480+ reptiles, sabbatical travel to Malaysia and Norway, the 2017 ASH conference (of course) and co-authoring the forthcoming Action Plan for Australian Lizards and Snakes (ably led by Dave Chapple). She continues roles on the Commonwealth and WA Threatened Species

Scientific Committees, and coordinating translocation-focused projects in the NESP Threatened Species Recovery Hub. She was a member of the winning team for the Peer Prize for Women in Science (Earth, Environment and Space) - linked to a Science paper on the perverse impacts of species distribution shifts due to climate change.

South Australia

Menzies' Lab
University of Adelaide

James' current research includes musculature, especially the jaw of various New Guinean frogs. He is also working on the natural history and anatomy of Barygenys spp (Anura: Microhylidae)

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Queensland

James Cook University
Schwarzkopf Vertebrate Ecology Lab

Lin Schwarzkopf keeps trying to support the whole enterprise as much as possible by reading manuscripts, advising everyone, and applying for grants. Her collaboration with the Ecosounds Lab at QUT is leading to lots of exciting noises...

Deb Bower left the lab to take up a lecturing position at the University of New England. She is now dead to us. DEAD! (Not really - we love you Deb!!!) Her departure left a void in our collective heart that is now only partially filled by Stewart Macdonald. Stewart is using machine learning to automatically recognise frog calls from long-duration audio recordings. Anna Pintor is leading a NESP project on what/where/how/why threatening processes are affecting threatened species in Northern Australia. However, as a rogue postdoc whose previous supervisor has disappeared to Canada, she is secretly plotting an escape into venomous snake studies.

Four PhD students have recently submitted theses and/or graduated. Heather Neilly quantified the impacts of cattle grazing on fauna (including reptiles), and found no tradeoff between economically profitable grazing and biodiversity. Heather is now a postdoc looking at the role of fauna in ecological restoration in the riverland region of South Australia. Ben Muller's work on trapping cane toads in Australia has led to

an Endeavour Postdoctoral Fellowship with Steve Johnson at the University of Florida trapping cane toads in the USA. Eric Nordberg looked at the effects of cattle grazing on arboreal reptiles, and found native house geckos thrive in heavily grazed areas as a result of reduced competition from disturbance-sensitive species. Eric is now working for JCU & CSIRO in Townsville looking at the impacts of feral pigs in North Queensland. Sasha Greenspan graduated *Cum Laude* from her PhD looking at the thermal thresholds of chytrid fungus on frogs, and is now a postdoc with Gui Becker at the University of Alabama.

We have no shortage of current, herpetologically inclined PhD students: Sheryn Brodie spends her days wearing headphones, listening to the chirping of crickets, the rustling of leaves, and the occasional ribbit of a frog. Jaimie Hopkins is looking at the vocal behaviour of invasive species, and how these newly introduced noises impact native species. Her study species include noisy cane toads and Asian house geckos. Donald McKnight is finishing his PhD on the population genetics and microbiomes of frogs following recovery from a chytridiomycosis outbreak, and he is actively looking for postdoc positions. Kyana Pike is learning how giant Galapagos tortoises use farmlands during their migratory movements and how the use of these landscapes affects both tortoise ecology and agricultural outputs. Jendrian Riedel is working on the evolution and ecological adaptations of gecko skin microstructures. Most of the field work and data collection is done, so he is now focused on lab work and data analysis. Wytamma Wirth's work is focused on ranaviral infection of Australian freshwater turtles. He has completed the majority of the data collection/experimental portion of his PhD, and will spend his final year analysing data and writing up.

We also have many Honours and minor-project students:

Larissa Boundy is interning with us, detecting toads from eDNA. Elliot Budd is finished up his first-class honours on the function of the caudal knob in Prickly Knob-tailed Geckos (*Nephrurus asper*), using field- and lab-based behavioural observations. Leah Carr is working on a project with Deb Bower and Don McKnight to help understand why some chytrid-affected rainforest frogs only persist at lower elevations, despite sympatric species re-populating uplands. Rheanne Denny is currently studying whether boldness differs between native geckos (*Gehyra dubia*) and introduced Asian house geckos (*Hemidactylus frenatus*). Ayano Fushida studied tail-waving behaviour in Carlia skinks, and the influences of skin fouling on shedding frequencies in geckos. Valdemar Joergensen recently completed a minor project examining the skin microbiomes of Australian geckos, and he is currently working at Aalborg University, Department of Chemistry and Bioscience as a research assistant. Rishab Pillai looked at eco-morphology in Velvet Geckos (*Oedura* spp.). Specifically, how adhesive performance varies based on microhabitat choice and how this reflects in the morphology of toe-pads. He's hoping to continue this work in a PhD.

Other, slightly less herpetological projects in the lab: Juan Mula Laguna studies black-throated finches; Cat Kelly is describing the demographics of chital deer invasion in north Queensland; Tom Bruce studies feral cats in the Wet Tropics; Lily Leahy is squinting at ants; and Denise McGregor is examining body size gradients in greater gliders.

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Victoria

Central Highlands Environmental Consultancy
Chytrid Fungus Mapping

We are researching Chytrid Fungus in relation to salinity.

Australian Capital Territory

Dearly Departed:
Maxine Piggott (Charles Darwin University), Paul Oliver (Queensland Museum and Griffith University), and Emma Sherratt (University of Adelaide) have left the safety of Scott's wings for greener pastures. Thanks for everything, and we wish you all the best!

Still Kicking:
Marta Vidal-García just finished an Endeavour Postdoctoral Fellowship, co-hosted by the Keogh and Hoskin Labs. She is currently a postdoc in the lab, working on morphological evolution in Australian frogs. (follow her at @m_vidalgarcia)

Damien Esquerré is currently finishing his PhD with Scott, aimed to be submitted in April 2019. His future plans remain a mystery even for him. He has been busy working in the evolution of pythons of the Old World and the *Liolaemus* lizards of the New World.

Carlos Pavón-Vázquez is one year and a half into his PhD, looking into the phenotypic evolution and phylogeographic patterns of goannas. At the same time, he tries to stay relevant in his home country, preparing for the time when Australia gives him the boot.

Ian Brennan is in the home stretch of his PhD on reptile macroevolution, and frighteningly close to the light at the end of the Keogh Lab tunnel. – "I'm hoping to stay on as a Postdoc in Australia, and am happy to entertain ideas (rob, steal, apply for grants). I've even got a few of my own, so find me for a chat! (follow him at @ian_g_brennan)"

Mitzy remains the talismanic Postdoc, dealing the finishing touches to many a Keogh lab project (*Eulamprus*, *myobatrachids*, et al.). She's single handedly keeping ASH membership afloat with her third beautiful kid, and working part time for Scott.

Lab leader Scott is completing his transition from venomous snake researcher to coast-house tradie and lamp taxonomist/curator. Open to conversations about tiling, gyprock, and plumbing. (follow him and the lab at @Keogh_Lab)

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New South Wales

University of Sydney
Evolutionary and Integrative Zoology Lab (Whittington Thompson Lab)

Although Mike Thompson finally retired and moved to South Australia in August, the lab is continuing its research on the evolution of viviparity and other aspects of the physiology of reproduction under the expert guidance of Camilla Whittington. Mike was appointed as an Emeritus Professor, so he is continuing to co-supervise students. Camilla, Mike and others also received a new ARC Discovery grant beginning in 2018 to study the placental nutrition in vertebrates.

Josh Kemsley completed his honours project comparing the contraction of uterus of oviparous and viviparous skinks, *Saiphos equalis*, discovering that the mechanisms of contraction are very similar to those in mammals. Monty Oldroyd finished his honours analysis of the transcriptome of oviparous and viviparous populations of the skink, *Lerista bougainvillii*, which involved fresh collecting by Monty, Josh and Mike on Kangaroo Island and the South Australian arid lands.

Claudia Santori has been very successful in attracting small grants to support her PhD project on turtles in the River Murray, which is being co-supervised by Ricky Spencer at WSU and James (Van) Van Dyke at Charles Sturt University. Claudia has split her time between Sydney University, WSU and her field sites near Murray Bridge in South Australia, where she spent much of last summer and plans to spend considerable time this summer. She has discovered that turtles are major consumers of dead carp in the Murray, and that beds of submerged macrophytes are important refuge areas for hatchling turtles. She has also used entries into the TurtleSAT mobile phone app to publish a paper on the prevalence and importance of deaths of turtles as they cross roads.

Several other students in the lab are studying non-herps, but addressing similar questions about the evolution of viviparity, including Mel Laird (based on marsupials, completed her PhD in 2017), Jess Dudley (based on dunnarts, American kangaroo rats, domestic cats, completed her PhD in October), Sadeq Khan (based on the world's smallest sea star, continuing PhD), Polly Hanaford (metabolism in seahorse embryos, hons project) and Tara McKenzie (parturition in seahorses, hons project).

A new postdoc, Charles Foster, joined the lab in July as part of the ARC Discovery grant. Charles is an expert bioinformatician and is analysing our enormous transcriptome data set from the uterus and placental tissues of multiple species. Having a botanical background, Charles is rapidly developing his lizard catching

skills. After Mike's retirement, (the fabulous) Jacquie Herbert has reduced her time at uni to only one day a week, however she continues to try to keep control of things in the lab and help Camilla and the students as much possible. She spends the rest of her time being surrounded by glitter and all things Christmas!

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University of Sydney
Shine Lab

Rick Shine has finally retired, after completing his Laureate Fellowship in May 2018. After forty years at the University of Sydney, he is now Professor Emeritus and is trying to work out what he wants to do when he grows up. In the short term that looks like a blend of research (on snakes and toads) and other activities (notably, the writing of books about snakes and toads). Rick's book "Cane Toad Wars" (University of California Press) was published in early 2018. A couple of snake books are written also (well, almost). Rick intends to maintain selected toad projects, as well as his long-running sea snake work in New Caledonia (with collaborator Claire Goiran, and now with Vinay Udyawer also) and his studies on tropical snakes in the Northern Territory (with Greg Brown).

Immediately after he retired, Rick and his wife Terri headed off to a lizard conference in Israel in June (who would have thought that the Golan Heights is an amazing spot to find herps? It is!) and then New York in July (annual joint meetings of the US-based herpetology societies). It proved to be an interesting meeting, as those on you on social media are doubtless aware. The next trip (August) was to Komodo Island, an extraordinary experience organized by the tour company run by Ruchira Somaweera (Aaranya). Cavorting with giant lizards, snorkeling with manta rays, spotlighting for blue vipers, staying in ridiculously comfortable resorts. All herpetologists need to make a pilgrimage to Komodo at some time, if only to glimpse a hint of what things were like in Jurassic times when reptiles ruled the planet.

With the end of Rick's Laureate Fellowship, the postdocs employed under that scheme (Jayna DeVore and Simon Ducatez) waved goodbye and took off for the

next phases of their careers (currently in Thailand and Barcelona). Michael Crossland is still based at Middle Point (NT) and working with toads, with Lee Ann Rollins of UNSW. The Tadpole Team gathered massive data sets on toads across Australia, as well as in Hawaii, Puerto Rico and French Guiana – so we can now unravel the evolution of some amazing ecological and behavioural diversity. If we ever find time to finish analyzing the data and writing the papers, that is. Greg Brown remains at Middle Point working with snakes and toads; he is now in his eighteenth year as a postdoc, and planning to break the world record for duration of a postdoctoral career.

Rick obtained two ARC Linkage grants for toad work last year, and they employ two postdocs. Georgia Ward-Fear is rolling out taste-aversion training across the Kimberley, in advance of the toad front, hoping to save imperiled native predators. She has recently set up a website (www.canetoadcoalition.com) to explain the work. In NSW, the toad's southern invasion is the focus of work by Matt Greenlees (postdoc) and Lachlan Pettit (PhD student). Lachlan's project explores the rate and trajectory of goanna recovery following cane toad invasion. So far, Lachlan has successfully surveyed lace monitors along the east coast invasion chronosequence, gathering extensive demographic and behavioural datasets. This season, Lachlan switches focus to yellow-spotted monitors across northern Australia and will spend a fair chunk of time chasing goannas and toads around the Kimberley with Georgia Ward-Fear.

Rick and Matt are actively looking for one or two PhD students for fieldwork projects on the NSW front; please contact Rick (rick.shine@sydney.edu.au) if you are interested. And we can accommodate a student or two at Middle Point as well; Greg (Gregory.brown@sydney.edu.au) is the main contact person there.

Greg Clarke is finishing up his PhD work on competitive interactions in cane toads (with an emphasis on comparisons between toads from different parts of the country). He is currently in Melbourne, gleaning wisdom from co-supervisor Ben Phillips. Dan Selechnik moved from Deakin Uni (Geelong) to the sinful city of Sydney to complete his PhD on toad genetics, epigenetics and immune function; the move was prompted by the concurrent northward migration of his co-supervisor Lee An Rollins. Nicky Rollings' PhD studies revolve around telomeres and agamid lizards (and sometimes, gartersnakes); Camilla Whittington co-supervises her. Nicky may be wondering why her original supervisor (Mats Olsson) returned to Sweden, and two of her three replacements took jobs elsewhere (Chris Friesen, off to Wollongong on another postdoc) or retired (Rick). But they are all still involved, so she has a numerous (but highly dispersed) set of para-supervisors.

Sam McCann and Georgia Kosmala completed their theses recently, and will soon be handed their official doctoral certificates at a graduation ceremony. Sam looked at how to translate lab research on tadpole pheromones into toad control in the real world. Georgia looked at how toads have adapted to the new challenges they have faced during their international diaspora; notably, how they have evolved to maintain locomotor performance even under extremes of desiccation and heat.

Former PhD students Jodie Gruber (toad behaviour) and Cam Hudson (toad morphology) have both landed postdoc positions in other labs, working with

sticklebacks in Switzerland (Cam) and fiddler crabs in the Northern Territory (Jodie). Another former student, Sarsha Gorissen, has been contracted as an ecologist by OEH on two projects to monitor Blue Mountains Water Skinks. One of those projects was via a co-authored grant.

Kat Stuart decided to switch from her Honours focus (cane toads) to another invasive pest (starlings), and she is doing a genetics-based PhD with Lee Ann Rollins at UNSW.

Melanie Elphick has just celebrated turning 50 and is now a very Senior Research Assistant indeed! In what will be her 23rd, and last, year of full-time employment in the Shine Lab, Mel continues to derive great pleasure from helping staff and students with admin and logistics, and managing the day to day running of the lab. Mel's greatest joy, however, is manuscript formatting and figure preparation, and with only 24 papers to go, Mel will be the proudest research assistant ever when Rick hits the magic 1000 peer-reviewed papers on his CV. What a fantastic way to finish off an extraordinary two decades assisting Rick with his research.

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University of Wollongong
Byrne and Silla Lab (aka EARL)

The Evolution and Assisted Reproduction Lab (EARL) welcomed extra research dollars earlier this year from a successful ARC Linkage Grant and a NSW Environmental trust grant. These projects are focused on investigating the effects of dietary carotenoids on a range of fitness-determining traits; from colouration, escape performance, personality and reproductive output to the skin microbiome of corroboree frogs.

We welcome Dr Chris Friesen to the team! Chris has commenced a UOW Vice Chancellor's Postdoctoral Fellowship investigating the environmental drivers of geographic variation in, and the physiological underpinnings of, sexual selected and life history traits in reptiles. We also welcome PhD students Michael McFadden (Taronga Conservation Society Australia), Deon Gilbert (Zoos Victoria) and Shannon Kelleher to the lab. Mike is focused on exploring ways to improve captive breeding and reintroduction programs for various species (with a focus on corroboree frogs), Deon is interested in developing new ways to conserve and manage Baw Baw frogs and Shannon is interested in animal personality and mate choice in corroboree frogs.

Congratulations to Leesa Keogh who submitted her PhD thesis this year. Leesa was focused on investigating the effects of antibiotics and antioxidants on sperm storage and motility activation in Booroolong frogs and conducted a large dietary manipulation study to investigate the effects of dietary carotenoids on sperm quality. PhD students Daniel O'Brien and Emma McInerney have completed data collection and are working on writing up their theses. Dan's thesis looks at mating system evolution in red-backed toadlets while Emma's predominately explores the effects of dietary carotenoids and training on exercise performance in corroboree frogs.

For more about what's been going on in the lab go to: www.evolution-assistedreproduction.com

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University of New England
Laboratory of Applied Zoology and Ecological Restoration

Deb began a position as Lecturer in Ecosystem Rehabilitation at the University of New England and moved to Armidale last April. She is heading LAZER which strives to understand and mitigate threats to wildlife through experimental and empirical ecology, and community engagement.

December will find Deb on voyage to Antarctica as part of the Homeward Bound Women in Science program to create a global alliance of bad-ass sisters in science and plug the leaky-pipeline of women lost in STEM leadership. She has also recently taken up a Nature Column for Fairfax media and already published on Pobblebonks, Fungi and orgasms.

The lab is slowly gaining momentum. We inherited Louise Streeting in her second season of a Masters on the ecology of Bell's turtles in New England. Part of the NSWS SOS funded 'Turtles Forever' project also includes Geoff Hughes (Supervised by Paul McDonald and Adrienne Burns) who is out trapping turtles for the first season of his PhD. Melissa Abbott-Smith is preparing proposals to study blast fishing in Tanzania.

The lab will be joined by new Masters student's next year who have all received scholarships: Abdur Razzaque will be working on calling phenology of frogs in Papua New Guinea, Kimberley Miller will work on landholder perceptions of threatened frogs, Annette Deppe will study the ecology of highland longneck turtles.

If any students are interested in research projects in freshwater ecology or conservation of herps please get in touch Deborah.Bower@une.edu.au

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Australian Museum Herpetology

The focus of the Australian Herpetology lab in the last year has been the national citizen science project FrogID (frogid.net.au). Since launching in November 2017, we've received over 30 thousand call recordings and put over 36 thousand records of over 165 frog species on the map! That's a huge number of validated biodiversity records of frogs! As a result, our lab has turned into a call center (get it!?), with most of us spending a lot of time with earphones on, listening to the sweet songs of frogs. Please, keep the calls coming in!

Jodi Rowley (Curator, AM & UNSW), in between listening to frog calls or talking about frog calls, is working on various frog ecology and conservation projects in Australia and SE Asia. She's *still* searching for the Peppered Tree Frog (*Litoria piperata*) and trying get more DNA out of the formalin-fixed specimens (a collaboration with many, including Tim and Marion). She's also working on big round frogs (*Platyplectrum*) and pointy brown frogs (Rocket frogs) with Renee and

Chris, and is helping out where she can on other projects in Australia and SE Asia. She's still obsessed with assessing the conservation status of frogs (and other critters) and is now on the NSW Threatened Species Scientific Committee as well as the IUCN Amphibian Red List Authority. She somehow managed to conduct fieldwork in NSW (particularly the New England Tablelands), the Northern Territory and northern Vietnam last year. She's enjoying being a joint-appointment with the Centre for Ecosystem Science at UNSW- teaching and supervising students, and generally trying to get everyone to fall in love with amphibians and reptiles!

Stephen Mahony (Technical Officer, AM), when not databasing or wrangling collection tasks, is working on several research projects, largely involving Australian lizards. He is still in the process of hunting down those with overdue loans and he's also been very involved in FrogID.

Tim Cutajar (Research Assistant & Honours Student, AM & UNSW) is in the early stages of a project to increase detectability of rare and elusive frog species through iDNA (invertebrate-derived DNA) surveys, trapping frog-biting midges and sequencing the DNA in their blood meals to detect the host. He is set to test the method in October in Barrington Tops, targeting the Barrington Tops Tree Frog (*Litoria barringtonensis*) and the Stuttering Frog (*Mixophyes balbus*). Tim is also continuing to work with the IUCN Amphibian Red List Authority on an update of the Red List for all Mainland Southeast Asian amphibians, and has been spending a lot of time in the DNA lab, sequencing anything amphibian, some reptiles and even the occasional fish. He was also involved in much of last season's field work in eastern NSW and joined Jodi in Vietnam last year. Tim has recently been working with Jodi, Chris, and collaborators in the UK and Vietnam on describing new species and updating the ranges of Vietnamese horned frogs (*Megophyrs*). He's also been very involved in FrogID.

Chris Portway (Research Assistant, AM) has been measuring lots of frogs for the taxonomic revision of *Platyplectrum* and the *Litoria* 'Rocket frog' group. When he's not measuring frogs, he has been doing qPCR to quantify chytrid infection in *Litoria wilcoxi, Philoria kundangungan* and some historical specimens from the AM's collection. He's also been very involved in (you guessed it!) FrogID.

Adam Woods (FrogID Science Communicator and Project Coordinator) has been busy with all things FrogID (well, maybe not all things- he's one of the few of us not identifying submissions!).

Harry Leung (Research Assistant, AM) is working with Tim Cutajar on continuing the update of the IUCN Amphibian Red List for mainland Southeast Asian amphibian species. He is also involved in searching for the Green-thighed Frog (*Litoria brevipalmata*), led by Chris Portway at Ourimbah, with current efforts focused on analyzing data from automatic recordings. He is also listening to and identifying frog calls submitted to FrogID.

Jordann Crawford-Ash (Research Assistant & Honours Student, AM & UNSW) is examining the dynamics of amphibian chytrid fungus infection in three frog species in Sydney as part of her Honours research. She's also busy listening to and identifying frog calls submitted to FrogID.

Kathy Potter (Research Assistant, AM) is listening to and identifying more frog calls than you could imagine that have been submitted to the FrogID project. Apparently, that's not enough, as she's started several research projects on frog bioacoustics!

Chi Phan (Research Assistant, AM) is working with Tim Cutajar on updating the IUCN Amphibian Red List for mainland Southeast Asian amphibian species and has just started on research projects examining the trade in Southeast Asian amphibians.

Brittany Mitchell (Honours Student, AM & UNSW) has just commenced an Honours project using large-scale citizen science data (FrogID, of course!) to examine the acoustic responses of frogs to anthropogenic disturbance. She's focusing on the raspy sounds of the Red Tree Frog (*Litoria rubella*)- so please record and submit the calls of this species to FrogID to help her out!

Duong Le (PhD Student, AM & University of Science, Vietnam National University-HCMC) continues to examine the impacts of habitat modification on amphibians in Vietnam. She was awarded a visiting fellowship this year, and spent three weeks working with the lab at the Australian Museum.

Ross Sadlier (Senior Fellow) continues to work on New Caledonian lizards, with the description of two new species of skink restricted to islands accepted for publication, reviews of the biology of two threatened skink species *Lacertoides pardalis* and *Simiscincus aurantiacus* published. Closer to home, he's completed a manuscript recognising the Kaputar Skink, has a review of *Egernia cunninghami* and a description of the eastern Mallee Dragon near completion, plus a response to the Arthur Georges review of *Freshwater Turtles of Australia* accepted for publication by the *Australian Journal of Zoology*.

Harold Cogger (John Evans Memorial Fellow) updated 7th edition of Reptiles & Amphibians of Australia (see below), which will be out shortly. It's little changed except for an updated table of current species at the front and an Appendix of 29 pages in which the 80-odd species described since the last edition are included with brief descriptions and maps.

Glenn Shea (Research Associate) continues to work mostly on the systematics of the skinks of the genera *Eugongylus*, *Sphenomorphus* and *Scincella* in New Guinea, Indonesia, the Solomon Islands and SE Asia, and their relatives. More locally, he is writing up several papers on Australian typhlopids, on the ecology of New Caledonian skinks (the latter with Herve Jourdan, Ross Sadlier and Aaron Bauer), and the systematics of *Eulamprus* and the *Egernia striolata* complex. During 2017, he also participated in the IUCN Australian reptile assessments, and visited the Western Australian Museum, Museum of Victoria, Queensland Museum, Bishop Museum, US National Museum and Museum of Comparative Zoology in search of more scales to count. During his US tour, he examined the type of the enigmatic species *Hombronia fasciolare*, purportedly from New Zealand, and has resolved the identity of that species, which is not what it has previously been suggested to be. During 2018, he has been supervising research projects by two third year DVM students: Paul McCarthy, who is analysing Glenn's data on museum specimens

of *Eugongylus albofasciolatus*, with the aim of resolving the limits of this species, and Jessica Fenyo, who is looking at patterns of geographic variation in morphology of the Green Tree Snake, *Dendrelaphis punctulatus*.

Frank Lemckert (Research Associate) has changed consultancies and is now working with SMEC, but keeping his hand in with frogs through working with the Australian Museum as well as trying to manage the NSW Declining Frog Working Group. The latter has proven challenging with less time than ever in a busy job, but Frank is working to have one meeting a year and keep the group in the mind of the NSW Office of Environment and Heritage (OEH). Frank's involvement in more technical frog work now mostly involves using his now very, very, very long experience with frogs to review technical works for government agencies. This has included modelling of predicted frog distributions for NSW DPI and minimum viable patch sizes for a couple of species for the OEH Saving our Species Program. And Frank still provides some input into listings of species under different legislations and producing expert reports to allow determinations of impacts on threatened species. He still dreams of spending time in alcohol fume filled rooms looking at frog specimens, but his main enjoyment is in sending pointed text messages to Jodi every time he hears her on the radio (his phone is rapidly wearing out).

Marion Anstis (Research Associate) is collaborating with the lab primarily in regards to the search for the Peppered Tree Frog (*Litoria piperata*) and investigating the validity of the species (aka measuring a lot of tiny frogs!). Some copies of the second edition of Marion's 'Tadpoles and Frogs of Australia' (New Holland 2017) will be available at the December ASH meeting. It includes 5 new species described since the first edition and has been revised and updated, with some additional photos.

Gerry Swan (Research Associate) is still writing a paper on the 15009 animals recorded during a 950km pipeline from Wallumbillah to Moomba in 2011, including 6000 frogs, 4500 lizards and 1000 snakes. A more recent pipeline across the Barkly Tablelands in 2017 could be even more interesting once the data are extracted and finally collated. Then if the weather eventually warms up some more field work with *Ctenophorus mirrityana*.

Dane Trembath (Research Associate) has been busy working on his mulga snake revision and listening to and identifying frog calls submitted to FrogID. He's also involved in collaborative fieldwork in the Northern Territory, and FrogID outreach.

Renee Catullo (Research Associate) is primarily collaborating with the lab on big round frogs (*Platyplectrum*) and pointy brown frogs (Rocket frogs).

Phil Spark (Research Associate) is collaborating with the lab on a few projects on NSW frog and reptile diversity, with a focus on the New England Tablelands.

Sophie Collins (PhD Student & Research Assistant, AM & UNE) joined the search for the Peppered Tree Frog and is resurveying frog populations on the New England Tablelands of NSW as part of her PhD.

Liam Bolitho (PhD Student & Research Assistant, SCU & AM) is chasing *Philoria* in the mountains of as part of a PhD project at SCU (David Newell), and mapping/modelling on other projects.

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University of Newcastle

In late 2017 the University of Newcastle's "Frog Lab" welcomed a new academic into our fold – a wonderfully charismatic Ass. Prof. Matthew Hayward. The only problem is, he's a mammal guy. To make things worse, he sometimes works on birds. But rather than have deep species rifts divide our lab, us herpetologists have taken the high road and embraced this new diversity by reimaging ourselves as more than just frog-ophiles and adopting the new name; The University of Newcastle's "Biological Conservation Research Group". Keep an eye out for the logo in 2019.

Despite infiltration by inferior non-herpers, our work is still very frog-dominated. We continue to blaze forward with research on what we assume is everyone's favourite amphibian – the green and golden bell frog, *Litoria aurea*. PhD students, Dean Lenga and Chad Beranek, and honours student Cassie Maynard, are continuing our work on *L. aurea* population ecology, effects of mosquitofish, and habitat use across created wetlands on Kooragang Island. Years of work on this system is finally paying off, with record numbers of frogs captured over the last two seasons. We finally have frogs breeding like rabbits!

In addition to a proliferation of tadpoles, we celebrated a proliferation of *L. aurea* focused PhD theses this year. Alex Callen, Carla Pollard, James Garnham, Melanie James, and all made it across the line and either graduated or had their thesis accepted. They are now experiencing post-PhD life working in lecturing, animal services, consulting, and local council, respectively.

We also have Lachlan Campbell and Rose Upton rushing toward the pointy end of the PhD stick, with their projects looking at cryopreservation in goanna and frog sperm, respectively. They made us proud (and a little jealous) by presenting at the world cryopreservation conference in Spain earlier this year, alongside their supervisors Simon and John Clulow. Lachlan has made great leaps in the optimization of goanna sperm collected in the Kimberly region ahead of the cane toad invasion, with the aim to preserve genetic diversity ahead of inevitable population decline. And Rose has become one of the very few people in the world to raise frogs to adulthood that were breed from cryopreserved sperm. I've been told that an F2 generation is just around the corner! We are also proud of these two for recently out-competing a bunch of microbiologists and winning two-out-of-four presentation awards during the University of Newcastle's Research Higher Degree Biology conference.

John Gould is also rounding up his PhD work on the breeding biology of the rare and enigmatic, Fletcher's frog, *Lechriodus fletcheri*. In addition to fascinating discoveries of semelparity and conspecific larval cannibalism within this species, John has developed computer automated frog-recognition for *L. fletcheri* individuals. I'm sure you'll agree that the development of such efficient and non-invasive mark recapture methods has great potential for improving research on many of our species!

Earlier in the year, we congratulated students, Belinda Howe and Cottrell Tamessar, on the completion of their first-class honours theses. Although they were confined to the laboratory, Belinda's project on immune gene expression in a chytrid-susceptible and non-susceptible species, plus Cottrell's work on optimising

antimicrobial control for amphibian skin culture, have broad implications for combating the threat of chytridiomycosis. Belinda unexpectedly found that two species which differed greatly in their susceptibility to chytrid, had the same genetic immune-response. Suggesting that an alternative, physiological mechanism is behind *Litoria fallax's* tolerance to the disease. Cottrell was able to optimise a cell-culture media and grow a non-immortalised *L. aurea* cell line that can be used for testing the effects of chytrid on frog skin ex-situ.

To round off our lab's busy year, we have also commenced a research project investigating what impact subsidence caused by longwall coal mining has on the heath frog, *Litoria littlejohni*. Despite causing severe destruction of amphibian breeding habitat, the impact of longwall mine subsidence on native species has been drastically understudied, and subsequently poorly understood. To help fill this knowledge gap, Kaya Klop-Toker has returned to the lab in a post-doctoral role, Samantha Wallace from Deakin University has joined us for a PhD position, and we have one more PhD candidate joining us in the new year to fill the population genetics component of our research. However, this project has scope for multiple honours projects and we are in the search for students. If you know of any clever and enthusiastic students who might be interested in such a conservation focused project, we would greatly appreciate it if you could encourage them to contact us. They can email Kaya (kaya.klop-toker@newcastle.edu.au) for more information.

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