THE AUSTRALIAN SOCIETY OF

HERPETOLOGISTS

INCORPORATED

NEWSLETTER 50

Published [14 December 2015]

Letter from the editor

It is with the dawning of springtime that I bring you the 2015 newsletter for the Australian Society of Herpetologists. Having missed the last conference in Eildon, Victoria I can only report from rumours and gossip that it was a scientifically rich and debonair affair.

I was excited and proud to hear of strong matriarchal leadership coming from the queens of herpetology - Joanna Sumner, Devi Stuart-Fox and Katie Howard (with Nick Clemann and Richard Peters presumably hiding their y chromosomes and trying to live up to such levels of general awesomeness). It is great and promising to see a generation with a few more amazing female mentors coming through in the society. Perhaps Beyonce will write a song about girls ruling herpetology one day yet… the world is not enough.

Our up coming meeting in the deep south of Tasmania promises to attract the die hard ASH A-team and anyone else who needs an excuse to make it to the island state. I am now back in Australia, having returned to my roots in the north and I very much look forward to catching up with everyone then.

Special thanks to Jacquie Herbert - my favourite and beloved human, for filling in as ASH paparazzi and providing photographs for another edition of the newsletter.

Back legs first,
Deb Bower

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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THE AUSTRALIAN SOCIETY OF HERPETOLOGISTS

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WCH: Developing a Global Communication Network for Herpetologists

The World Congress of Herpetology (WCH) is an international organisation whose primary goal is: "**to promote international interest, collaboration and co-operation in herpetology**". To date this has been achieved by successfully hosting seven world congresses in locations around the world (Fig. 1). The 8th WCH will be hosted in Hangzhou, China and will complete the location of these meetings in all zoogeographic regions of the world.

In addition to providing this important role, we are now inviting herpetologists around the world to join an exciting new WCH initiative to develop a global communication network for herpetologists. The objective is to provide a global framework linking individual herpetologists, with local, national, and regional herpetological societies around the world, using an integrated email, www sites, and social media network.

The WCH Global Communication Network for Herpetologists has been initiated to provide a rapid form of communication among herpetologists around the world, linking students, professors, and professional herpetological organisations through the World Congress of Herpetology (Fig. 2).

Affiliated organisations form an important role within the WCH constitution (Fig. 3) and can facilitate opportunities to connect individual herpetologists around the globe. To promote regional participation in WCH activities, affiliated organisations are encouraged to nominate a member to represent their organization and region on the WCH International Herpetological Committee.

The global WCH communication network will disseminate information about:

- Local and national herpetology labs, and organizations, located within each region;
- Local, national, regional, and WCH conferences and workshops in herpetology;
- Studentships, scholarships, and volunteer opportunities for students in herpetology;
- Career opportunities such as postgraduate scholarships, postdoctoral positions, jobs for herpetologists;
- Research activities that have an international perspectives and global participation.

The WCH communication network will engage with affiliated individuals and organizations using all opportunities available. Current media include:

1. Active links between websites, including both organizations and individual labs organized within regions, via an interactive global map on the WCH website
   (WCH URL: http://www.worldcongressofherpetology.org/);
2. Reciprocal sharing of logos on our respective websites;
3. Linking Facebook pages via the WCH Facebook page;
   (https://www.facebook.com/pages/World-Congress-of-Herpetology/141951465828807).

4. Actively disseminate information using social media networks (e.g. WCH Twitter hashtag: # WCHerpetol);
5. Provide email notifications to individual herpetologists around the world, distributing through individual, local and regional email list-servers.

In my role as WCH Secretary General, I would like to personally invite individuals and organizations to join this network, and where possible, encourage your local organisation to become "Affiliated" with the World Congress of Herpetology.

If your organisation joins this exciting new initiative, I would also invite your organization to appoint a “WCH Representative” to provide an active link between WCH and your organisation. The primary role of the nominated WCH Representative would be to share and pass on information from your society membership to the WCH and vice-versa (through a regional hub). The WCH Representative will be a direct link for communication and will mediat

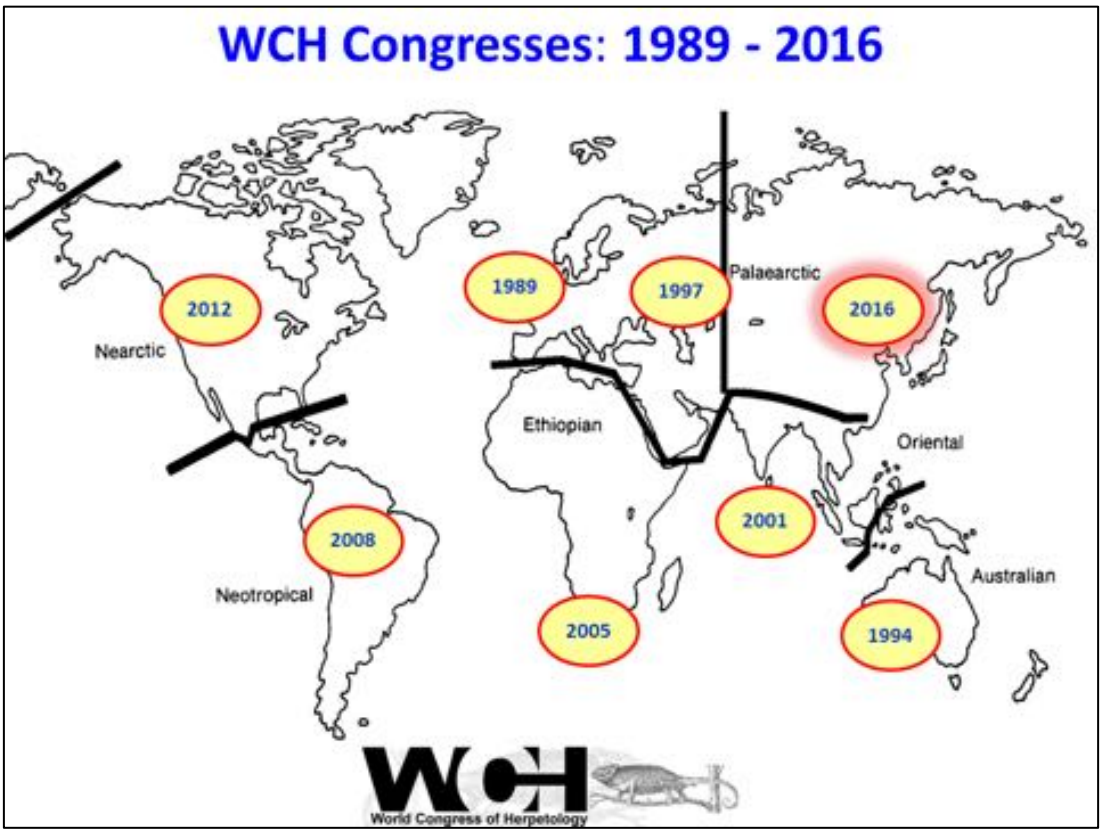

FIG. 1. Years and regional locations of the WCH congresses hosted between 1989 and 2012.

The 8th WCH congress will be held in Hangzhou, China between the 16-21 August in 2016

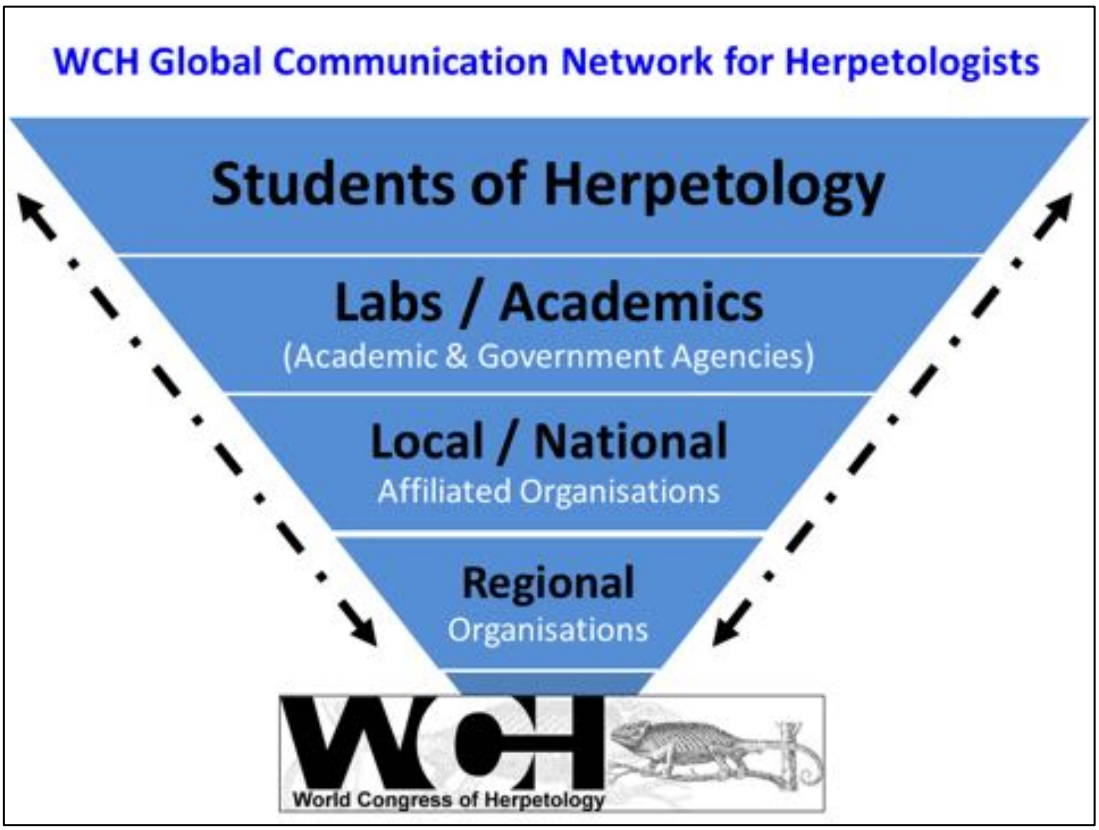

FIG. 2. A conceptual model for developing the WCH Global Communication Network for herpetologists. Individuals can link directly via Facebook and other social media, and organisations can share web pages and email list servers.

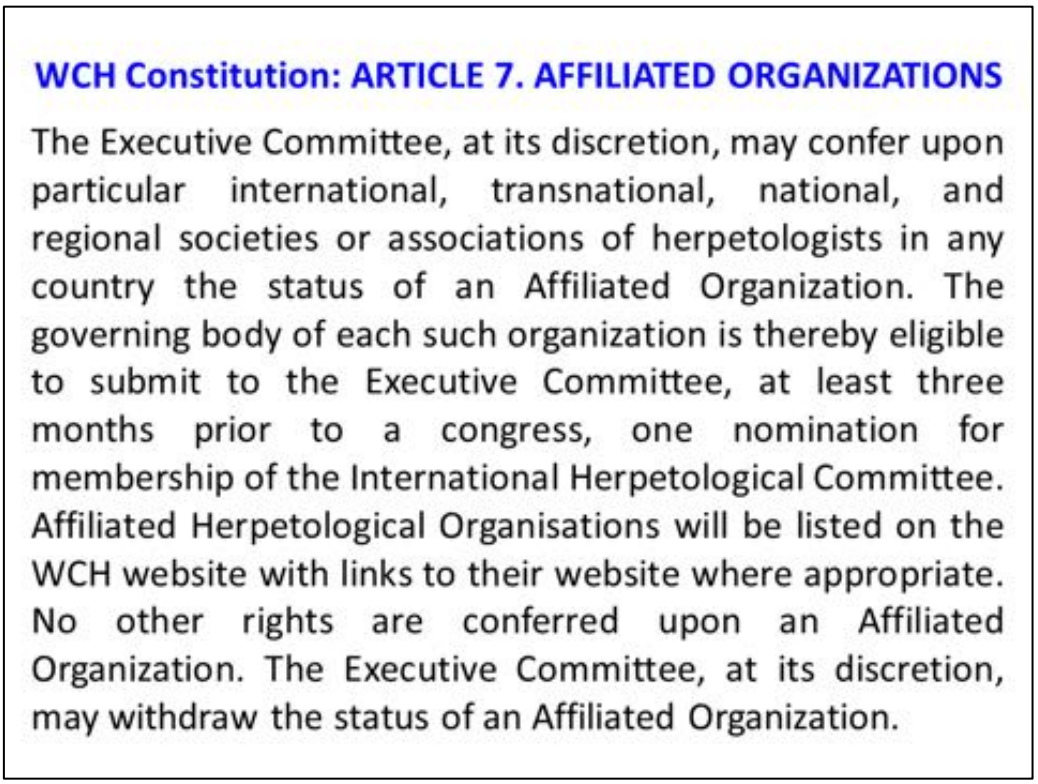

FIG.

FIG. 3. An extract from the WCH constitution outlining the role of “Affiliated Organizations".

World Congress of Herpetology

A warm WELCOME awaits you for the 8th World Congress of Herpetology in Hangzhou, China

15-21 August, 2016

4. First advertisement for the 8th World Congress of Herpetology to be held in Hangzhou, China between 15th and 21nd of August 2016.

Australian Capital Territory

Fenner School
Australian National University

The Conservation and Landscape Ecology Group brings together a diverse group of field ecologists, PhD students, postdoc researchers and statisticians who work on conservation biology and applied ecology problems. Over recent years our focus on reptiles has increased and now includes work on responses to habitat restoration, pine plantations, forestry, fire, and connectivity conservation. These projects are supervised by David Lindenmayer, Damian Michael, Adrian Manning and Don Driscoll.

Brett Howland continues to work on his PhD, studying lizard populations in grasslands. His research recently featured in the media. Watch his video here https://www.youtube.com/watch?v=qgIqLY1VdCc, and read his Conversation piece here https://theconversation.com/new-evidence-culling-kangaroos-could-help-the-environment-30795. Brett has a paper in review "Habitat preference of the striped legless lizard: implications of grazing by native herbivores and livestock for conservation of grassland biota". He has also been deeply involved in a translocation project for the striped legless lizard (*Delma impar*).

Damian Michael has been managing several large-scale monitoring programs in southern NSW and north-east Victoria for the past 15 years and is still very much focused on farmland ecology and rocky outcrop conservation in Australia. He also conducts a mark-recapture and demographic study on small-eyed snakes and eagerly awaits a suitable PhD candidate to begin a radio-telemetry study on red-bellied black snakes.
Daniel Florance continues to manage the Environmental Stewardship Program (ESP) and the Grazing Study. These monitoring programs investigate the biodiversity benefits of the Australian Government's agri-environment scheme and keep Dan very busy.

Geoffrey Kay is at the business end of his PhD examining the ecological elements of large-scale agri-environment conservation policy. He has been working on addressing policy gaps around local- and landscape-scale processes underpinning biodiversity conservation networks in agricultural landscapes, using herpetofauna as a case study. Geoff is also using a large-scale empirical dataset to examine the drivers of livestock grazing, including the impacts of historic grazing on herpetofauna.

Melissa Wynn is a year and a half into her PhD on the role of invasive species in the decline of Christmas Island's native reptiles. She hopes to identify the cause of recent reptile extinctions and describe the population demographics and predator-prey interactions of the last remaining wild reptile (the CI giant gecko). Melissa aims to use empirical evidence to identify key factors causing these declines, and inform on-ground management in collaboration with Christmas Island National Park (Parks Australia).

Nicole Hansen is one year into her PhD on herpetofauna movement in fragmented agricultural landscapes. Her findings will assist in better planning and implementation of plantings and inform land-use planning, policy development, restoration and stewardship payments. Nicole presented a poster on "How does matrix management influence connectivity for herpetofauna?" at the 2015 Biodiversity Across The Borders conference. Nicole's research was featured in "Landmark Ag Study" published in the Young Witness in Feb 2015 http://www.youngwitness.com.au/story/2864524/landmark-ag-study/. Nicole is about to embark on her next field season and is seeking volunteers to help discover the movements of *Gehyra variegata* though cropping landscapes and revegetation areas. This involves trapping, radio-tracking and fluorescent powder tracking (ie. lots of running around in the dark and chasing reptiles!) More details here: https://nicoleahansen.wordpress.com/2015/06/01/volunteers-needed-for-reptile-movement-research-in-agricultural-landscapes/

Stephanie Pulsford is two years into her PhD on matrix ecology. She has spent much of the past two years getting very familiar with pitfall and funnel traps in the grazed Box Gum Grassy Woodlands between Bungendore and Cowra. Her research will help understand how grazing management influence herpetofauna populations and their movement in agricultural landscape. She is looking forward to the next few months of statistics and writing.

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Institute of Applied Ecology
University of Canberra

From the Georges Crew:- There has been quite a bit of transitional activity at the University of Canberra associated with the Georges Crew, as a result of the finalization of the Collaborative Research Network on Murray-Darling Futures and our ARC DP grants on sex determination in reptiles. This has been of greater concern I guess for people on soft money, the postdoctoral fellows, than for me and my colleagues in establishment positions. Kazumi Matsubara returned to Japan to continue his research on sex chromosome evolution with Yoichi Matsubara, Clare Holleley has taken up a position with CSIRO in Canberra, Bernd Gruber has returned to his substantive position with the University of Canberra, Carlos Gonzalez-Orozco has been offered a job back in Columbia and is exploring his options, and Peter Unmack has taken up a fixed term appointment with the Institute for Applied Ecology following his success in the ARC Linkage and Discovery rounds. So considerable downsizing of the overall team, but good news for most of the postdocs in that they have secured ongoing relevant employment.

The publication list tells the story, but the big news items from the team was the publication of the *Pogona vitticeps* genome sequence, quite an achievement for a small team. This annotated genome is already in use by labs from around the world, and with the other reptilian genomes coming on line, will prove an invaluable resource for studies in genetics and evolution. The other big highlight was acceptance of our paper by *Nature* on the remarkable finding that species can rapidly transition from genetic sex determination to temperature dependent sex determination. Sex reversal demonstrated earlier in the lab in our Science paper has now been shown to occur in the wild, and drive the rapid transition under climate change.

We have described a couple of new species of *Elseya* in studies led by Scott Thomson – *Elseya rhodini* from New Guinea and *Elseya flaviventralis* from the Northern Territory, bringing to closure the description and naming of the species identified in the earlier allozyme work on species boundaries undertaken by myself and Mark Adams. Using some new techniques involving SNP markers generated by our partner Andrzej Killian and co-located company DArT, we were finally able to tackle the issue of hybridization between the endemic Bellinger Sawshell Turtle *Myuchelys georgesi* and the introduced *Emydura macquarii* – it is happening, and causing considerable concern in the context of the disease that has decimated the *Myuchelys georgesi* (the most beautiful turtle in the world).

The PNG program continues at great pace, effectively led now by Yolarnie Amepou. Deb Bower and Simon Clulow saw the program first hand as the inaugural “eco-tourists” at the program’s research facility at Wau Creek, in the Kikori rainforest. These two champions did some serious herping, documenting about 28 species of frog (a number new to science) and catching (and eating) a range of interesting reptile species. Shenomorphus muelleri was a real highlight. Corner them at ASH for an update.

Three students completed in the last two years – Maria Boyle was awarded her PhD on modelling work on the role of sex determining mode on range shifts in the context of climate change, Bruno Ferronato on his study of urbanization and the eastern longnecked turtle, and Scott Thomson on the taxonomy of chelid turtles. Scott has moved back to Brazil to work, and Maria and Bruno have tutoring positions. Angelica Lopez, Yolarnie Amepou and Kate Hodges are at various stages of completion. Kate has moved to Queensland to take up a job with the Qld Government and Jon Marshall.

Yolarnie Amepou won the student prize at the Society for Conservation Biology Oceania Conference in Fiji, again at the TSD Conference in Tuscon Arizona, and was recently awarded the National *Pride of PNG Award* for Women, Environment by the PNG government, and so has really waved the flag for the team.

There are lots of opportunities for postgraduate students in the area of genetics and genomics in the Wildlife Genetics laboratories and the Epigenetics Laboratory, with or without a field component, if you are looking for a home.

2015

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Keogh Lab
Australian National University

Departed but not forgotten:
Dan Hoops (recent PhD graduate) recently finished his PhD at ANU earlier this year and will be starting a 2-3 year postdoc at McGill University in Montreal in the new year. Renee Catullo (PhD graduate a couple of years ago) finished up a postdoc at CSIRO and how now moved on to Macquarie University where she is teaching first year biology.

The current lab:
Maxine Piggot (ARC DECRA Fellow). Maxine is currently working on new methods to analyse water samples for detecting overall biodiversity using environmental DNA. One part of this project is seeing how well eDNA methods can work on detecting stream dwelling frogs such as Booroolong frogs at different life stages.

Mitzy Pepper (postdoc). Mitzy is now a mum! A few months after seeing you all at ASH she had a boy who they named Arifin. He is currently in training with his tiny hands to catch herps on upcoming fieldtrips. The rest of 2015 so far has been spent changing nappies and feeding a voracious baby, and trying to pretend she's still an

active part of the Keogh lab by turning up to the occasional lab coffee just so someone else can hold the baby. This little boy will keep me busy at home for most of the rest of this year, but hopefully I can introduce you at the Tassie ASH in 2016.

Kiki Dethmers (Northern Australian Marine Research Alliance Postdoctoral Fellow). Kiki has finished up her postdoc on sea turtle genetics and the impact of ghost nets. She has just returned to Holland for some rest and relaxation. Watch this space for what coming next.

Thomas Merkling (postdoc, Fyssen Fellowship, France). Thomas spent most of last year doing lab work on frillneck lizard skin and plasma samples to look at which pigments produce colour in the different frill colour forms. The corresponding paper has just been accepted in the Biological Journal of the Linnean Society. The main result is that carotenoids are present in all colour forms (but decrease from west to east), whereas pteridines are present only in the red and orange forms. He is currently applying for postdocs as well as working on another frilly paper looking at colour signalling and whether it changes according to colour form. He will also collaborate with Lisa Schwanz (UNSW) on temperature-dependent sex determination stuff.

Marta Vidal-Garcia (PhD student). Marta has been rendering and analysing 3D morphological and jumping kinematics data of Australian frogs. She is also writing up the results for some of these projects, and will be submitting her thesis later this year.

Damien Esquerré (PhD student). After finishing his MPhil with Scott, Damien is now enrolled in a PhD in the Keogh lab. He is now going to look deeper into the convergent evolution between pythons and boas, as well as starting other projects involving morphometrics, phylogenomics, phytogeography and systematics of pythons. Moreover, as always he is deeply involved in systematics and taxonomy of the extraordinary Liolaemus lizard radiation from his native South America. He is also a founder and editor of the first Chilean herpetological journal (www.boletindeherpetologia.com) and his book on the reptiles of the Metropolitan Region of Chile is being published this year.

Gabi Openshaw (PhD student). Gabi is currently writing up her first PhD manuscript, which examines the utility of combining alternative 2D observation angles for geometric morphometric analyses of complex biology structures. She is still working on monitor lizards, with the focus of this paper being the monitor (29 species) cranium. She has also started preliminary shape analyses of her 3D monitor lizard skull dataset, primarily focusing on the pygmy Odatria species.

Ian Brennan (PhD Student). Ian joined the Keogh lab in early 2015, after finishing a MSc in the USA on the systematics of Australian pygopodid geckos. Although a newly minted ANU PhD student, he has jumped right into work on macroevolutionary processes in southeast Asian and Australian geckos, and assorted phylogenetic studies of Australian squamate groups. Recent fieldwork has left him buried under a pile of lizard tissues, but he's hoping with more time at ANU, people will stop asking him who he is, and where Mitzy went. You can keep up with Ian and contact him through iangbrennan.org

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New South Wales

Taronga Zoo

Captive breeding and experimental reintroduction of declining NSW frog species, chytrid disease characterisation research with our many partners, and Fijian Crested Iguana conservation programs still dominate our current research. This work is being coordinated by Michael McFadden and Peter Harlow at Taronga Zoo, with help from all 8 staff in the Herpetofauna Division.

Corroboree Frogs

The Southern Corroboree Frog remains one of Australia's most threatened amphibians, with less than 50 individuals remaining in the wild. A captive insurance

colony has been established for this species at five institutions, including 350 frogs at Taronga Zoo, under the guidance of the recovery team co-ordinated by Dave Hunter, NSW Office of Environment and Heritage (OEH). Captive breeding has been very successful, resulting in the release of over 2300 eggs and 200 frogs from Taronga Zoo since 2011, in addition to those from our partners at Zoos Victoria and the Amphibian Research Centre. The experimental reintroduction program, led by Dave, is utilising a number of techniques, including release into artificial and natural pools at extinct sites, large disease-free enclosures and translocation to montane sites in the absence of other amphibian species that may act as a reservoir host for chytrid fungus.

The Northern Corroboree Frog is also critically endangered due to the introduced chytrid fungus. It has continued to decline rapidly in recent years, with its numbers being critically low at two of its three ESU populations. Taronga Zoo maintains a population from the Northern Brindabella ESU and has had successful breeding each year since obtaining the species in 2010. A trial reintroduction has taken place in the Northern Brindabellas in collaboration with NSW OEH, releasing eggs/tadpoles, juvenile frogs and adult frogs. Monitoring is taking place to assess the effectiveness of this technique and compare the survival at various life stages. Additionally, work is being undertaken with this species in conjunction with Dr Phil Byrne and Dr Aimee Silla to assess the hormonal induction of breeding.

Fijian Crested Iguanas

The Fijian Crested Iguana is a critically endangered species that has only a single secure population, on the uninhabited Iguana Sanctuary island of Yadua Taba. On all of the other 7 or 8 islands it still survives on, the population is down to a few dozen individuals. Genetic work by Scott Keogh and his team has shown that every island population is genetically distinct, so captive breeding of island populations on the verge of extinction has begun. Between April 2010 and February 2012, twenty one Crested Iguanas were captured on Monuriki Island by National Trust of Fiji staff, and delivered to captive breeding facilities at Kula Eco Park, Korotoga, Fiji. Iguanas are normally kept singularly, however they are paired for 3 - 4 months annually for breeding. So far 17 Monuriki iguanas (8 males and 9 females) have successfully reproduced at Kula Eco Park.


In late 2011 all goats (with funding from Pacific Invasive Initiative) and Pacific rats (with funding from Birdlife International) were eradicated from Monuriki Island. In the absence of goats the dry forest vegetation has begun to recover, so in May 2015 the first 32 captive bred Monuriki crested iguanas were released back on Monuriki Island. See the Kula Eco Park web site for details of the captive breeding project at: http://www.fijiwild.com/crested-iguana

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Whiting Lab
Macquarie University

The Lizard Lab (aka Whiting Lab) has had a busy time working on tree skink sociality, cognition and personality on campus and in Albury (Julia Riley) and South Australia; on water skink learning and dominance (Fonti Kar); on toad cognition and personality (Jodie Gruber, Shine Lab) and various other projects. Marco Barquero graduated (PhD, cosupervised by Richard Peters), having worked on Jacky dragon signalling. Siobhan Dennison (cosupervised with Adam Stow) handed her PhD in earlier this year after working on Great Desert skinks. Dan Noble won a DECRA and in May 2015 moved down the road to UNSW. He is still working on various projects in the lab and supervising Fonti's project. The lab also welcomed some new faces: James Baxter-Gilbert is working on water dragons (PhD), Arnaud Badiane (PhD, cosupervised with Pau Carazo) and Isabel Damas (PhD). Dr. Feng Xu (Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences) is visiting the lab for a year and working on tree skink cognition.

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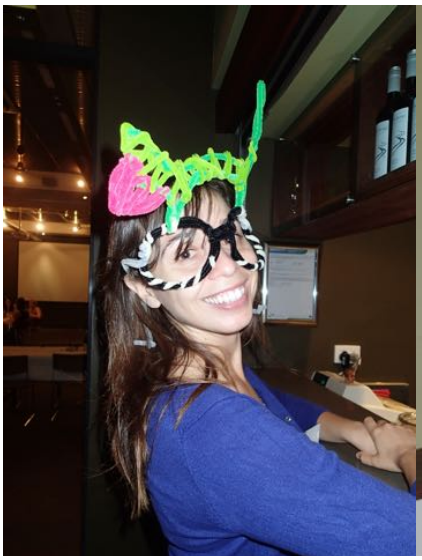


Thompson lab
University of Sydney

Apart from the on-going research on the evolution of viviparity, Mike has been busy engaging with community groups in research on the decline of turtles on the River Murray as part of an ARC Linkage grant with Ricky Spencer, Arthur Georges and Bruce Chessman.

Oliver Griffith submitted his PhD entitled “Mechanisms of placental evolution; the genetics and physiology of pregnancy in lizards” in May and will take up a postdoc position at Yale in September. Oliver presented some of his findings at the 2015 Boden Research Conference on Comparative Genomics in Adelaide this year.

Van (James Van Dyke) has begun working on conservation of turtles in the Murray River through the University of Western Sydney, but is also continuing work on lizard and snake viviparity in ongoing side projects at the University of Sydney. Van returned to the USA last year to give a talk at the University of Virginia Ecology and Evolutionary Biology Seminar Series. This year he attended the Joint Meeting of Ichthyologists and Herpetologists in Reno, Nevada, USA, where he presented a paper on how to make a baby skink: the evolution of placental nutrient transfer.

Camilla Whittington has discovered that the expression of the VEGF111 in the uterus is not a feature of viviparity, but instead is expressed in the uterus of species in the *Sphenomorphus* group skinks, regardless of parity mode, but not in skinks in other lineages. She is continuing to study pregnancy in skinks as well as mammals and seahorses. In the past year, Camilla has been an invited keynote speaker at the European Meeting of PhD Students in Evolutionary Biology (Brussels, Belgium),

Evolutionary Biology Symposium (Zurich, Switzerland) and the 2015 Boden Research Conference on Comparative Genomics (Adelaide, Australia).

Matt Brandley completed his DECRA at the end of 2014 and moved to Orange in NSW. He comes into the lab occasionally to continue work on the transcriptome of the uterus of a variety of species of reptiles (including birds). He has recently published 4 chapters (chapters 2-5) in the new edition of the 'excellent and worth buying' 4th Edition of Herpetology (Pough, Andrews, Crump, Savitzky, Wells and Brandley, 2015).

Erin McDonald has begun a Masters on vascular changes to the uterus of the live bearing skink, *Pseudemoia entrecasteauxii*, during pregnancy.

Jessica McGlashan is in the final stages of her PhD write up at the moment on "Synchronous hatching in freshwater turtles: metabolic and endocrine physiological mechanisms".

Celine Goulet is working hard on her PhD on *Lampropholis delicata* with David Chapple at Monash, cosupervised by Mike.

Bec (Rebecca) Bray now works as the Collection Manager (Terrestrial Vertebrates) at the Western Australian Museum (WAM). She completed her PhD at Monash with David Chapple, co-supervised by Mike on "The evolution, ecology and invasion biology of the lizards of Lord Howe Island".

Kevin Hendrawan completed his honours year and was awarded 'best honours student presentation' at the two conferences he has presented at – Australian and New Zealand Society for Comparative Physiology and Biochemistry (Armidale 2014) and ASH 2015. He is currently writing up his papers and working as a lab technician in medical sciences while deciding which avenue he would like to take for his PhD.

Jacquie Herbert still tries to keep control of everything in the lab during her two days a week. The rest of her time she surrounds herself with glitter…

Other "non-herp" PhD students in the lab, Melanie Laird and Jess Dudley, are working on pregnancy in mammals, and recently presented papers at the Australian Mammal Society (AMS) meeting in Hobart. Fran van den Berg, has just handed in her PhD on 'Ecology of thermally extreme environments: ontogenetic ecophysiology of flat rock spiders, *Morebilus plagusiu*" and is now busy writing up her papers and demonstrating undergraduate biology.

Other Conferences

Most of the herp members of the lab attended ASH 2015 in Eildon, Victoria and some of the lab attended the Australian and New Zealand Society of Comparative Physiology and Biochemistry (ANZSCPB) meeting in Armidale in November, 2014.

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Frog Lab
University of Newcastle

Michael Mahony has recently returned from sabbatical in the US and frog collecting trips to western Australia. Michelle Stockwell is taking a maternity leave to look after her rapidly developing tadpole - Alice. PhD students - James Garnham, Carla Pollard, Jose Valdez and Kaya Klop-Toker are in the final throes of thesis writing. Simon Clulow is continuing his work on cane toads in the Kimberley with Sean Doody and Colin McHenry; gene banking and assisted reproduction for conservation of frogs and reptiles; and various other frog projects closer to home. He is currently co-supervising John Gould's PhD on the evolutionary ecology of *Lechriodus fletcheri;* Hugh James' and Lachlan Campbell's PhD projects on various aspects of the cane toad problem in the Kimberley; Liam Grice's honours project on cane toads themselves; and has strayed from the nest to co-supervise Josephine Burstal's honours on the behaviour and invasion success of common mynas (yes, a bird). John Clulow is continuing with amphibian ART and supervising Honours student Rebecca Seeto who working with amphibian cell culture and Rhys Corrigan who is detecting eDNA in ponds. Deb Bower was working part time but has largely transitioned over to JCU, though she still maintains control of the lab by writing updates, be they true or otherwise.

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Shine Lab
University of Sydney

2015 has been a bumper year for the toad-botherers and snake-harassers of the Shine Lab. Most notably, we have been (and some of us still are) engaged in A Great Trans-Pacific Toad Jamboree. Seventeen brave souls (including professors, collaborators, postdocs, research students and staff) caught assorted flights to

Hawaii in early June, on the 80th anniversary of the day that the original Australian Cane Toads (*Bufo crosslandi*) left the docks of Honolulu on the liner Mariposa. Some of us are already back in Australia after a few weeks, whereas others will keep harassing Hawaiian toads for another month or so.

Our fundamental aim was to gather data on Hawaiian toads to compare to the extensive information we have gained in Australia. The Hawaiian work will illuminate what those original toads were like, as well as clarifying how 80 years of life in Hawaii (or Australia) have changed the Cane Toad. The project was ambitious from the outset, with teams immediately spreading out to collect hundreds of Cane Toads from both wet and dry sides of three islands, and bring them all back to a Victorian mansion on the Big Island that we transformed from a yoga retreat into an ecology lab. Rick Shine dreamed it all up (what was he smoking?) and helped set up the facilities in Hilo. Lee Ann Rollins (Deakin University) took tissue samples across three islands for genetic analysis, with help from postdoc Simon Ducatez and new graduate student Dan Selechnik. Matt Greenlees and Georgia Ward-Fear radio-tracked and spool-tracked toads in the field, when Matt wasn't busy catching invasive chameleons and the like. Simon, with his fellow postdocs Jayna DeVore and Michael Crosssland, is conducting a range of studies on larval toads, on a series of issues ranging from developmental plasticity to pheromonal communication. Grad student Jodie Gruber is quantifying toad personality, Cam Hudson is looking at morphology and locomotor ability, and Sam McCann is looking at tadpole behaviours that are relevant to toad control. Georgia Kosmala converted a sauna into an experimental chamber to investigate hydric and thermal biology of toads, and Georgia and Sam are exploring thermal biology as well. Greg Clarke is about to start his PhD on competition in toads (under the benevolent [?] co-supervision of Ben Phillips, University of Melbourne), and is running pilot studies. Crystal Kelehear Graham zipped across from the USA to look inside toads for entertaining parasites. Chalene Bezzina had the hardest job of all, as the sole RA keeping the students sober and the postdocs on track.

Compared to the great Hawaiian adventure, our usual activities look a bit more pedestrian. But there have been plenty of highlights.

Toadlord

Rick Shine is halfway through his five-year Laureate Fellowship from the ARC. He continues to believe that he runs the group, although everyone knows that Melanie Elphick (who celebrates 20 years in Rick's employ this year) is the power behind the throne. And any tendency towards over-confidence in Rick is quickly wiped out by his psychotic Bearded Dragon, Richard Parker, who rules Rick's office with an iron beard, and frequently draws blood from the professor during daily feedings.

In 2015, Rick was elected as president of the Society for the Study of Amphibians and Reptiles (SSAR), the world's biggest herpetological scientific society. He is the first non-US resident to be so honoured. A "popular" book he has written about Cane Toads will be published by the University of California Press in 2016. He has also finished a book on his snake research, and another one is well-advanced. Rick will give the public lecture at the forthcoming Behaviour 2015 conference in Cairns. He is also off to Sweden for a talk at Lund in October. Although toads have taken over his research world, he still disappears to New Caledonia every January to

continue his long-running mark-recapture studies on sea snakes, and to sample the local croissants.

If he still has any cash in his research accounts after the Hawaiian extravaganza, Rick plans to take his group to Brazil, in the toad's native range, in 2016.

Collaborators
We continue to work with several groups to exploit the potential of the cane toad system. Martin Whiting from Macquarie University in the cognition work; Keith Christian from Charles Darwin University in physiological studies; Lee Ann Rollins (Deakin University) in genetics and epigenetics. Lee Ann is co-ordinating a diverse international group to sequence the Cane Toad Genome. Ben Phillips and Reid Tingley (University of Melbourne) do all kinds of clever models that we pretend to understand. In Western Australia, we collaborate with David Pearson and Corrin Everitt, from the WA Department of Parks and Wildlife. Cathy Shilton (NT Veterinary Pathology Labs) is exploring some fascinating new diseases, and Crystal Kelehear Graham (based at the Smithsonian) is chasing parasites. In other studies, we are working with Mats Olsson (Sydney Uni), Sylvain Dubey (University of Lausanne, Switzerland), Takashi Haramura (Kyoto University), Weiguo Du (Chinese Academy of Sciences), Claire Goiran (University of New Caledonia), Thomas Madsen and Bea Ujvari (Deakin University) and Troy Baird (Oklahoma State University), as well as several other people who have good defamation lawyers and thus, are best not mentioned here.

Postdocs
Greg Brown is juggling ecological and immunological work on snakes and toads, as part of his ARC Future Fellowship. Our research station at Middle Point was largely deserted while everyone was in Hawaii, a situation that Greg regards as somewhere close to paradise. Greg's current passions include an emerging disease that rips holes in toad colons, and is rapidly fatal.

Michael Crossland continues to explore larval ecology; Rick's success in winning a large ARC Linkage grant in 2015 means that Michael can keep harassing tadpoles for a few more years. After a decade at Middle Point enjoying the delightful weather of the Top End, Michael has had a very different 2015. He spent two months on Ishigaki Island (in Okinawa, Japan) with collaborator Takashi Haramura (Kyoto University) before jetting off to Hawaii for another two months.

Matt Greenlees is our NSW toad guru, supervising hordes of students and enjoying fatherhood. Like Michael, his nefarious activities look set to continue, based on the large ARC Linkage grant that we just landed. Matt has been continuing his mark-recapture study of toads in northern New South Wales racking up summer number five, having picked up and measured close to ten thousand toads. Based on his old supervisor's (Dr Greg Brown) insistence on rigour in such studies – there is almost enough now to start analysing patterns. Otherwise he has been co-supervising Team Bufo PhD students Uditha Wijethunga and Sam McCann and honours students Lachlan Pettit and Renee Silvester along with the lab 'rogue' Blue Mountains Water Skink student Sarsha Gorissen. Summer 2014-5 also saw Matt once again 'responsible' for co-ordinating some intensive intermediate and senior undergrad subjects which included dragging about 70 undergraduate students up to

his old stomping ground in the Top End for a couple of weeks to be schooled in the art of Tropical Wildlife Biology – and not get eaten by crocodiles (he did however fail to protect them from a psychopathic piglet). He also made a cameo visit as part of the recent lab invasion of Hawaii to find about 500 toads, track a few of these and assist with setting the stage for several other projects – all while successfully avoiding being arrested (twice) and being released from Pearl Harbour Military base (those guys are pretty serious…). Otherwise he has been trying to spend a bit of time with his young family to make sure the children are sufficiently indoctrinated with an appreciation for herpetofauna, and a few other bad habits.

Camila Both has returned to an academic position in Brazil, but is organizing our plans for a trip en masse to her country in 2016.

Jayna DeVore is testing the hypothesis that a human being can survive on chocolate milk and two hours sleep per night to conduct vastly ambitious experiments on larval ecology. Jayna is documenting complex patterns of plasticity in larval responses to cues from predators and conspecifics.

Simon Ducatez continues a mix of theoretical and empirical studies, with the latter mostly focused on phenotypic plasticity and bet-hedging in toad tadpoles. He still looks fondly at birds, the subjects of his previous work, but with less enthusiasm than before: the electroshock therapy that Rick has instituted seems to be working.

Mark Richardson is based at Deakin University with Lee Ann. He is the official bio-informatician of Team Bufo. Nobody understands what he does with transcriptomes, but we suspect that it is terribly clever.

Hong Li from Nanjing University is spending a year with us to examine developmental plasticity in reptiles (especially, selective forces for the evolution of viviparity). Hong is working on the Brindabella skinks with Melanie Elphick, and also on sex-changing dragons with Clare Hollely and Arthur Georges (University of Canberra).

Graduate Students
Uditha Wijethunga (PhD, from 2012) is completing her thesis on abiotic and biotic limits to the distribution of Cane Toads in southern Australia. She has discovered that Cane Toad tadpoles just laugh at most of the factors (extremes of temperature, salinity, pH etc) that would trouble a lesser anuran. If you live in southern Australia, prepare to be hearing the guttural call of a male toad sometime sooner rather than later.

Sarsha Gorissen (PhD, from 2012) has concluded her fieldwork in the Blue Mountains and Newnes Plateau on the endangered Blue Mountains water skink, *Eulamprus leuraensis*. Sarsha is focusing on factors such as fire regimes and urbanisation, which appear to reduce habitat quality for these iconic skinks. Her third and final field season featured a fire- and a disturbance ecology study; and, involved mainly mark-and-recapture trapping and habitat scoring. She is now preparing to present these findings at ICCB/ECCB, France, and as a result, finds herself knee-deep in the bog that is data analysis. She was invited to speak at OEH "Save Our Species" meetings, and received further funding from the ESA and

USyd. So, the lizards are "sitting pretty"; well, prettier. Sarsha is currently writing her thesis, and says that she is enjoying the challenge of statistics. Yes, that's right. Enjoying it.

Georgia Ward-Fear (PhD, from 2013) is running a ridiculously complex, multi-faceted, cross-cultural project in Oombulgarri, an amazingly beautiful remote floodplain in the Kimberley. Working closely with indigenous rangers, Georgia is field-testing the idea that conditioned taste aversion can buffer the impact of cane toad invasion on yellow-spotted monitors (*Varanus panoptes*). Even more remarkably, it seems to be working.

Daniel Natusch (PhD, from 2013) has the PhD project that all snake-loving 10-year-olds dream about: studying the ecology of giant pythons in tropical rainforest at the tip of Cape York Peninsula. In particular, Dan is looking at how communally-nesting starlings are a magnet for a wide range of predator species. Dan and Georgia are competing to see whose study area offers Rick the best fishing opportunities. So far it's neck-and-neck.

Cameron Hudson (PhD, from 2013) is measuring toads, toads, and more toads. He has finally hit the 5,000 target, but shows no signs of stopping. If Cam can't tell us how toads have evolved morphologically during their Australian adventure, no one ever will. Cam is using a wide range of methods to study morphology (including 3-D scanning) and locomotor modes. Cam is also daddy-in-chief to thousands of young toads that we are raising at Middle Point under standard conditions, from parents

from across the toad's Australian range. With luck, those youngsters will tell us how much of the phenotypic variation in nature is heritable.

Jodie Gruber (PhD., from 2013) has shifted her focus from Cane Toad cognition to Cane Toad personality. Toads certainly have personalities, whereas nobody except her co-supervisor Martin Whiting is convinced that they have measurable cognitive abilities. Of course, some of us are not convinced that Martin has measurable cognitive abilities either. In work to date, Jodie has detected strong geographical variation in personality traits in toads from across the species' range in Australia. She is repeating those studies in Hawaii, and later will look at F1 youngsters from Team Bufo's common-garden breeding stock to disentangle environmental and genetic effects.

Samantha McCann (PhD, from 2014) is developing new approaches to cane toad control, especially the tadpole-trapping technologies. We are collaborating with the Western Australian Department of Parks and Wildlife to run some of those trials near Kununurra, whereas others are happening in Hawaii and New South Wales. Have Tadpole, Will Travel.

Georgia Kosmala (PhD, from 2014) is documenting hydric and thermal aspects of Cane Toad physiology. She spent a few months back in her native Brazil to document responses of native-range toads, and has since done the same with Aussie and Hawaiian animals.

Greg Clarke (PhD, from 2015) has been lured back to the Shine Lab after an Honours year with us a couple of years ago. Greg will test some hare-brained ideas hatched by his supervisors, Ben Phillips and Rick, that revolve around head-to-head competition between toads from different parts of the Australian range. He is running pilot trials in Hawaii at present. He and Rick have already made a substantial empirical advance, with the creation of a new drink called the "Rooted Toad". It involves a mixture of root beer and Captain Morgan Spiced Rum, plus tapioca balls to mimic the toad eggs. Even if nothing else comes out of Greg's PhD, it will surely be ranked as a great success.

Dan Selechnik (PhD, from 2015) has just joined us from the USA. He will work with Lee Ann Rollins and Rick on the epigenetics of the toad invasion.

Honours students

Based at Deakin University with Lee Ann, Jack Reid is examining gene expression in toad tadpoles exposed to the intraspecific suppression pheromone. At Sydney Uni, three Honours students are just beginning their work. All are doing toady things. On the north coast of NSW, Renee Silvester will look at interactions between Cane Toads and bee hives, and Lachlan Pettit will examine the impacts of translocation on dispersal rates and habitat use of toads. In Sydney, Milly Raven (co-supervised by Ashley Ward) will tease apart the stimuli that elicit schooling in larval toads.

Tech staff

Melanie Elphick is on the threshold of an almost-unimaginable triumph – surviving 20 years as Rick's research assistant, and still greeting every day with a smile. She

runs the Brindabella skink work every summer, with a variety of collaborators, as well as the exponentially increasing load of paperwork from the University bureaucrats. Mel has broken all existing world records in the fields of manuscript formatting, figure preparation and proofreading. Mel is also good at keeping the lab clean and organised. One of the highlights of the year for Mel was another successful field season, continuing the long-term research project on *Bassiana duperreyi* with Hong Li. Other memorable moments of 2015 include the 2-week party Mel and Uditha had while the rest of the lab were conducting cane toad research in Hawaii, and watching the enthusiasm with which Richard Parker sinks his teeth into bok choy (and occasionally professorial phalanges) on feeding days.

Given the size of the lab group and the genius of bureaucrats for inventing yet more forms to fill in, Mel's job would be impossible without Chalene Bezzina's able assistance. Despite an unsettling tendency to enjoy talking about the All Blacks defeating the Wallabies, Chalene has become an indispensible part of the group.

Book chapters

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Papers

2014 papers

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Greenlees, M. J., M. R. Crossland, and R. Shine. 2014. Larval interactions with an invasive species (the cane toad *Rhinella marina*) affect life-history traits in an Australian anuran (the marbled frog *Limnodynastes convexiusculus*). Australian Zoologist 36:424-428.

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2015 papers

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Shine, R. 2015. The evolution of oviparity in squamate reptiles: an adaptationist perspective. Journal of Experimental Zoology A, in press.

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Hudson, C. H., B. L. Phillips, G. P. Brown, and R. Shine. 2015. Virgins in the vanguard: low reproductive frequency in invasion-front cane toads. Biological Journal of the Linnean Society, in press.

Cook, T. R., X. Bonnet, T. Fauvel, R. Shine, and F. Brischoux. 2015. Foraging behaviour and energy budgets of sea snakes from New Caledonia: insights from implanted data-loggers. Journal of Zoology, in press.

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Webb, J. K., M. L. Scott, M. J. Whiting, and R. Shine. 2015. Territoriality in a snake. Behavioral Ecology and Sociobiology, in press.

Clarke, G., M. Crossland, C. Shilton, and R. Shine. 2015. Chemical suppression of embryonic cane toads (*Rhinella marina*) by larval conspecifics. Journal of Applied Ecology, in press.

González-Bernal, E., G. P. Brown, M. S. Crowther and R. Shine. 2015. Sex and age differences in habitat use by invasive cane toads (*Rhinella marina*) and a native anuran (*Cyclorana australis*) in the Australian wet-dry tropics. Austral Ecology, in press.

Dustin Welbourne
University of New South Wales

Dustin has been working on how passive infrared triggered camera traps can be used to survey squamate communities. A chapter detailing the proof of concept is in: Meek, P. & Fleming, P. (eds) 2014, Camera Trapping: Wildlife Management and Research, CSIRO Publishing, Canberra.

The following publication is in press where Dustin and co-authors compare the camera trapping method with alternative techniques and show camera traps are as effective as cover boards for surveying squamates.

Welbourne, D., MacGregor, C., Paull, D., & Lindenmayer, D. B. (in press) The effectiveness and cost of camera traps for surveying small reptiles and critical weight range mammals: A comparison with labour-intensive complimentary methods, Wildlife Research.

Dustin hopes to attend the ASH conference next year and present work on determining abundance of Jacky dragons using camera traps alone.

Queensland

James Cook University

Lin Schwarzkopf has just got the wonderful opportunity that is an ARC Linkage grant in conjunction with Paul Roe at QUT to create a caller/listener device, which could be used to detect anything that answers calls – like threatened species or invasive species... This in addition to research funding from Main Roads and Transport to study endangered birds!

Meanwhile her students are continuing to do their wonderful work, finishing theses left and right. Ross Alford is scampering around, having got a new hip that works much better than the old one. He has taken sick leave from his long-service leave… and still seems to be working full time.

Our newest lab member is Don McKnight, who hails from the US and is rashly planning to study the impacts of declines and extinctions on the genomics of frog populations. Deb Bower has returned home from Madagascar, and joined us for a postdoc to help us understand the tipping points associated with declines and extinctions of frog populations.

Heather Neilly has now qualified for her PhD and is trapping every vertebrate on the Wambiana grazing trial (six times), and will soon know how different grazing strategies influence them. Eric Nordberg qualified for his PhD after arriving from the US, and has come a long way from tracking rattlesnakes to working out why native house geckos like grazed areas so much.

Ben Muller is planning to upgrade to a PhD after having such a great time doing his masters on trapping toads (but we think he just really wants to play golf for another year). Rickard Abom has just written the last chapter of his PhD and is waiting for Lin to read it, the end is nigh! Anna Pintor is also nearly finished her PhD. She is going to revolutionise the approach to ectotherm physiology, limits and climate change worldwide, starting with her recent paper in Ecological Monographs.

Kat Schmidt finished her PhD working out what eats what in a rainforest stream. Kiyomi Yasumiba finished her PhD on the acoustic social systems of cane toads, and is waiting to hear about the acceptance of her 2nd paper. Daryl Trumbo has completed a huge common garden experiment on tadpoles from various locations in Australia – they seem to have responded to his treatments, but no one is sure what happened. Swati Banergee has taken a leave of absence from her PhD to do other, much more important things.

Lexie Edwards has joined us as a technician after completing her honours on *Cophixalus*. Rachel Duffy (who used to be Rachel Heckathorn) finished her honours on red-backed fairy wrens and is about to run off travelling with her husband, Richard (our first lab marriage!) Jodie Nordine has just completed her honours on behavioural syndromes in skinks – they don't have'em, except for thermoregulatory behaviour. Arnaud Gourret is finally writing up his masters on leaf-tailed geckos and the temperatures of the trees they live in.

Congratulations to Angus McNab, who has received highly positive comments on his MSc thesis.

Lee Berger and Lee Skerratt continue their fabulous studies of wildlife disease, Lee Berger working on the genomics of Bd, with a bevy of postdocs and students, including Laura Branelly, Alicia Maclaine, Alex Roberts and Tiffany Kosch. Dave Pike and Betsy Roznick returned to Florida in the USA, and continue to publish with their JCU colleagues – long may D&B prosper.

Sara Bell has taken a Job at the Australian Institute of Marine Science, working on coral disease. Richard Duffy has moved on to greener pastures at the Billabong Sanctuary, where all the visitors are getting highly accurate information on the local wildlife. Mat Vickers is doing a postdoc with Fabien Aubret in France. He has now raised approximately 1 million baby snakes. He says they are really different from skinks.

Leila Brook has moved on to the Dept of Land, Water, the Environment and Planning in Victoria. Justin Perry mostly works for CSIRO, but occasionally works on his PhD thesis on fire and wildlife. John Llewelyn is continuing his postdoc on skink evolution in peripheral isolates with Ben Phillips. Stewart Macdonald also works on these skinks on recently finished his PhD, took a trip to WA and became the first person known to us that has seen every Australian species of python.

Sarah Sapsford is doing a PhD on plants in WA. Jason Schaffer continues his great work on freshwater turtles, Ellen Ariel is still studying the fresh and sea turtles of north Queensland. Blanche Danastas is completing her PhD on sea snakes, and has found a few new ones in the process.

Abom, R., Vogler, W., & Schwarzkopf, L. (2015). Mechanisms of the impact of a weed (grader grass, *Themeda quadrivalvis*) on reptile assemblage structure in a tropical savannah. *Biological Conservation, 191, 75-82.*

Bower, D. S., Valentine, L. E., Grice, A. C., Hodgson, L., & Schwarzkopf, L. (2014). A trade-off in conservation: Weed management decreases the abundance of common reptile and frog species while restoring an invaded floodplain. Biological Conservation, 179, 123-128.

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Daskin, J. H., Bell, S. C., Schwarzkopf, L., & Alford, R. A. (2014). Cool temperatures reduce antifungal activity of symbiotic bacteria of threatened amphibians–implications for disease management and patterns of decline.

Davis, J. L., Alford, R. A., & Schwarzkopf, L. (2015). Some lights repel amphibians: implications for improving trap lures for invasive species. International Journal of Pest Management(ahead-of-print), 1-7.

Hacking, J., Abom, R., & Schwarzkopf, L. (2014). Why do lizards avoid weeds? Biological

Invasions, 16(4), 935-947.

Hagey, T., Harmon, L., & Schwarzkopf, L. (2014). How Geckos Stick in Nature: Ecology and Biomechanics of Gecko Feet. Paper presented at the Integrative and Comparative Biology.

Llewelyn, J., Schwarzkopf, L., Phillips, B. L., & Shine, R. (2014). After the crash: How do predators adjust following the invasion of a novel toxic prey type? Austral Ecology, 39(2), 190-197.

Manicom, C., Alford, R., Schoener, T. W., & Schwarzkopf, L. (2014). Mechanisms causing variation in sexual size dimorphism in three sympatric, congeneric lizards. Ecology, 95(6), 1531-1544.

Phongkangsananan, N., Schwarzkopf, L., & Pike, D. A. (2014). Chatty females and quiet males: complex vocal communication in the northern dtella, *Gehyra dubia*. Herpetological Conservation and Biology, 9(2), 285-296.

Roznik, E. A., Sapsford, S. J., Pike, D. A., Schwarzkopf, L., & Alford, R. A. (2015). Condition-dependent reproductive effort in frogs infected by a widespread pathogen. Proc. R. Soc. B, 282(1810), 20150694.

Sapsford, S. J., Alford, R. A., & Schwarzkopf, L. (2015). Visible Implant Elastomer as a Viable Marking Technique for Common Mistfrogs (*Litoria rheocola*). Herpetologica, 71(2), 96-101.

Sapsford, S. J., Roznik, E. A., Alford, R. A., & Schwarzkopf, L. (2014). Visible implant elastomer marking does not affect short-term movements or survival rates of the treefrog *Litoria rheocola*. Herpetologica*, 70*(1), 23-33.

Watson, G. S., Cribb, B. W., Schwarzkopf, L., & Watson, J. A. (2015). Contaminant adhesion (aerial/ground biofouling) on the skin of a gecko. Journal of The Royal Society Interface, 12(108), 20150318.

Watson, G. S., Green, D. W., Schwarzkopf, L., Li, X., Cribb, B. W., Myhra, S., & Watson, J. A. (2015). A gecko skin micro/nano structure–A low adhesion, superhydrophobic, anti-wetting, self-cleaning, biocompatible, antibacterial surface. Acta biomaterialia.

Watson, G. S., Schwarzkopf, L., Cribb, B. W., Myhra, S., Gellender, M., & Watson, J. A. (2015). Removal mechanisms of dew via self-propulsion off the gecko skin. Interface, Journal of the Royal Society, 12 (http://dx.doi.org/10.1098/rsif.2014.1396).

Yeager, A., Commito, J., Wilson, A., Bower, D., & Schwarzkopf, L. (2014). Sex, light, and sound: location and combination of multiple attractants affect probability of cane toad (Rhinella marina) capture. Journal of Pest Science, 87(2), 323-329.

Zozaya, S. M., Alford, R. A., & Schwarzkopf, L. (2015). Invasive house geckos are more willing to use artificial lights than are native geckos. Austral Ecology.

Booth Lab
School of Biological Sciences, The University of Queensland

Uzair Rusli is in the write-up stage of his PhD examining the energetic cost of nest escape in green turtles and Brisbane river turtles.

Juan Lei has completed his first year of fieldwork on his PhD project examining goanna predation of sea turtle nests at Wreck Rock beach.

Owen Coffee has just joined the lab to start a PhD examining stable isotopes and diet of green and loggerhead turtles.

Carpentier, A. S., D. T. Booth, K. E. Arthur and C.J. Limpus (2015). Stable isotope relationships between mothers, eggs and hatchlings in loggerhead sea turtles *Caretta caretta.* Marine Biology. 162: 783-797. DOI: 10.1007/s00227-015-2624-x.

Booth, D.T. (2014). Kinematics of swimming and thrust production during powerstroking bouts of the swim frenzy in green turtle hatchlings. Biology Open 3:887-894. DOI: 10.1242/bio.20149480.

Lei, J., and D. T. Booth. (2014). Temperature, field activity and post-feeding metabolic response in the Asian house gecko, *Hemidactylus frenatus*. Journal of Thermal Biology 45: 175-180. DOI: 10.1016/j.jtherbio.2014.09.006.

Sim, E.L., D.T. Booth, C.J. Limpus, and M. L. Guinea. (2014). A Comparison of

hatchling locomotor performance and scute pattern variation between two rookeries of the flatback turtle (*Natator depressus*). Copeia 2014: 339-344. DOI: 10.1643/CH-13-018.

Booth, D.T. (2014). Longer incubation periods are energetically costly for turtle embryos. Annual Research & Review in Biology. 4(19):2931-2937. DOI : 10.9734/ARRB/2014/9998

Sim, E.L., D.T. Booth and C.J. Limpus (2014). The effect of non-modal scute patterns on phenotype and locomotor performance of loggerhead (*Caretta caretta*) and flatback (*Natator depressus*) turtle hatchlings. Copeia 2014:63-69 DOI: http://dx.doi.org/10.1643/CP-13-041

Zewe, F.L., and D.T. Booth (2014). A preliminary study on the effect of isolation on frog larval growth and metamorphosis. Australian Zoologist 37:1-5.

Wood, A., D.T. Booth and CJ Limpus (2014). Sun exposure, nest temperature and loggerhead turtle hatchlings: Implications for beach shading management strategies at sea turtle rookeries. Journal of Experimental Marine Biology and Ecology 451:105–114. DOI dx.doi.org/10.1016/j.jembe.2013.11.005

Hero Lab
Griffith University, Gold Coast campus

Flat out as always here on the Gold Coast.

JMH is busy preparing for the next World Congress of Herpetology (15-21 August 2016) in China
(www.wch2016hangzhou.com)

Congratulations to Kat who has completed her PhD on Acid frogs and has now graduated to "Dr" Kat Lowe !

Mariel Familiar and Christina Kindermann are hunkered down writing papers and finishing up their PhD's this year, so things are relatively quiet.

Jon Shuker continues to write papers on Acid Frogs, and Tahlie Page and Deanna Bolto are out in the freezing weather measuring temperatures and activity of frogs in the forests of Springbrook.

In April JMH was guest international speaker at the 4th International Bornean frog Race in Sarawak. The winner found a caecilian! Check out the International Bornean frog Race facebook page :
https://www.facebook.com/TheBorneanFrogRace

Jean-Marc is always looking for good PhD candidates to work on frogs and climate change, and long-term monitoring projects (on herps and all forms of biodiversity): please contact "m.hero@griffith.edu.au" if your interested.

PS
The Survival of the Earth Depends on Frogs (http://youtu.be/ugvnxpYnsPQ)

PPS
See you all at the World Congress of Herpetology in China!

Lowe, K., G. Castley & J.-M. Hero. 2015. Resilience to climate change: complex relationships between wetland hydroperiod, larval amphibians, and aquatic predators in temporary wetlands. Marine and Freshwater Research.66:1-14.

Rhodin, A.G.J., H. Kaiser, P.P. van Dijk, W. Wüster, M. O'Shea, M. Archer, M. Auliya, L. Boitani, R. Bour, V. Clausnitzer, T. Contreras-MacBeath, B.I. Crother, J.M. Daza, C.A. Driscoll, O. Flores-Villela, J. Frazier, U. Fritz, A. Gardner, C. Gascon, A. Georges, F. Glaw, F.G. Grazziotin, C.P. Groves, G. Haszprunar, P. Havaš, J.M. Hero, M. Hoffmann, M.S. Hoogmoed, B.D. Horne, J.B. Iverson, M. Jäch, C.L. Jenkins, R.K.B. Jenkins, A.R. Kiester, J.S. Keogh, T.E. Lacher Jr., J.E. Lovich, L. Luiselli, D.L. Mahler, D. Mallon, R. Mast, R.W. Mcdiarmid, J. Measey, R.A. Mittermeier, S. Molur, V. Mossbrugger, R. Murphy, D. Naish, M. Niekisch, H. Ota, J.F. Parham, M.J. Parr, N.J. Pilcher, R.H. Pine, A.B. Rylands, J.G. Sanderson, J. Savage, W. Schleip, G.J. Scrocchi, H.B. Shaffer, E.N. Smith, R. Sprackland, S.N. Stuart, H. Vetter, L.J. Vitt, T. Waller, G. Webb, E.O. Wilson, H. Zaher, and S. Thomson (Corresponding Author). 2015. Comment on Spracklandus Hoser, 2009

(Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published. (Case 3601; see BZN 70: 234–237; 71: 30–38, 133–135, 181–182, 252–253). Bulletin of Zoological Nomenclature 72(1):65-78.

Narayan, E. J., T. S. Jessop & J.-M. Hero. 2015. Invasive cane toad triggers chronic physiological stress and decreased reproductive success in an island endemic. Functional Ecology. DOI: 10.1111/1365-2435.12446

Kindermann, C. C., E. Narayan & J-M Hero. 2014. The neuro-hormonal control of rapid dynamic skin colour change in an amphibian during amplexus. PLoS ONE Dec. 3, 2014. DOI: 10.1371/journal.pone.0114120

Simpkins, C.A., M. Van Sluys & J.-M. Hero. 2014. Swabber effect: Swabbing technique affects detectability of *Batrachochytrium dendrobatidis*. Herpetological Review. 45:443-445

Narayan, E., N. L. Evans & J.-M. Hero. 2014. Monitoring physiological stress in semi-free ranging populations of an endangered Australian marsupial, the Greater Bilby (*Macrotis lagotis*). European J. Wildlife Research. DOI 10.1007/s10344-014-0842-z

Narayan, E. & J.-M. Hero. 2014. Acute thermal stressor increases glucocorticoid response but minimizes testosterone and locomotor performance in the cane toad (*Rhinella marina*). PLoS ONE. DOI: 10.1371/journal.pone.0092090

Narayan, E., H. McCallum & J.-M. Hero. 2014. Over-wintering tadpoles of *Mixophyes fasciolatus* act as reservoir host for *Batrachochytrium dendrobatidis.* PLoS ONE. DOI: 10.1371/journal.pone.0092499

Simpkins, C.A., J.D. Shuker, G.W. Lollback, J.G. Castley & J.-M. Hero. 2014. Environmental variables associated with the distribution and occupancy of habitat specialist tadpoles in naturally acidic, oligotrophic waterbodies. Austral Ecology. 39:95–105

Narayan, E. & J.-M. Hero. 2014. Repeated thermal stressor causes chronic elevation of baseline corticosterone and suppresses the physiological endocrine sensitivity to acute stressor in the cane toad (*Rhinella marina*). Journal of Thermal Biology. 41: 72-76.

Victoria

Melbourne Museum Herpetology
Museum Victoria

Jane Melville has recently received an ABRS-sponsored Churchill Fellowship to spend 7 weeks in 2016 at the Natural History Museum in Berlin, to learn X-ray CT scanning.

Joanna Sumner is making progress on the Ian Potter Biobank build and the `liquid nitrogen system should be up and running in the new year when we will move our tissue collection into the new system. Also hoping to continue the venom bank work after great results from preliminary venom gland transcriptome sequencing work.

Christy Hipsley joined the MV Herp lab in January as a postdoc from the Natural History Museum in Berlin, Germany. Christy works on the evolutionary history of squamate reptiles, integrating geologic and genomic records to uncover patterns and processes of morphological transformation. She is currently investigating the developmental dynamics of ecomorphological convergence in lacertid lizards, using X-ray CT and geometric morphometrics. She will also do this for Australian skinks … eventually.

Katja Boysen recently joined the lab as a Research Associate and will be working on malaria parasites (*Haemosporida*) in Australian lizards. Coming from a malaria background (Max Planck Institute for Infection Biology, Berlin), she is hoping to contribute to the understanding of host-parasite evolution in Australian herpetofauna.

Katie went from Katie Smith to Katie Date and is juggling collection management tasks with reading and assisting with herpetology research where she can.

Maggies Haines completed her PhD and is now working as a project officer at Museum Victoria. She's using the NGS approach DArTseq to further investigate the *Litoria ewingii* / *L. paraewingi* hybrid zone and is currently wading through piles of data.

Claire Keely is just back from maternity leave and is writing up her project on the conservation genetics of the endangered Growling Grass Frog, *Litoria raniformis*. Kirilee Chaplin is continuing her PhD research on the conservation genetics and ecology of several grassland earless dragon species in Queensland. Currently she is working on the Emerald species' morphology/description. Kirilee has received a pile of grants: Linnean Soc. NSW - Joyce W. Vickery Award, Peter Rankin Herpetology Trust Fund, Holsworth Wildlife Research Endowment, Museum Victoria 1854 Student Grant and Australian Conservation Taxonomy (Zoology) Award organised by the Society of Australian Systematic Biologists.

Brittney Carter is analysing DArTseq data for her masters project on desert dragons. “A comparison of habitat distributions, gene flow and diversification in a sand-specialist (*C. isolepis)* and rock-specialist (*C. caudicinctus*).

Haines, M. L., Moussalli, A., Stuart-Fox, D., Clemann, N. and Melville, J. 2014. Phylogenetic evidence of cryptic diversity and historic mtDNA introgression in the lizard genus *Pseudemoia* from south-eastern Australia. Molecular Phylogenetics and Evolution, 81: 86-95.

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Jane Melville, Katie L Smith, Rod Hobson, Sumitha Hunjan, Luke Shoo. The role of integrative taxonomy in the conservation management of cryptic species: The taxonomic status of endangered earless dragons (Agamidae: Tympanocryptis) in the Grasslands of Queensland, Australia. PLoS ONE 07/2014; 9(7):e101847

Paul M. Oliver, Katie L. Smith, Rebecca J. Laver, Paul Doughty, Mark Adams. Contrasting patterns of persistence and diversification in vicars of a widespread Australian lizard lineage (the *Oedura marmorata* complex). Journal of Biogeography 07/2014; 41(11)

T. Lynette Plenderleith, Katie L. Smith, Stephen C. Donnellan, Richard D. Reina, David G. Chapple. Human-Assisted Invasions of Pacific Islands by Litoria Frogs: A Case Study of the Bleating Tree Frog on Lord Howe Island. PLoS ONE 05/2015; 10(5):e0126287.

Clemann N, Rowe KMC, Rowe KC, Raadik T, Gomon M, Menkhorst P, Sumner J, Bray D, Norman M, Melville J (2014) Value and impacts of collecting vertebrate voucher specimens, with guidelines for ethical collection. Memoirs of Museum Victoria 72: 141–151.

Oliver PM, Laver RJ, Melville J, Doughty P (2014) A new species of Velvet Gecko (Oedura: Diplodactylidae) from the limestone ranges of the southern Kimberley, Western Australia. ZooTaxa 3873 (1): 049–061.

Ng J, Clemann N, Chapple SNJ, Melville J (2014) Phylogeographic evidence links the threatened 'Grampians' Mountain Dragon (*Rankinia diemensis* Grampians) with Tasmanian populations: conservation implications in south-eastern Australia. Conservation Genetics 15:363–373.


SHADOW'S GYM
ELTHAM
Corona

School of BioSciences and School of Ecosystem and Forest Sciences University of Melbourne

Stefano Canessa has just submitted his thesis and promptly disappeared to the northern hemisphere to start a postdoc at the Zoological Society of London. We are of course distraught at this turn of events and scheming to have his thesis failed and EU citizenship revoked, thereby bringing him safely back to our collective grasp. Andrew Hamer has returned to his old love, spending copious hours chasing Bell Frogs on the south-coast of New South Wales. He continues his work on the ecology of urban amphibians and mitigation of road impacts.

Geoff Heard will be repatriated in early September, having spent the last two years in the UK. He continues to work on the metapopulation and metacommunity dynamics of peri-urban frogs, and has been dabbling in the spatial epidemiology of chytridiomycosis. Claire Keely has just returned from maternity leave, during which she not only looked after her bouncing boy Max, but had a manuscript accepted, pushed various analyses forward and played the odd netball grand final. Wonder woman. Kirsten Parris has just taken up a Senior Lecturer position in the School of Ecosystem and Forest Sciences.

Recent froggy news includes a Linkage Project on the costs and benefits of urban stormwater wetlands, and the development of metacommunity models for predicting the fate of peri-urban frogs. Reid Tingley has been busy investigating the cost-efficiency of environmental DNA sampling for monitoring threatened aquatic species. What started out as an excuse to chase European newts around the suburbs of Melbourne has now led to projects on platypus and fish. Sadly, much of Reid's herpetological research is done via the R interface these days. He is hoping that the return of Dr Heard in 2015 will set this right.

Matt West is currently slaying the thesis dragon. Once dispatched it will disgorge some very nice insights into chytrid impacts on Spotted Tree Frogs. That's your hot tip right there.

Grants and awards
2015-2021 National Environmental Science Program, Research Hub for Clean Air and Urban Landscapes: Rayner, Parris, Hobbs, Bekessy et al.
2014-2017 ARC Linkage Grant (LP140100343): Swearer, Parris, Mulder, Pettigrove and Coleman, Assessing the ecological costs and benefits of artificial wetlands in urban landscapes.
Media
'Keeping toads out of the Pilbara' Wildlife Australia (print), Vol. 95, 03/2015.
'Newt troublemakers settle in' Lost in Science (3CR community radio), 10/07/2014.
'From pet to pest: newts settle on the urban fringe' ECOS Magazine, 09/07/2014.

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Canessa, S., Heard, G.W., Robertson, P. and Sluiter, I.R.K. (2015). Dealing with trade-offs in destructive sampling designs for occupancy surveys. PLoS ONE 10(3): e0120340.

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Ewen, J.G., Soorae, P.S. and Canessa, S. (2014). Reintroduction objectives, decisions and outcomes: global perspectives from the herpetofauna. Animal Conservation, 17(S1): 74-81.

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Hamer AJ, Langton TES, Lesbarrères D (2015) Making a safe leap forward: Mitigating road impacts on amphibians. In Handbook of Road Ecology, eds R. van der Ree, D.J. Smith, C. Grilo. Wiley Blackwell, West Sussex, UK.

Hamer AJ, Harrison LJ, Stokeld D (in press) Road density and wetland context alter population structure of a freshwater turtle. Austral Ecology.

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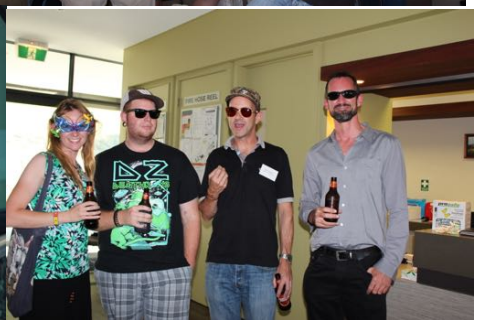
Tingley R, Thompson MB, Hartley S, Chapple DG (in press) Patterns of niche filling and expansion across the invaded ranges of an Australian lizard. Ecography.



Ecophysiology & Conservation Research Group (richardreina.com)
Monash University

Our group now have a new website with info on our research and other interesting news. The website is richardreina.com and our Twitter handle is @LetsGetPhysEcol follow us for updates!

Brian Kearney's PhD is nearly ready for submission. Brian has been examining the effects of secondary salinisation in Australia, with a focus on how elevated salinity impacts directly on anuran survival and overall species richness. Brian has a new paper out from his PhD work in JEZ.

Lynette Plenderlieth is another PhD student ready to fly the coop with her thesis almost ready for submission. Lynette began studying the introduction biology and ecology of *Litoria dentata* on Lord Howe Island. She has since expanded her research to the ecology of all *Litoria* frogs in Australia. She is exploring the phenology and detectability of *Litoria* in South East Queensland and examining the development and behaviour of tadpoles exposed to predation risk at different temperatures and population densities. Lynette recently published her first paper on Lord Howe Island in PLoS One.

Sean Williamson's PhD on the influence of oxygen availability on embryonic development in turtles and crocodiles is coming along nicely. Sean has completed the majority of his Australian fieldwork with the final field season in Costa Rica looming, biologists have it tough I tell you! Sean has recently had his first PhD paper accepted in Journal of Wildlife Diseases on crocodilian hematology.

Haley Mason has very recently completed her Honours year looking at the effects of climate change on sea turtles and the impact it might have on temperature preferences of hatchlings and the sex ratio of adults.

Chloe Rings published her honours work in PBZ on embryonic arrest in flatback turtles and is now working as a ranger on the Crocodile Islands in the Northern Territory.

The 35th annual symposium on sea turtle biology and conservation was held in Dalaman, Turkey, where Richard gave the invited keynote address entitled 'Sea turtles and climate change'. Sean presented his findings from an incubation experiment he had completed on Heron Island one week earlier. Talk about a quick turnaround! Sean's presentation on the role of hypoxia in extending embryonic arrest received many interesting questions from people excited by the potential applications of the findings for avoiding movement-induced mortality when transporting turtle eggs. Post-conference, Sean is currently recovering from his Turkish coffee addiction whilst Richard is a recovering from a near-fatal baklava overdose.

Rings, C.C., Rafferty, A.R., Guinea, M.L., and Reina, R.D. 2015. The impact of extended preovipositional arrest on embryonic development and hatchling fitness in the flatback sea turtle. Physiological and Biochemical Zoology 88, 116-127. DOI: 10.1086/677951

Plenderleith, T.L., Smith, K.L., Donnellan, S.C., Reina, R.D., Chapple, D.G. 2015. Human-Assisted Invasions of Pacific Islands by *Litoria* Frogs: A Case Study of the Bleating Tree Frog on Lord Howe
Island. PloS One. DOI: 10.1371/journal.pone.0126287

Kearney, B.D., Pell, R.J., Byrne, P.G., and Reina, R.D. 2014. Anuran larval developmental plasticity and survival in response to variable salinity of ecologically relevant timing and magnitude. Journal of Experimental Zoology 321A, 541-549. DOI: 10.1002/jez.1887

Rafferty, A., Scheelings, T., Foley, L.J., Johnstone, C., Reina, R., 2014, Reproductive investment compromises maternal health in three species of Freshwater Turtle, Physiological and Biochemical Zoology [P], vol 87, issue 3, University of Chicago Press, United States, pp. 411-419. Doi:10.1086/675310

Rafferty, A., Reina, R., 2014, The influence of temperature on embryonic developmental arrest in marine and freshwater turtles, Journal of Experimental Marine Biology and Ecology [P], vol 450, Elsevier BV, Netherlands, pp. 91-97. Doi:10.1016/j.jembe.2013.10.018

Scheelings, T.F., WIliamson, S., and Reina, R.D. (2015). Hematology and serum biochemistry ranges for free-ranging freshwater crocodiles (*Crocodylus johnstoni*) in Western Australia. Journal of Wildlife Diseases in press.

South Australia

Mike Tyler
University of Adelaide

In the course of the past year our activities have involved studies on diverse topics. Firstly, a continuation of work on frog fossils from caves on the WA/SA border on the Nullarbor Plain. This material is the first from the Plain and is dated at around 400,000 yr BP. The specimens have been extracted by a group at Flinders University.

A curious feature of the frog materials is the fact that even as early as the Eocene the specimens represent extant genera of hylids, limnodynastids and myobatrachids, such as *Litoria*, *Limnodynastes* and *Crinia*. In contrast the mammals exhibit substantial diversification over the same periods of time.

For the last decade collaboration with Professor John H. Bowie and many of his post-graduate students has resulted in the isolation and identification of peptides in frog skin secretions. (Macroglands of Duellman). The latest study of one of the peptides in *Litoria caerulea* and related species is caerin 1. In collaboration with a group at Harvard University it has been demonstrated that this peptide inhibits or prevents the transmission of HIV.

In the course of the past year Mike Tyler received the UNESCO Achievement Award for heightening awareness of the ecological plight of frogs and the discovery of pharmaceutical products developed from frog secretions.

Tyler, M.J. (2014) Pheromones and Amphibian Behavior. In Toxinology. SpringerReference.com.

Compernolle, S.V., Smith, P.B., Bowie, J.H., Tyler, M.J., Unutmaz, D. and Rollins-Smith, L.A. (2015) Inhibition of HIV Infection by Caerin 1 Antimicrobial Peptides. Peptides.

Read, J.L., Tyler, M.J. and Robinson, M. (2015) Recruitment and abnormality rates of a desert frog assemblage at an Australian copper mine. Ecological Management & Restoration.


ash2015

Michael Bull
Flinders University

Mike Bull has been leading the team focusing on sleepy lizards, pygmy bluetongue lizards (Mid-north region, SA) and slater's skinks (Alice Springs, NT). The sleepy lizard project is concentrating on behaviour syndromes and social networks among the lizards living in an area, and how that influences the transmission of parasites. The pygmy bluetongue project continues with new insights into social interactions, the impact of grazing (by sheep) on lizard behaviour and habitat, and conservation strategies. Included in these conservation strategies are population augmentation translocations, which are being investigated in collaboration with Mark Hutchinson, Mike Gardner and Phil Weinstein. The slater's skink project continues to explore the use of artificial burrows for this species with new insights into the preferred burrow characteristics of the species.

Dale Burzacott continues as Mike Bull's research assistant and lab coordinator.

Stephan Leu is using social network theory to investigate animal social behaviour and parasite transmission processes. Currently, he is investigating salmonella transmission through sleepy lizard networks. Over many months of fieldwork each year, he and his team have collected a lot of detailed data on lizard movement, interactions, parasite load, body condition etc., which are the basis for his

modelling. He has also been working on mating systems and long-term monogamy in sleepy lizards, and drivers of social network topology.

In the coming field season the Bull Lab will welcome collaboration with the University of California, Davis. Andy Sih and his team will be joining our sleepy lizard team for 3 field seasons and will be investigating social networks in the sleepy lizard, with a focus on lizard behaviour and how this influences lizard home range.

New to the Pygmy Bluetongue lizard team are Bonnie Derne and Lucy Clive. Both Bonnie and Lucy have commenced their PhD's this year. Their projects will continue to build on pygmy bluetongue lizard translocation research. They will be conducting experimental translocations within field enclosures, which have been established in a known pygmy bluetongue habitat, which will commence in March, 2016. They will use these translocations to assess genetic, ecological and parasite related risks associated with uniting allopatric populations.

Jess Clayton and Torben Nielsen are in the final year of their PhD's, working on grazing impacts on pygmy bluetongue lizards. Jess has collected burrow data over two field seasons and will use this data to investigate burrow occupancy by lizards and other species at the site, and how burrow construction and persistence is influenced by a range of environmental factors including grazing, rainfall, vegetation cover and soil moisture.

Aaron Fenner is currently working as a regional ecologist for Arid Recovery and Bush Heritage Australia, but continues to have adjunct lecturer status at Flinders University. Aaron continues his work on pygmy bluetongue lizards and is co-supervising two honours students with Prof Mike Bull, Chris Seidel and Cara Haig, who will be investigating the impact buffel grass and vegetation clearing has on small vertebrate diversity and abundance in South Australia's rangelands on Bush Heritage's Bon Bon Station.

Julie Schofield and Mehregan Ebrahimi have finished their PhD's. Mehregan is now working at the Shiraz University in Iran, but continues to have an adjunct lecturer status at Flinders University. He continues his work on pygmy bluetongue lizards with publications exploring lizard behaviour.

Stuart Thomas is new to the Bull Lab, commencing his Honours project on Slater's Skink earlier this year. His research aims to investigate burrow characteristics that are favourable to Slater's skinks.

Bull, C.M., Godfrey, S.S., Ebrahimi, M. and Fenner, A.L. (2015) Long and short term residence in refuge burrows by endangered pygmy bluetongue burrows. Amphibia-Reptilia 36(2) 119-124

Clayton, J. and Bull, C.M. (2015) The impact of sheep grazing on burrows for pygmy bluetongue lizards and on burrow digging spiders. Journal of Zoology. In Press

Ebrahimi, M., Godfrey, S. S., Fenner, A. L. and Bull, C. M. (2014) Mating behaviour in pygmy bluetongue lizards: do females 'attract' male lizards? Australian Journal of Zoology 62(6) 491-497

Ebrahimi, M. and Bull, C.M. (2015) Behavioural changes in an Endangered grassland lizard resulting from simulated agricultural activities. Journal of Arid Environments. 113 102-107

Ebrahimi, M., Ebrahimi, E., and Bull, C.M. (2015) Minimizing the cost of translocation failure with decision-tree models that predict species' behavioural response in translocation sites. Conservation Biology 29(4) 1208-1216

Ebrahimi, M., Godfrey, S. S., Fenner, A. L. and Bull, C. M. (2015) Interactions between pygmy bluetongue lizards and some co-existing species. Transactions of the Royal Society of South Australia. In Press

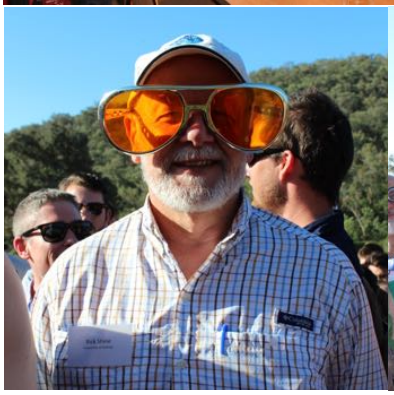
Fenner, A. L., Majoros, P., and Bull, C. M. (2015) Scatting behaviour of the sleepy lizard, *Tiliqua rugosa*. Transactions of the Royal Society of South Australia. In Press

Leu ST, Burzacott D, Whiting MJ, Bull CM (2015) Mate familiarity affects pairing behaviour in a long-term monogamous lizard: evidence from detailed bio-logging and a 31-year field study. Ethology 121:760-768

Pelgrim, K, Fenner, A. L., Schofield, J. A., and Bull, C. M. (2014) Dynamics of a temperate grassland reptile community in the mid-north of South Australia. Transactions of the Royal Society of South Australia 138(2) 257-266

Shamiminoori, L., Fenner A. L., Schofield, J. A. and Bull, C. M. (2015) Variation in size and condition of neonate pygmy bluetongue lizards, *Tiliqua adelaidensis*. Transactions of the Royal Society of South Australia. In Press






James Menzies
University of Adelaide

Menzies, J.I. (2014a). Notes on *Nyctimystes* (Anura: Hylidae) tree frogs of New Guinea, with descriptions of four new species. Alytes 30, 42-68.

Menzies, J.I. (2014b). Notes on *Nyctimystes* species (Anura,Hylidae) of New Guinea: the *Nyctimystes narinosus* species group with descriptions of two new species. Transactions of the Royal Society of South Australia 138. 135-143

Menzies, J.I. (2014c) Notes on tree frogs, *Nyctimystes species* (Anura: Hylidae), of New Guinea; the *Nyctimystes* papua Species Group. Alytes 31, 59-76.

Menzies, J.I. (2014d). Notes on the tree frogs (Anura; Hylidae; Nyctimystes) of New Guinea: the *Nyctimystes montanus* Species Group. Submitted to Raffles Bulletin of Zoology.

Menzies, J.I. and G.R. Johnston (2015). The structure of the male proboscis in the New Guinean tree frogs *Litoria pronimia* and *Litoria havina* (Anura: Hylidae). Australian Journal of Zoology. (in print)

Menzies, J.I. and Awal Riyanto (2015). On the generic status of '*Nyctimystes*' *rueppelli* (Anura: Hylidae) a tree frog of Halmahera Island, Indonesia.Alytes (in print).

Menzies, J.I. and G.R. Johnston (2015). The structure of the male proboscis in the New Guinean tree frogs *Litoria pronimia* and *Litoria havina* (Anura: Hylidae). Australian Journal of Zoology, 63(3), 175-180.

Menzies, J.I. and Awal Riyanto (2015). On the generic status of '*Nyctimystes*' *rueppelli* (Anura: Hylidae) a tree frog of Halmahera Island, Indonesia. Alytes 13, 17-22

Western Australia

Davis Lab
Edith Cowan

Although the herp focus of the Davis lab is waning with a mainly bird focus at the moment, we have managed to keep our reptile fire ecology interests burning. We have two long-term projects. One is looking at the post-fire recovery of a reptile community at Kings Park, a large urban bushland remnant in central Perth. The other is looking at the impacts of fire on reptiles at Bush Heritage Australia's Charles Darwin Reserve - work undertaken by Tim Doherty during his PhD in Rob's lab. Tim looked at the interaction between feral cats and fire in semi-arid scrublands and has recently submitted! Rob is hoping to get back to working on frogs sometime in the near future.

More lab news at: www.faunaresearch.worpdress.com

Davis, R.A. and Doherty, T.S. (2015). Rapid recovery of an urban remnant reptile community following summer wildfire. PLoS One. 10(5): e0127925.

Doherty, T., Davis, R.A., Van Etten, E.J.B., Collier, N. and Krawiec, J. (2015). Response of a shrubland mammal and reptile community to a history of landscape-scale wildfire. International Journal of Wildland Fire. 24: 534-543

Bateman and Fleming
Curtin and Murdoch

We have gained 4 new honours students: A. Marinovic - "Seed dispersal by *Tiliqua rugosa rugosa*"; R. Chippendale - "Bite force in *Tiliqua rugosa rugosa*"; M. Castelli - "Autotomy in pygopodids and skinks"; and S. Smithies - "Lizard predation in the Great Western Woodlands".

Nothing else to report - business as usual!

Gilson LN & Bateman PW. (2015). Stuck in a rut: Potential costs of sand roads to gopher tortoises *Gopherus polyphemus*. Current Zoology. In Press

Bateman, P. W., Fleming, P. A., Jones, B. C., & Rothermel, B. B. (2014). Defensive responses of gopher tortoises (*Gopherus polyphemus*) are influenced by risk assessment and level of habituation to humans. Behaviour,151(9), 1267-1280.

Bateman, P. W., & Fleming, P. A. (2014). Body size and group size of Cuban tree frog (*Osteopilus septentrionalis*) tadpoles influence their escape behaviour. Acta Ethologica, 18(2), 161-166.

Bateman, P. W., & Fleming, P. A. (2014). Living on the edge: Effects of body size, group density and microhabitat selection on escape behaviour of southern leopard frogs *Lithobates sphenocephalus*. Current Zoology, 60(6), 712-718.

Bateman, P. W., Fleming, P. A., & Rolek, B. (2014). Bite me: Blue tails as a 'risky-decoy defence tactic for lizards. Current Zoology, 60(3), 333-337.

Western Australian Museum

After several years of a collection-manager-less collection, we are delighted to welcome Bec Bray from Melbourne to the WAM herp team. Bec is finishing up her PhD with Dave Chapple at Monash, while steadily working through the backlog of neglected loans, unregistered specimens and general lab chaos that has accumulated in the intervening years. Welcome Bec!

Super WAM Research Associates Ryan Ellis and Luke Kealley continue to contribute to research projects and collection management while pursuing their higher degrees at Charles Darwin University and UWA (see publications below).

The big news for our collections is we're moving the whole bloody lot (about 165,000 herp specimens) to a brand-spanking new wet store in 2016. This is part of the WA Museum's 'New Museum Project', of which about $22 million of the $428 million allocated to the new display museum downtown goes to the new wet store and new laboratories. Although moving the entire collection (again!) is a daunting task, we'll be happy to move it from the current wet store, which was originally built as a paint room for arcade video games for Time Zone in the late 90s. The old wet store will be reconfigured to house our large specimens, which have been off-site at a chemical depot for decades, a welcome consolidation of the specimens.

Research-wise, strong collaborations with ANU, Museum Victoria and SA Museum are on going, with some fruits of these efforts published recently. Regular visitors include Aaron Bauer, Dan Rabosky and countless Moritz people who can't seem to get enough of WA reptiles. Can you blame them?!

Doughty, P., Kealley, L., Fitch, A. and Donnellan, S.C. (2014). A new diminutive species of *Varanus* from the Dampier Peninsula, western Kimberley region, Western Australia. Records of the Western Australian Museum 29: 128–140.

Doughty, P., Kealley, L., Shoo, L.P. and Melville, J. (2015). Revision of the Australian Pebble-mimic Dragons (*Tympanocryptis cephalus*: Reptilia: Agamidae) species-group. Zootaxa: in press.

Ellis, R.J. (2015) Corrections of the type specimens of *Liasis olivaceus barroni* Smith, 1981 (Serpentes: Pythonidae). Records of the Western Australian Museum 30(1): 61–63

Ellis, R.J. & Georges, A. (2015) An annotated type catalogue of the turtles (Testudines: Pleurodira: Chelidae) in the collection of the Western Australian Museum. Records of the Western Australian Museum 30(1): 52–60.

Maddock, S.T., Ellis, R.J., Smith, L.A., Doughty, P. and Wüster, W. (2015). A new species of death adder (Acanthophis: Serpentes: Elapidae) from north-western Australia. Zootaxa 4007(3): 301-326

Oliver, P.M., Laver, R., Melville, J. and Doughty, P. (2014). A new species of Velvet Gecko (Oedura: Diplodactylidae) from the limestone ranges of the southern Kimberley, Western Australia. Zootaxa 3873: 49–61.


Zebra


DRUM & BASS

National and International

Mike Bamford

A wide range of techniques is used to sample reptile assemblages, and a lot of discussion goes into the merit of pitfall layout, drift fence design and the use of newer techniques such as funnel traps. A relationship must exist between measures of abundance determined with these sampling techniques and the absolute or actual abundance of species, but few studies have investigated this relationship. Mike's study reports on work that involved determining the absolute abundance of reptiles through systematic and intensive searching of measured plots (mostly 5m x 5m), and compares the results with pitfall trapping carried out in the same area. The study area, on the northern coastal plain of SW Western Australia, was in heathland/low woodland on sandy soils with a reptile assemblage containing a high proportion of fossorial and limbless species. It was found that these were greatly under-represented in pitfall trap results compared with systematic searching results. For example, *Lerista praepedita* accounted for 24.1% of searching captures but just 2.9% of trapping captures. In contrast, surface-active reptiles were over-represented in pitfall results. *Ctenotus fallens* accounted for 4.8% of searching captures but 23.4% of pitfall captures. The systematic searching also allowed for the calculation of absolute density of reptiles; 429.8 individuals/ha.

The results have implications for ecological studies, general surveys and conservation project, especially where fossorial species are well-represented.

Bamford, M and Calver, M. A comparison of measures of abundance of reptiles in Kwongan vegetation of the South-West of Australia, determined through systematic searching and pitfall trapping. Aust. Zool.

Edwards Lab
University of California, Merced

We just opened our doors July 1st 2015! Kinsey Brock will be joining the lab as its first PhD student starting August 2015. She will be looking at the evolution of behaviour and signalling morphology in Greek Aegean *Podarcis erhardii*. Dan is continuing her work on the evolution of *Ctenophorus* sand dragons and Galapagos tortoises and will soon be expanding her horizons to work on western US lizards.

Poulakakis N*, Edwards DL*, Chiari Y, Garrick RC, Benavides E, Russello MA, Watkins-Colwell GJ, Glaberman S, Tapia W, Gibbs JP, Cayot LJ, Caccone A. Accepted. Description of a new Galápagos giant tortoise species (Chelonoidis; Testudines; Testudinidae) from Cerro Fatal on Santa Cruz Island. PLoS ONE

Edwards DL, Melville J, Joseph L, Keogh JS. In press. Ecological divergence, adaptive diversification and the evolution of social signaling traits: An empirical study in arid Australian lizards. The American Naturalist

Rix M, Edwards DL, Byrne M, Harvey MS, Joseph L, Roberts JD. In press. Biogeography and speciation of terrestrial fauna in the south-western Australian biodiversity hotspot. Biological Reviews

Edwards DL, Garrick RC, Tapia W, & Caccone A (2014) Cryptic structure and niche divergence within threatened Galápagos giant tortoises from southern Isabela Island. Conservation Genetics 15: 1357-1369.

Garrick RC, Benavides E, Russello MA, Hyseni C, Edwards DL, Gibbs JP, Tapia W, Ciofi C, Caccone A (2014) Lineage fusion in Galápagos giant tortoises. Molecular Ecology 23: 5276-5290.

Edwards DL & Knowles LL (2014) Species detection and individual assignment in species delimitation: Can integrative data increase efficacy? Proceedings of the Royal Society B 281: 20132765

OULALAB
Station d'Ecologie Expérimentale du CNRS à Moulis, France

Fabien is still busy playing with snake eggs to try and understand how developing embryos communicate with each others, the kind of information exchanged, and the longer term effects on hatchlings' personality and performance.

Aubret, F. & Mangin, A. 2014 The snake hiss: potential acoustic mimicry in a viper-colubrid complex. The Biological Journal of the Linnaean Society 113(4): 1107-1114.

Aubret, F. 2014 Island colonisation and the evolutionary rates of body size in insular neonate snakes. Heredity, in press.

Aubret F, Tort M, Michniewicz RJ, Blanvillain G and Coulon A 2014. Cooperate or compete? Influence of sex and body size on sheltering behaviour in the wall lizard, Podarcis muralis. Behaviour 151: 1903-1920.

Michaelides S, Cornish N, Griffiths R, Groombridge J, Zajac N, Walters GJ, Aubret F, While GM and Uller T. 2015 Phylogeography and conservation genetics of the common wall lizard, *Podarcis muralis*, on islands at its northern range margin. PlosOne In press.

Aubret F, Tort M & Sarraude T. 2015 Evolution of alternative foraging tactics driven by water temperature and physiological constraints in an amphibious snake. The Biological Journal of the Linnaean Society, 115(2), 411-422.

Aubret F., Blanvillain G. & P.J.R. Kok 2015. Myth busting? Effects of embryo positioning and egg rolling on hatching success in the water snake *Natrix maura*. Scientific reports, In press.


Australian Wildlife Conservancy

AWC herpos are (avoiding winter as always) out among the traps monitoring the reptile and amphibian fauna of Australia's tropical north (the southern dwellers will have to wait for summer for their census). They occasionally take interest in those other things known as mammals and birds as well. The most recent surveys at Mt Zero-Taravale and Pungalina-Seven Emu provided more material to fuel the Moritz lab and associates, plus a possible northerly range extension for *Rhynchoedura eyrensis* (Eridani is trying to distract Mitzy from her adorable son to check this one!). AWC has also recently extended the feral cat research project across the northern savannas with intensive radio-tracking of cats is taking place at Piccaninny Plains on Cape York Peninsula, where reptiles and amphibians form a large part of the diet of cats.

Work on Great desert skinks at Newhaven Wildlife Sanctuary continues with AWC staff member/masters student Danae Moore.

Eridani has finally published the last of her PhD results, only 8 years after the fact, so now you can all read about what is slithering around inside pythons.

Moore, D., Kearney, MR, Paltridge, R, McAlpin, S and Stow, A. 2015. Is fire a threatening process for *Liopholis kintorei*, a nationally listed threatened skink? Wildlife Research. http://dx.doi.org/10.1071/WR14227

Mulder, E and Smale LR, 2015. The endoparasites of *Liasis fuscus* (Serpentes: Boidae) from the Adelaide River floodplain, Northern Territory, Australia. Australian Journal of Zoology 63, 81-90. http://dx.doi.org/10.1071/ZO14088

Minutes of the 40th AGM of the Australian Society of Herpetologist Inc.

Eildon, ACT.

Meeting opened by President Jo Sumner at 1715 on Friday 23 January 2015

Rick Shine, Devi Stuart-Fox, Paul Oliver, Clare Morrison, Kylie Robert, Simon Clulow, Glenn Shea, Ryan Ellis, Jane Melville, Paul Doughty, Mark Hutchinson, Scott Thomson, Arthur Georges, Dave Chapple, Mike Gardner, Andrew Amey, Ben Phillips, Lynette Plenderleith, Richard Reina, Simon Hudson, Memento Hudson, Michael Kearney, Nicki Mitchell, Ross Alford, David Newell, Kirsten Parris, Katie Smith, Nick Clemann, Matt Greenlees, Erik Wapstra, Jean-Marc Hero, Scott Keogh, Kate Umbers, Mitzy Pepper, Richard Peters, David De Angelis, Marissa Parrott, Katie Smith, Claire McLean, Dale Roberts, Stewart Macdonald, Mike Thompson, Francis Lemckert, Simon Blomberg, Lin Schwarzkopf, Craig Moritz, Peter Harlow.

Apologies: Deb Bower, Conrad Hoskin

All motions moved and seconded are asked for support via show of hands for and against. If no against votes are recorded the motion is passed as all in favour.

Previous minutes

Minutes of the 2014 meeting were read by Eridani Mulder, and it was moved by Rick Shine that the minutes be accepted as an accurate record of the previous meeting. Seconded by Arthur Georges, all in favour, motion carried.

Treasurer's Report

Jo Sumner presented the treasurers report, as treasurer Conrad Hoskin was unable to attend. It was moved by Erik Wapstra that the treasurers report be accepted as true and correct. Seconded by Frank Lemckert, all in favour, motion carried.

Discussion around the room indicated we should query Conrad if there is a maximum amount of money allowed in the society bank account.

Secretary's Report

Eridani Mulder provided a short secretary's report on the status of society memberships. The electronic system is still working well, and it is much easier to track down people with old email address etc.

Dale Roberts moved that the secretary's report be accepted. Seconded by Mark Hutchinson, all in favour, motion carried.

GENERAL BUSINESS
ASH Species List

Scott Keogh gave an update to the meeting on the progress of the ASH species list. A panel of experts has been formed and an emerging idea was to potentially piggyback on to a couple of well established and respected international lists. Scott will investigate whether an ASH committee could be advisory to these international lists. Jane Melville asked how this would link into the ABRS database? Scott said that he would discuss this with ALA and ABRS. Craig Moritz said he was confused about why the international lists were not drawing from ABRS lists. Scott Keogh is still pushing this issue forward and will provide another update at the next AGM.

EIS 'appropriate persons'

Jo Sumner discussed Simon Hudson's draft of appropriate persons to conduct environmental impact statements/assessments involving threatened herpetofauna. This project will continue with the help of Frank Lemckert & Melissa Bruton, who are assisting Simon and Memento Hudson.

Research Grants

Scott Keogh provided a report from the research grant committee.

At the previous ASH AGM a simple application form was put together and sent out to the ASH email list. Thirty-two applications were received in 2014. The applications were reviewed the following grants were awarded

Honours/Masters grant (up to $1000), PhD (up to $2000).

Winners:

Stephen Zozaya ($750)
Ben Halliwell ($750)
Lisa Keogh ($750)
Oliver Griffiths ($750)

Scott suggested that announcements of research grants be made at the ASH meeting, and that we make timing regular for the year. Erik Wapstra asked why we limited grants to 4 awards and whether we could give out more?

Craig Moritz suggested that we allocate 25% of our carry forward account balance each year to student research awards.

Memento Hudson asked if it the total grant amount should be a consistent amount rather than a percentage of the balance and therefore not subject to the whims of the finances of the society.

Craig Moritz moved that the society allocate a fixed proportion of 25% of the available society funds to research grants with reassessment in 3 years time. Mike Thompson seconded. All in favour, motion carried.

2016 World Congress of Herpetology

Marc Hero gave a short presentation on the upcoming World Congress of Herpetology to be held in China.

Jane Melville asked that the WCH link be added to the ASH web page.

ASH philosophy of inclusivity

Devi Stuart-Fox presented to the meeting a philosophy of inclusivity. This philosophy has been drafted for discussion amongst members. Extended discussion on various viewpoints carried on throughout the meeting. Eventually some edits were made to the original statement.

Devi Stuart-Fox moved that we accept the statement in edited form, as shown below. Seconded by Craig Moritz. All in favour, motion carried.

ASH Conference 2016

Jo Sumner discussed the 2016 ASH meeting, which is being hosted by Erik Wapstra/University of Tasmania.

A discussion ensued of where conferences are to be held. It is increasingly becoming difficult to find venues that are suitable to accommodate the number of

delegates. Nick Clemann commented about the issues with holding the conference in remoter locations in summer.

Erik Wapstra discussed the timing of the conferences. Conferences were moved to be annually several years ago. So we have had 3 years of annual conferences, so now is a good time to review this decision. Erik stated that the next conference needs to be in January/February because otherwise the timing is difficult with the upcoming WCH. Erik is thinking of holding the conference in early February 2016. Glenn queried whether we do still want to invite the SRARNZ again in 2016? Erik said that we would be able accommodate 190 delegates in 2016 at the proposed venue. Mike Thompson provided some good reasons for going back to holding the conference every 18 months, including being able to accommodate researchers who's field season is always in the summer months.

Craig Moritz suggested that members contact the secretary to discuss any issues with timing.

ELECTION OF NEW OFFICE BEARERS

The committee was stood down. Jo Sumner thanked all office bearers for their service and continued to run the meeting.

Nominations were received by the President 21 days before the AGM as listed below.

President: Erik Wapstra

Vice President: no nomination (position is taken by former President)

As there were no other nominations, the nominees were elected unopposed, with the full executive listed below.

President: Erik Wapstra

Vice-President: Joanna Sumner

Treasurer: Conrad Hoskin

Secretary: Eridani Mulder

Ordinary Members: Kate Umbers

Ordinary Members: Lynette Plenderleith

Editor: Deborah Bower

Public Officer: Mitzy Pepper

Erik Wapstra accepted the presidency, and thanked Jo Sumner for all her hard work as ASH president 2014, and for a fantastic 2014 conference.

Meeting closed at 1828 by Erik Wapstra

ADDENDUM

The Student Prize winners at the 2015 conference were as follows:

The **Peter Rawlinson Prize for PhD** presentation

Mozes Blom
Cryptic Crypto's: Capturing genomic diversity for phylogenetic inference Runner-up

Jose Ramos
Are you waving at me? Variation in tail displays by resident and intruder identity in Phrynocephalus vlangalii *from China*

The **Murray Littlejohn Prize** for best Honours presentation

Kevin Hendrawan
Inflammatory gene expression in the uterus of a live-bearing lizard

The Ric Longmore Prize for best Poster was awarded

Julia Riley
Scanning snakes: measurement of fat, lean mass and total water content of snakes using quantitative magnetic resonance

The Australian Society of Herpetologists Inc. Inclusivity Statement.

Philosophy of Inclusivity: The Australian Society of Herpetologists

Draft Statement, January 2015

The Australian Society of Herpetologists Incorporated (ASH) is a professional body for practicing herpetologists. The objectives of the Society are:

to promote the scientific study of amphibians and reptiles;

to provide opportunities for discussion and dissemination of information among its members by appropriate means, including meetings and publications; and

to take an active interest in the conservation of amphibians and reptiles.

ASH supports the discipline of herpetology in Australia by holding regular scientific meetings and offering research and travel grants to its student members. It also

hosts a list server to facilitate herpetology-related correspondence between members.

ASH seeks to ensure an inclusive, welcoming and safe and accessible environment for all herpetologists, regardless of gender, sexual orientation, race, religion, disability or physical appearance. This environment includes the physical, social and cultural environment at its scientific meetings and the virtual environment associated with its list server and other electronic communications.

At its scientific meetings, ASH will provide an inclusive, welcoming and safe environment for all delegates, and will not tolerate harassment in any form. ASH recognises that the use of language or imagery that is sexually explicit and/or denigrates others on the basis of gender, sexual orientation, race, religion or physical appearance is not appropriate during any part of its scientific meetings, including talks, poster sessions, dinners and other social events.

This statement has been endorsed by ASH and it is the responsibility of all participants to behave in the accordance with the Society's principles of inclusivity. The Society reserves the right to sanction or expel participants who do not behave accordingly.