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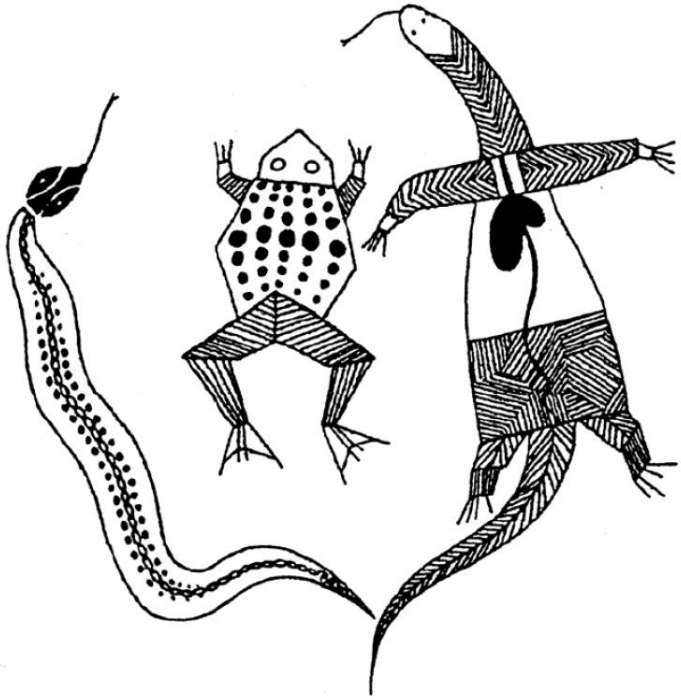


NEWSLETTER 48

Published 29 October 2014

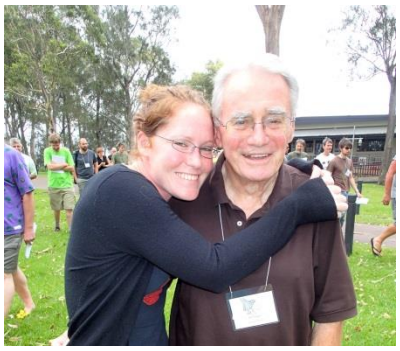
Letter from the editor

This letter finds itself far removed from last year's ASH conference, held in Point Wolstoncroft, New South Wales. Run by Frank Lemckert and Michael Mahony and their team of froglab strong, the conference featured some new additions including the hospitality suite (as inspired by the Turtle Survival Alliance conference in Tuscon, Arizona though sadly lacking of the naked basketball), egg and goon race and bouncing castle (Simon's was a deprived childhood), as well as the more traditional elements of ASH such as the cricket match and Glenn Shea's trivia quiz. May I just add that Glenn Shea wowed everyone with his delightful skin tight, anatomically correct, and multi-coloured, leggings!

To the joy of everybody in the world, the conference was opened by our very own Hal Cogger (I love you Hal). Plenary speeches were given by Dale Roberts, Lin Schwarzkopf and Gordon Grigg and concurrent sessions were run about all that is cutting edge in science and herpetology. Of note, award winning speeches were given by Kate Hodges (Ph.D) and Grant Webster (Honours) and the poster prize was awarded to Claire Treilibs.

Thank you to everyone who contributed towards an update and Jacquie Herbert for all the fantastic photos.

By now I trust you are all preparing for the fast approaching ASH 2014, the 50 year reunion and set to have many treats in store. I am sad to not be able to join you all in celebrating what is sure to be, an informative and fun spectacle. I have recently finished my postdoc at the University of Newcastle and left the country in search of chameleons, geckos and I guess if I happen to be attached by lemurs, I won't complain either. So I will leave you in the trusty hands of minxy Mitzy and Professor Keogh. Be sure to impress the great professor by putting your best sunset photo on the last slide of your talk and someone please make sure Nick Clemann behaves himself. You know I've run out of things to say when I start writing about Nick. So til next time.



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THE AUSTRALIAN SOCIETY OF HERPETOLOGISTS

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NEW MEMBERSHIP FORM

The Australian Society of Herpetologists Inc. is a society for professional herpetologists and publishing amateurs. The Society is incorporated in the Australian Capital Territory and is administered by a council of seven members. The Society meets at intervals of between 12 and 18 months, usually in a residential situation away from a major city. Meetings take the form of sessions of scientific papers and a business meeting.
Membership is by nomination by two financial members of the Society who will vouch for the acceptability of the prospective applicant

Dues are currently AUS$35.00 per annum for non-students and $15.00 for full time students. All fees must be tendered in Australian Currency and cheques made payable to: Australian Society of Herpetology Inc. Fees are due in June every year.
If you wish to pay via bank deposit or credit card, please go to:

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NEW MEMBERSHIP FORM

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Nominator:……Signature……..

Seconder……Signature…….……

Herpetological interests of new member……..

……

Australian Wildlife Conservancy
Nationwide

Lisa Farnsworth is busy supervising the bulldozing for construction of AWC's newest feral proof fence at Mt Gibson, which will help protect loads of small furries, but also other cool things we care about like *Egernia stokesii badia*, *Neelaps bimaculatus*, *Suta fasciata*, *Lucasium squarrosum* etc.
Gina Barnett has been busy leaving the SW WA reptiles in peace for a while as she was helping out in the Gulf of Carpentaria and FNQ on fauna surveys with Eridani Mulder, where they have been busy picking up northerly range extensions of *Ctenotus pulchellus* at Pungalina-Seven Emu, and digging up strange and exciting blindsnakes (that appear to be impersonating shoelaces) at Piccaninny Plains.
Elsewhere within AWC, a second *Morelia carinata* has shown up at Artesian Ra in as many months, with no-one but mammologists around, and we're all still trying to sort out the *Rhynchoedura*'s and *Gehyra*'s


Queensland

Conrad Hoskin lab
James Cook University

Conrad has been researching Green-eyed Treefrog hybrid zones (*Litoria serrata* and *L. myola*) in north Queensland in collaboration with Megan Higgie (also at JCU). This work is investigating why the process of reinforcement occurs in some hybrid zones and not others. Kelsey Hosking (Honours student) has been slaving away in 2013 assessing the genetics and morphology of tadpoles through the hybrid zones. Conrad and Megan also co-supervised Peter Alexander (Hons 2012-2013), who studied frog flies (*Corethrella, Batrachomyia* and mosquitoes) in the Wet Tropics. Otherwise, Conrad continues his research on the phylogeny, biogeography and taxonomy of various herp groups (including microhylid frogs, leaf-tailed geckos, *Amalosia* and *Oedura* geckos, *Lampropholis*, *Liburnascincus* and *Carlia* skinks). Research on Asian House Gecko bushland invasion and impacts continues with Louise Barnett (PhD student). Work also continues on *Litoria lorica* and other threatened Queensland frogs and reptiles.

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Zozaya M, Scheffers BR, Hoskin CJ, Macdonald SL & Williams SE. 2013. A significant range extension for the Australian wet tropics skink *Eulamprus frerei* (Reptilia: Squamata: Scincidae). Memoirs of the Queensland Museum, Nature 56: 621–624

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Pike Lab
James Cook University

The Pike lab studies the ecology and evolution of reptiles, focusing on how the environment influences life history. We are mainly comprised of BSc Honours students and MSc Minor Project Students. Together with Lin Schwarzkopf and Ross Alford we are focusing on frog disease ecology in the Wet Tropics over the next few years, and are hoping to investigate the interactions between canopy cover and temperature to better understand the effects of climate change on lizard populations.

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Huang, W.-S., S.-M. Lin, S. Dubey, and D.A. Pike. 2013. Predation drives interpopulation differences in parental care expression. Journal of Animal Ecology 82:429-437.
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Pike, D.A., R.M. Andrews, and W.-G. Du. 2012. Eggshell morphology and gekkotan life-history evolution. Evolutionary Ecology 26:847-861.
Huang, W.-S., and D.A. Pike. 2012. Effects of intraguild predators on nest-site selection by prey. Oecologia 168:35-42.


Phillips Lab
James Cook University

Ben Phillips has decided that dung beetles are evil, and has come back to the warm lambency of Little Brown Skinks (abetted in this by Stewart Macdonald, John Llewelyn, Amberlee Hatcher, and Craig Moritz). He gets into the field and lab occasionally, but still spends dangerous amounts of time pondering range edges, thermal physiology, ecological modelling, and heffalumps. Ben stopped thinking (in any meaningful sense of the word) about four years ago, but he hopes that a good night's sleep might change that.

Little Brown Skinks have also been keeping John Llewelyn busy. He has been working with Amberlee Hatcher (who has actually been doing the hard work), testing the thermal sensitivity and desiccation resistance of rainforest sunskinks from numerous populations in the Wet Tropics. The next step is to run a common garden experiment to study the heritability of these climate-relevant traits. John has also been finding it difficult to stop thinking about cane toads.

Stewart Macdonald continues to contend with masses of stinging tree in cyclone-ravaged rainforest fragments in his effort to look at adaptive variation in Little Brown Skinks. In his spare time he maintains the Australian Reptile Online database (arod.com.au) and has released, along with Stephen Zozaya, a smartphone field guide to Australian snakes (Snakes of Australia on the Apple app store - buy it and help fund his skink addiction!).

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Terrestrial Vertebrate Ecology
School of Marine & Tropical Biology, James Cook University

Lin Schwarzkopf has been made deputy Head of School, a job which is expanding to take up quite a bit of time. In between, she is trying to catch up on all the other stuff she is supposed to be doing. Luckily, her students have been sending her great work to polish – keep it up, everyone! Also, her work on the effects of different grazing regimes on vertebrate populations on Wambiana Station is warming up, along with the weather. Ross Alford is away, having just had his other hip resurfaced. We expect him to be up and about and running up and down creeks in the rainforest in no time. In the meantime, he is enjoying programming in R, and inventing a single generalised linear mixed model to analyse all ecological processes simultaneously. Dave Pike is back from a visit to Korea to see his collaborator there, and is writing papers at the speed of light, supervising students like crazy and managing to teach a subject (Tropical Biodiversity) all at the same time. Robert Puschendorf has got a job in chilly Plymouth, England, and is settling in well, with a new baby. Betsy Roznick has finished a draft of her PhD thesis on the ecology of frogs infected with chyridiomycosis, and is enjoying some R & R with her family in the USA. Rickard Abom has taken a job as a departmental technician in the School of Marine and Tropical Biology. This has meant he has had to take a leave of absence from his PhD study on the influence of grader grass on vertebrates, but he's planning to get back to it soon. Sara Bell has completed her PhD and taken on a post-doc with Lee Berger and Lee Skerratt, but visits us for part time work helping with frog disease studies, writing up her PhD papers, and co-supervising Swati Banergee, who has started a PhD on the interactions between the antimicrobial peptides on frog skin and the chytrid fungus. Kiyomi Yasumiba continues her PhD on the social systems of cane toads, working out which calls they love to hate, why males like other male calls, and how the propensity to call changes with season. Richard Duffy helps Kiyomi, and everyone else, and keeps the lab running smoothly. Mat Vickers has just returned from a speaking tour of France and Puerto Rico, where he attended a workshop on thermoregulation. He has now captured an anole. He says they are really different from skinks. Anna Pintor is still conducting the most amazingly detailed physiological study of every skink in Australia, and their response to variation in temperature. She is powering through hundreds of tests per day, and has completed a draft of the first chapter of her PhD. Kat Schmidt is doing her PhD working out what eats what in a rainforest stream. Leila Brook is preparing to give her PhD exit seminar on those mammal-like reptiles (or is it reptile-like mammals?), dingos and cats. We are looking forward to seeing her again, as she thaws out after spending the winter in Melbourne. Justin Perry mostly works for CSIRO, but occasionally works on his PhD thesis. He is presently examining the use of fire indices as predictors of biodiversity – he thinks they don't work so well. Daryl Trumbo is conducting his PhD study on the landscape ecology of cane toads, he is presently processing thousands of samples to determine the directions and speed of gene flow across Australia. Ian Bell has completed his PhD study on sea turtles, and is presently still working with Queensland Parks on sea turtles. John Llewelyn is doing a post-doc on skink evolution in peripheral isolates with Ben Phillips. Stewart Macdonald also works on these skinks. Ben Muller has figured out how to do his Masters of philosophy studies on cane toads while relaxing on a tropical

island – offer to trap them all! Sarah Sapsford has finished an amazingly large and detailed mark recapture study of common mist-frogs for her MPhil and has returned to Canada. She is going great guns producing manuscripts and papers. Arnaud Gourett is chasing leaf-tailed geckos in the rainforests of Queensland for his MPhil. He has also recorded the temperature of most of the trees in NQ while he is at it. Nilinda Phongkangsananan has just finished writing up her MSc thesis on the lexicon of native house geckos, and is now travelling Australia. Lauren Mills is completing her MSc thesis on temperature selection in individual skinks in relation to their performance. Jessica Hacking is busy doing a PhD at the University of Adelaide, having finished a fantastic honours project on the influence of grader grass on skinks. Her paper is in revision for Biological Invasions. In other news from around JCU: Conrad Hoskin has joined us. Jason Schaffer continues his great work on freshwater turtles, Ellen Ariel is still studying the fresh and sea turtles of north Queensland, Lee Skerratt and Lee Berger continue to make amazing discoveries about the amphibian chytrid fungus. Mariana Fuentes continues to predict the influence of climate change on sea turtles, now at AIMS, and Vimokshalehi Lukoshek is studying sea snake phylogeography, with the help of Blanche Danastas, who has started a PhD on these fascinating creatures.

In no particular order:

Llewelyn, J, Schwarzkopf, L, Phillips BL, Shine R 2013. After the crash: How do predators adjust following the invasion of a novel toxic prey type? Austral Ecology (in press)
Sapsford, S., Alford, RA, Roznick, E, Schwarzkopf, L. 2013. Visible implant elastomer marking does not significantly affect short-term movements or survival rates of the treefrog *Litoria rheocola*. Herpetologica (in press – accepted 15-08-13)
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Bell, I., Schwarzkopf, L., Manicom. C. (2012) Good news or bad? High survivorship rates of an annually decreasing population of endangered hawksbill turtles *Eretomochelys imbricata*. Aquatic Conservation: Marine and Freshwater Ecosystems 22(5):673-682.
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Schwarzkopf, L., Andrews, R.M. (2012) “Selfish Mothers” use “Maternal Manipulation” to maximize lifetime reproductive success. Herpetologica 68(3): 308-311
Llewelyn, J., Bell, K., Schwarzkopf, L., Alford, R.A., Shine, R. (2012) Ontogenetic shifts in prey toxicity influence feeding responses of a snake predator to anuran prey. Oecologia 169(4):965-973
Abom, R.T., Bell, K., Hodgson, L., Schwarzkopf, L. (2012) Moving day and night: highly labile diel activity patterns in a tropical snake. Biotropica 44(4):554-559.
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Fuentes, MMPB Pike, DADimatteo, A Wallace BP . 2013 Resilience of marine turtle regional management units to climate change Global change biology (in press)
Huang, SW, Lin, S M, Dubey, S, Pike, DA. 2013. Predation drives interpopulation differences in parental care expression Journal of Animal Ecology
Elzer, AL, DA Pike, JK Webb, K Hammill, R Bradstock, R Shine (2013) Forest-fire regimes affect thermoregulatory opportunities for terrestrial ectotherms. Austral Ecology (in press)
Bell, I, DA Pike (2012) Somatic growth rates of hawksbill turtles *Eretmochelys imbricata* in a northern Great Barrier Reef foraging area. Marine Ecology Progress Series 446, 275-283
Pike, DA, JK Webb, R Shine (2012) Hot mothers, cool eggs: nest-site selection by egg-guarding spiders accommodates conflicting thermal optima. Functional Ecology 26, 469-475
Puschendorf, R, L Hodgson, RA Alford, LF Skerratt, J VanDerWal (2013) Underestimated ranges and

overlooked refuges from amphibian chytridiomycosis. Diversity and Distributions (in press)
Rowley, JJL RA Alford (2013) Hot bodies protect amphibians against chytrid infection in nature. Scientific reports (in press)
Bell, SC, RA Alford, S Garland, G Padilla, AD Thomas (2013) Screening bacterial metabolites for inhibitory effects against *Batrachochytrium dendrobatidis* using a spectrophotometric assay. Diseases of aquatic organisms 103, 77-85
Alford, RA (2013) Environmental epidemiology: Fluctuating temperature effects Nature Climate Change 3 (2), 101-103
Woodhams, DC, SC Bell, N Kenyon, RA Alford, LA Rollins-Smith (2012) Immune evasion or avoidance: Fungal skin infection linked to reduced defense peptides in Australian green-eyed treefrogs, *Litoria serrata* Fungal biology (in press)
Hauselberger, KF, RA Alford (2012) Prevalence of *Batrachochytrium dendrobatidis* infection is extremely low in direct-developing Australian microhylids. Diseases of Aquatic Organisms 100, 191-200
Voyles, J, LR Johnson, CJ Briggs, SD Cashins, RA Alford, L Berger, LF Skerratt (2012) Temperature alters reproductive life history patterns in *Batrachochytrium dendrobatidis*, a lethal pathogen associated with the global loss of amphibians Ecology and evolution 2 (9), 2241-2249
Roznik, EA RA Alford (2012) Does waterproofing Thermochron iButton dataloggers influence temperature readings? Journal of Thermal Biology 37 (4), 260-264
Daskin, JH, RA Alford (2012) Context-dependent symbioses and their potential roles in wildlife diseases. Proceedings of the Royal Society B: Biological Sciences 279 (1733), 1457-1465 6
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Puschendorf, R, RA Alford, CJ Hoskin (2012) Armoured Mistfrog *Litoria lorica* CSIRO Publishing
R Puschendorf, RA Alford, CJ Hoskin, S Cashins (2012) Waterfall Frog *Litoria nannotis* CSIRO Publishing


Craig Franklins Laboratory
The University of Queensland

New People to the lab include Alice Batty BSc – Honours candidate working on the effects of prolonged disuse on gut cell turnover in burrowing frogs, Emma Ceccato BSc – Honours candidate working on effects of UV radiation on amphibian immune system function, Maili Forbes BSc – Honours candidate working on the control of metabolic rate during aestivation in burrowing frogs.
Jay Hansen - PhD candidate - Jay has just started with the lab and will be looking at the functional role(s) of cloacal bursae in Australian freshwater turtles.

A variety of exciting projects are on-going in Craig's lab, and despite his burgeoning admin commitments he is still finding time to get out into the field with his crocodile research on the Wenlock River. This has been a long-term research collaboration with Australia Zoo. Craig is currently involved in advancing the emerging field of conservation physiology. He is very fortunate to have a great group

of research fellows and students who are all busy with their herp investigations.
Beau Reilly has been conducting novel research on an Australian species of desert frog (the green-striped burrowing frog, *Cyclorana alboguttata*). Beau has recently developed a massive genomic resource for *C. alboguttata* by sequencing RNA from muscle tissue and going on to characterising its skeletal muscle transcriptome (i.e. transcribed elements of the frog's genome telling us what genes are turned off and what are turned on during aestivation).
Melissa Bruton has continued her work looking at the importance of natural regrowth woodlands. she has found that these areas have high habitat value for reptile communities, & woma pythons can climb trees!
Michel Ohmer is investigating the role of skin sloughing in the susceptibility of amphibians to chytridiomycosis at the cellular, species and phylogenetic level. She is currently working on the first manuscript of her PhD, applying for grants to film frogs in zoos and captive breeding centres all over the world, and of course watching riveting videos of frogs sloughing whenever she has a free moment. If you have a colony of frogs in captivity and would love to know how often they slough, please let her know! She has cameras, will travel (Seriously! Contact her at: michel.ohmer@uqconnect.edu.au). So far she has filmed frogs at the Woodland Park Zoo in Seattle, Washington (USA), and already has a number of additional locations lined up in Australia and abroad. This year she has travelled to the World Congress of Herpetology in Vancouver to present work related to her master's degree, and was selected to participate in the Student Conference on Conservation Science held in Brisbane this past January. She has also had a second paper from her master's work successfully published in Animal Conservation.
Pippa Kern has been studying the amazing ornate burrowing frog. *Platyplectrum ornatum* tadpoles show inherent thermal independence of burst swimming performance, and possibly metabolic rate at high temperatures. This thermal independence may allow tadpoles to overcome temperature effects on predator avoidance mechanisms, and reduce metabolic demands in their thermally variable developmental environments.
Rebecca Cramp has been looking at the effects of early UV-B radiation exposure on immune characteristics of brown striped marsh frog larvae. She has found that early UV exposure disrupts pigmentation patterns of subsequent metamorphs and appears to susceptibility to diseases like chytridiomycosis.

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Campbell H.A., Watts M.E., Dwyer R.G. & Franklin C.E. (2012). V-Track: software for analysing and visualising animal movement from acoustic telemetry detections. Mar Freshwater Res, 63, 815-820.
Meyer E.A., Cramp R.L., Bernal M.H. & Franklin C.E. (2012). Changes in cutaneous microbial abundance with sloughing: possible implications for infection and disease in amphibians. Dis Aquat Organ, 101, 235-242.
Micheli-Campbell M.A., Gordos M.A., Campbell H.A., Booth D.T. & Franklin C.E. (2012). The influence of daily temperature fluctuations during incubation upon the phenotype of a freshwater turtle. J Zool, 288, 143-150.
Mitchell T., Alton L.A., White C.R. & Franklin C.E. (2012). Relations between Conspecific Density and Effects of Ultraviolet-B Radiation on Tadpole Size in the Striped Marsh Frog. Conserv Biol, 26, 1112-1120.
Niehaus A.C., Angilletta M.J., Sears M.W., Franklin C.E. & Wilson R.S. (2012). Predicting the physiological performance of ectotherms in fluctuating thermal environments. J Exp Biol, 215, 694-701.
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Campbell H.A., Dwyer R.G., Irwin T.R. & Franklin C.E. (2013). Home Range Utilisation and Long-

Range Movement of Estuarine Crocodiles during the Breeding and Nesting Season. Plos One, 8.
Reilly B.D., Schlipalius D.I., Cramp R.L., Ebert P.R. & Franklin C.E. (2013). Frogs and estivation: transcriptional insights into metabolism and cell survival in a natural model of extended muscle disuse. Physiol Genomics, 45, 377-388.
Young K.M., Cramp R.L. & Franklin C.E. (2013). Each to their own: skeletal muscles of different function use different biochemical strategies during aestivation at high temperature. J Exp Biol, 216, 1012-1024.
Young K.M., Cramp R.L. & Franklin C.E. (2013). Hot and steady: Elevated temperatures do not enhance muscle disuse atrophy during prolonged aestivation in the ectotherm *Cyclorana alboguttata*. J Morphol, 274, 165-174.

Hero Lab
Griffith University, Gold Coast campus

The Hero Lab is powering along with a diverse group of students working on frogs, koalas, bilbies and tigers.

Postdocs Dr Edward Narayan and Dr Greg Lollback have been instrumental in expanding the scope of our research group resulting in a publication frenzy by our honour's and postgraduate students.

Clay Simpkins also completed his Masters on acid frogs - again with papers coming out. His thesis is entitled "Conservation biology of the acid frog *Litoria olongburensis."*

Jon Shuker finished his honours project on Acid Frog habitat selection and is also in publishing mode.

Lynette Plenderleith has joined the lab in collaboration with Monash. Lynette's Principal Supervisor Dr David Chapple at Monash University). The thesis entitled "Ecology and invasion biology of the bleating tree frog (*Litoria dentata*) on Lord Howe Island" is changing to focus more in Australia where the frogs can be found more easily ...

Christina Kindermann has published papers linking stress with Bd infection and is now completing her PhD studying colour change in *Litoria wilcoxi*. Her thesis is entitled "Behavioral ecology, reproductive biology and colour change physiology of Stony Creek Frog (*Litoria wilcoxii*)."

Mariel Familiar-Lopez has come from Mexico to work on "Mountain-top endemic frogs and the challenges they face with climate change."This project has been partly funded by a collaborative research project with Mike Mahony (Newcastle) and David Newell (SCU).

Katrin Lowe has submitted her thesis on the ecology of acid frogs - with papers flowing through. The thesis is entitled "Landscape ecology and bioclimatic conditions of the Wallum Sedge Frog (*Litoria*

olongburensis) in coastal wallum wetlands of eastern Australia."

Danial Stratford has a job at CSIRO following submission of his Phd entitled "Predicting and measuring the impacts of climate change on frogs in SE Qld."

Dr Edward Narayan has continued his awesome publishing record (see publications), however unfortunately his Griffith Post-doc has come to an end and he is urgently applying for his next post-doc.

VISITING SCIENTISTS

Dr Domingos Rodrigues is on sabbatical for 1 year from the Universidade Federal de Mato Grosso, Brasil. Domingos is a visiting Lecturer working on the PPBio Long-Term Ecological Research Project in the rainforest of the southern Amazon.

Prof. Peter Narins (California), Phil Bishop (New Zealand) and Ikkyu Aihara (Japan) also returned this year to play with acoustics using fireflies, and using LED lights to follow females in their quest to find the perfect male.

Over winter we have been presenting at numerous conferences around the world and will reunite in spring to hit the field for the pending frog season...
then returning to Nepal with 24 students before Xmas ...

JMH has spent 3 months wandering between conferences in Europe, busy preparing for the World Congress in China 15-22 August 2016, and trying to organise the inaugural ASH Herpathon for ASH 2014 ...
stay tuned ...

Book
Magnusson, W. E., R. Braga-Neto, F. Pezzini, F. Baccaro, H. Bergallo, J. Penha, D. Rodrigues, L. M. Verdade, A. Lima, A.L.M. Albernaz, J.-M. Hero, B. Lawson, C. Castilho, D. Drucker, E. Franklin, F. Mendonça, F. Costa, G. Galdino, G. Castley, J. Zuanon, J. Vale, L. Campos, R. Luizâo, R. Cintra, R.I. Barbosa, A. Lisboa, R.V. Koblitz, A. R. Mendes-Pontes & C. Nunes da Cunha. 2013. Biodiversity and Integrated Environmental Monitoring. Attema Design. California, USA. ISBN # 978-85-65551-05-2

Book chapters
Hero, J.-M., G.W. Lollback, J. Shuker & J.G. Castley. In press. 2013 Feature Box 8.8 In Chapter 8
Lindenmayer, D., Prober, S., Crane, M., Michael, D., Okada, S., Kay, G., Keith, D., Montague-Drake, R. & E. Burns. Temperate eucalypt woodlands. In Biodiversity and Environmental Change: Monitoring, Challenges and Direction. (Eds: Lindenmayer, D., E. Burns, N. Thurgate and A. Lowe). CSIRO

PUPLISHING. Melbourne, Australia.
Hero J.-M. C. Morrison, J. Chanson, S. Stuart, and N. A. Cox. 2012. Phylogenetic correlates of extinction risk in amphibians. Chapt. 8, pp 3539-3551.
in Amphibian Biology. Vol. 10, Conservation and Decline of Amphibians: Ecological Aspects, Effect of Humans, and Management. (Eds) H. Heatwole & J. W. Wilkinson. Surrey Beatty & Sons, NSW.
Morrison, C. & J.-M. Hero. 2012. Geographic correlates of extinction risk in amphibians. Chapt. 9, pp 3552 -3556. in Amphibian Biology. Vol. 10, Conservation and Decline of Amphibians: Ecological Aspects, Effect of Humans, and Management. (Eds) H. Heatwole & J. W. Wilkinson. Surrey Beatty & Sons, NSW.
Hero J.-M. and C. Morrison. 2012. Life History correlates of extinction risk in amphibians. Chapt. 10, pp 3567- 3576. in Amphibian Biology. Vol. 10, Conservation and Decline of Amphibians: Ecological Aspects, Effect of Humans, and Management. (Eds) H. Heatwole & J. W. Wilkinson. Surrey Beatty & Sons, NSW.
Morrison, C., J.-M. Hero and M. Van Sluys. 2012. Final Chapter & Overview of Conservation of Amphibians. Chapt. 15, pp 3704- 3708. in Amphibian Biology. Vol. 10, Conservation and Decline of Amphibians: Ecological Aspects, Effect of Humans, and Management. (Eds) H. Heatwole & J. W. Wilkinson. Surrey Beatty & Sons, NSW.

Articles

Narayan, E., J. Cockrem & J.-M. Hero. 2013. Changes in serum and urinary corticosterone and testosterone during short-term capture and handling in adult male cane toad (*Rhinella marina*). General and Comparative Endocrinology. accepted 24 June 2013.
Narayan, E. & J.-M. Hero. 2013. Repeatability of baseline corticosterone and acute stress responses to capture, and patterns of reproductive hormones in vitellogenic and non-vitellogenic female Fijian ground frog (*Platymantis vitiana*). Journal of Experimental Zoology Part A: Ecological Genetics and Physiology. 9999:1-11.
Narayan, E., J. Cockrem & J.-M. Hero. 2013. Corticosterone stress response to sight of a predator in Fijian ground frog (*Platymantis vitiana*). PLoS ONE. In press.
Graham, C., E. Narayan, H. McCallum & J.-M. Hero. 2013. Non-invasive monitoring of stress physiology within free-living highland and lowland populations of native Australian Great Barred Frogs (*Mixophyes fasciolatus*) General and Comparative Endocrinology. 191:24–30.
Lowe, K., G. Castley & J.-M. Hero. 2013. Acid frogs can stand the heat: amphibian resilience to wildfire in coastal wetlands of eastern Australia. International Journal of Wildland Fire. in-press (accepted 7 March 2013)
Treby, D. L., J. G. Castley & J.-M. Hero. 2013. Forest conservation policy implementation gaps: consequences for the management of hollow-bearing trees in Australia. Conservation and Society. in-press (accepted 5 March 2013)
Narayan, E., K. Webster, V. Nicolson, A. Mucci & J.-M. Hero. 2013. Non-invasive evaluation of physiological stress in an iconic Australian marsupial: the Koala (*Phascolarctos cinereus*). General & Comparative Endocrinology.187:39-47.
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Wortley, L., J.-M. Hero & M. Howes. 2013. A review of empirical evaluations: Is research capturing the information needed to support the use of ecological restoration in natural resource policy? Restoration Ecology doi: 10.1111/rec.12028
Simpkins, C.A., J.D. Shuker, G.W. Lollback, J.G. Castley & J.-M. Hero. 2013. Environmental variables associated with the distribution and occupancy of habitat specialist tadpoles in naturally acidic, oligotrophic waterbodies. Austral Ecology doi: 10.1111/aec.12048
Kindermann, C., E. Narayan, C. Wild, F. Wild & J-M Hero. 2013. The effect of stress and stress hormones on dynamic colour-change in a sexually dichromatic Australian frog. Comparative Biochemistry and Physiology A. 165: 223-227.
Narayan, E., J-M. Hero & J.F. Cockrem. 2013. Are baseline and short-term corticosterone stress responses in free-living amphibians repeatable? General and Comparative Endocrinology. 164:21-28
Narayan, E., J-M. Hero & J.F. Cockrem. 2012. Inverse urinary corticosterone and testosterone

responses to different durations of restraint in the cane toad (*Rhinella marina*). Comparative Endocrinology and Stress Physiology Symposium SPECIAL ISSUE. General and Comparative Endocrinology. 179:345-349
Shuker, J. & J.-M. Hero. 2012. Perch substrate use of the threatened wallum sedge frog (*Litoria olongburensis*) in wetland habitats of mainland eastern Australia. Australian Journal of Zoology. 60:219–224
Narayan, E., N. Evans, V. Nicolson, A. Mucci & J.-M. Hero. 2012. Non-invasive evaluation of physiological stress hormonal responses in a captive population of the Greater Bilby (*Macrotis lagotis*). Endangered Species Research. 18: 279–289.
McLean, M. J., P. J. Bishop, J.-M. Hero & S. Nakagawa. 2012. Assessing the function of calls in Litoria chloris: quality signalling vs. individual recognition. Australian Journal of Zoology 60:120–126.
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Narayan, E., J. Cockrem & J-M. Hero. 2012. Effects of temperature on urinary corticosterone metabolite responses to short-term capture and handling stress in the cane toad (*R. marina*). General & Comparative Endocrinology 178:301-305
Lowe, K. & J-M. Hero. 2012 Sexual dimorphism and colour polymorphism in the wallum sedge frog (*Litoria olongburensis*). Herpetological Review 43:236–240.
Lowe, K. and J-M. Hero. 2012 Sexual dimorphism and colour polymorphism in the wallum sedge frog (*Litoria olongburensis*). Herpetological Review 43:236–240.
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Narayan, E., F. Molinia, J. Cockrem & J-M. Hero. 2012. Individual variation and repeatability in urinary corticosterone metabolite responses to capture in the cane toad (Rhinella marina). General and Comparative Endocrinology. 175:284-289.

Australian Capital Territory

Institute of Applied Ecology
Univeristy of Canberra

The major herpetological activity in the Institute for Applied Ecology at the University of Canberra centres on the following funded projects. Postdoc Lisa Doucette, Stephen Sarre, Bernd Gruber, and Will Osborne are studying the physical and physiological attributes of the earless dragon that enable it to persist in native lowland grasslands of the ACT and region, with a view to guiding management intervention and predicting the impact of climate change. This project is funded under the ARC Linkage Program in collaboration with the ACT Government. Will has retired and is now working as a freelance consultant, but with a keen eye out for continued herp work. Postdoc Kazumi Matsubara and Tariq Ezaz, now on tenured staff having secured a Future Fellowship, Stephen Sarre and Arthur Georges are investigating the ancestral origins of sex chromosomes in reptiles, with special focus on explaining the homologous sex chromosomes of chicken and gecko. This work is funded by the ARC Discovery Program. Postdoc Clare Holleley, Arthur Georges SS and Tariq Ezaz are using the latest cytological and genomic tools to explore the possibility that sex determination in species with TSD has an underlying genetic component to it, either by residual retention of the W chromosome or de novo predisposition. This work is funded by an ARC Discovery. Also supported by this grant is an investigation of sex determination in XY skink, *Bassiana dupereyii*, being conducted by Postdoc Denis O'Meally and Arthur Georges. Denis has recently taken up a position with Sydney University. Tariq Ezaz continues his work with Tony Gamble on chromosome evolution in the Gekkonidae, with funding from NSF, and Arthur Georges is collaborating with Fred Janzen and Dan Warner on geographic variation in sex determination, again funded by NSF. The Collaborative Research Network for Murray Darling Futures is funding a study of the landscape genetics of aquatic organisms of the MDB and adjacent drainages, including the freshwater turtle *Emydura macquarii*. This work is led by Senior Research Fellow Bernd Gruber, of gecko fame, with Postdoc Peter Unmack, of fish fame, and Arthur Georges, comfortably buried in obscurity. Dianne Gleeson, who has recently joined Faculty at UC from New Zealand (replacing Nancy Fitzsimmons), has the application of DNA techniques for early detection of invasive European Smooth Newts in her sights, as part of her broader CRC for Invasive Animals portfolio. These Newts have now established populations in the MDB. Arthur Georges, Carla Eisemberg and Jasmyn Lynch secured substantial funding from the petroleum industry for continued work on the pig-nosed turtle in Papua New Guinea, and are looking for students to engage in this work. Yolarnie Amepou will be undertaking her masters on the nesting biology of the pig-nosed turtle, with special emphasis on the impact of tidal inundation (a regular event in the lives of eggs laid on coastal beaches) on embryogenesis and sex determination. While on New Guinea, the project funded by the Hermon Slade Foundation on turtle phylogeography is nearing completion with the preparation of a publication showing the full orogenesis of New Guinea writ clear as a genetic signature in the turtle *Elseya novaeguineae*. Xiwuen Zhang is working with Arthur Georges on a mitochondrial genome phylogeny of the Chelidae, and has found some interesting nuances in preparing our reference mt genome, that of *Chelodina longicollis*. Stephen Sarre and Bernd Gruber revisited the WA gecko study sites to resurvey the wheat belt fragments of native vegetation after a couple of decades, with some disturbing results. Bernd is also continuing his studies of gecko populations in Kinchega National Park. Postdoc Theresa Knopp has finished her work on the pink-tailed legless lizard and returned to Finland. Shirley Famelli has completed her sandwich visit from Brazil, and returned home. She will be representing the IAE at the European Herpetological Congress. Arthur Georges, with Stephen Sarre and Tariq Ezaz, is leading a consortium to sequence the ZZ genome of the central bearded dragon, *Pogona vitticeps*. This is now complete. Other consortium members include Janine Deakin, who joined IAE Faculty earlier this year, Postdoc Denis O'Meally, Postdoc Hardip Patel from ANU, Paul Waters who has just taken up a position at UNSW, Matt Fujita and Todd Castoe at UTexas Arlington, Jenny Marshall-Graves, thinker in residence at the IAE, Goujie Zhang and Kary Lee of the Beijing Genome Institute. We are sequencing a second genome, a ZW individual, for in silico subtraction, to give the work the sparkle that will see it published in a high ranking journal. On the postgraduate front, congratulations to David Wong who has had his PhD thesis accepted on the Agricultural disturbance and the pink-tailed limbless gecko under the supervision of Will Osborne and Stephen Sarre. Maria Boyle has completed her thesis on Spatial and demographic consequences of genetic and

thermolabile sex determination in the context of a changing climate, under the supervision of Postdoc Lisa Schwanz, who has just taken up a Faculty position at UNSW, Jim Hone and Arthur Georges. Kate Hodges has submitted a manuscript from her thesis on the phylogeography of *Chelodina expansa*, with two more manuscripts at late stages of preparation on the phylogeography of *Chelodina longicollis*, and on a fascinating case of contemporary and historical introgression. Emma Carlson has submitted her honours thesis on the Conservation genetics of the earless dragon, and eagerly awaits the outcome. Tim McGrath continues his masters on the habitat and distribution of the earless dragon, part time though, having taken a position in the environment department of SEWPAC. Bruno Ferronato is continuing his PhD on the movements and reproduction of the eastern longnecked turtle in urban and adjacent rural habitat, under the supervisor of Arthur Georges and John Roe. John has moved to a Faculty position at the University of North Carolina. Welcome to Katie Taylor who begins her PhD on the behavioural ecology of the earless dragon under the supervision of Bernd Gruber, Stephen Sarre and Lisa Doucette.

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Conservation and Landscape Ecology Group
Fenner School, Australian National University

The CLE Group (Fenner School of Environment and Society) at the Australian National University comprises approximately 30 researchers (too many - visit http://fennerschool.anu.edu.au/research/groups/conservation-landscape-ecology for more information) broad conservation ecological projects. Our research is based on a suite of large-scale longitudinal field studies, mostly in south eastern Australia, with the following research themes:

* Herpetofaunal responses to habitat fragmentation
* Herpetofaunal responses to livestock grazing
• evaluating spatial trend patterns in lizard body size,
• quantifying reptile guild structure and niche breadth in temperate woodlands,
• investigating factors driving reptile community structure in temperate woodlands,
• monitoring Sloane's Froglet in the Albury local government area,
• assessing frog and reptile responses to vegetation management intervention in the Riverina

bioregion
* Identifying impact of alpine recreation on listed reptile species (guthega skink).

· Research is focused on the impacts of the amphibian chytrid fungus on frog species in the Southern Highlands of Australia.
· Investigating population recovery, the demographic impacts of endemic chytrid fungus infection and the role of reservoir host species in the decline of co-occurring species.
· Working with the NSW government to develop and implement management strategies for critically endangered frog species threatened by chytrid fungus.
* Developmental biology of the thorny devil

Moritz Lab
Australian National University

Craig Moritz (Our Leader). Craig has identified many areas of the monsoonal tropics that he wants to holiday, so has started fieldwork ticking off new unexplored land. When he's not in meetings, in the field or travelling overseas for work, he is hassling his students and staff for phylogenetic trees. Broadening his obsession from Heteronotia to Gehyra and even skinks, he's continuing to make a dint on the gaps in our understanding of the monsoonal tropics whilst making sure his lab stops writing him down as 'Mortiz'.

Rosa Agudo (Postdoc). Rosa has been in Moritz's group since December 2012. She landed Spanish postdoctoral funding that will allow her to work in the group until the end of 2014. Her project aims to answer two main questions: i) how species adapt to climatically variable environments and ii) where in the landscape species persisted through historical climate change (climatic refugia). These questions will be addressed by a multidisciplinary approach using population genomics and phenotypic analysis, and also integrating spatial modelling at a micro environmental scale, in order to test whether genetic adaptations are correlated with a set of morphological/physiological traits. She's focusing on Craig's baby, Hets.

Dan Rosauer (Postdoc). Dan is a spatial modeller with a focus on phylogenetic diversity. He is studying patterns of phylogenetic endemism across a number of lizard genera, and using data on current and past climate to model potential locations of evolutionary refugia in the monsoonal tropics and (on the side) in east coast rainforests.

Jason Bragg (Postdoc). Jason has been at ANU for a year, and is working on making inferences about lizard genetic diversity and evolution using lots and lots of sequence data. He has occasional relapses of botany, but is cheerfully back on the path to wellness, herpetology.

Mozes Blom (PhD student). Moos (as in 'most' minus the 't') moved to Australia to start what his lab and others laugh about being a lifetime commitment to working on Cryptoblepharus. When he's not trawling the internet for Cryptoblepharus photography, he is trying to resolve the Cryptoblepharus

phylogeny, in order to study the convergent evolution of ecomorph-types between habitats. By combining both genetics and morphology he aims to shed further light on this notorious genus and is looking forward to his very first ASH meeting!

Ana Silva (PhD student). Ana just came from Portugal to start her PhD in which she will study the adaptive capacity and distribution responses of two skink species with different thermal ranges to climate change. Specifically, she will compare the widespread species *Carlia triacantha* with its sister species, *Carlia johnstonei*, which has a restricted tropical distribution. She will be using phylogeographic, demographic and selection analysis of genomic data, and physiological information, that will be combined with past, current and future species distribution models under several climate scenarios, to understand how species with different thermal constraints will respond to predicted future climate.

Catherine Noble (Honours Student). Cat couldn't convince Craig to let her keep gallivanting across the Top End and harassing reptiles all day, so she is currently deriving and testing refugia hypotheses in the arid-monsoonal tropics using Gehyra genetics and spatial modelling.

Gaye Bourke (Field Tech/Taxonomist). Gaye started at the ANU in March and immediately disappeared off into the Kimberley for several months. Since her return she has been enjoying the fruits of a very productive fieldwork season and is about to start learning all about Gehyra taxonomy.

Sally Potter (Lab Manager). Sally has been trying to keep up with Craig for the past twelve months and ensuring he has his head screwed on and doesn't leave his camera behind in the field or his credit card at a restaurant. She's been continuing research involving taxa of the monsoonal tropics, mainly focusing on *Carlia amax* and understanding the biogeographic processes shaping their diversity. Like Jason, she has relapses of a previous life as a mammalogist but is thoroughly enjoying the transition to herps and admiring all they have to offer.

Renae Pratt (Research Officer). Recently returning to ANU to try her hand at herps, Renae has been given the task of sorting out *Gehyra nana*. Initial ND2 sequences have shown that it is near impossible in the field to distinguish these little, spotty geckos, however molecular methods and biogeography are helping to make sense of the multiple lineages found throughout the Gehyra. The next step is to venture into Next Gen Sequencing technologies to assess phylogenetic endemism and much, much more. To keep her out of trouble in the meantime, she's been given some *Lampropholis coggeri* samples to work on.

Mitchell Scott (Research Assistant). Mitch recently finished his Honours year in the Shine Lab looking at chemical communication in snakes. He has now torn himself away from Sydney to work with Craig's long-time lover, *Heteronotia binoei*. He's helping with efforts to identify cryptic species/lineages using both DNA sequencing and behavioural responses to conspecific chemical signals.

Keogh Lab
Australian National University

Departed but not forgotten:
Renee Catullo (recent PhD graduate) started a post-doctoral fellowship at CSIRO working on adaptation and climate change, and is learning to program. However, through an ABRS grant to Craig Moritz and Scott she is continuing to work on monsoonal biogeography and *Uperoleia* systematics. Expect at least one more *Uperoleia* to be described this year, and more in the future. She recently worked with the Victorian Department of Environment to get *Uperoleia martini* listed as Critically Endangered, and won't be surprised when other species join them on the threatened list. Lisa Schwanz (ARC DECRA Fellow). After a summer spent collecting jacky dragons and raising hatchlings, Lisa collected her first year's worth of data on her jacky dragon colony, including a side project led by new Masters' student Damien Esquerré. With a growing animal colony, Lisa is continuing her ARC DECRA research on offspring sex ratios in jacky dragons. She has recently moved to Sydney this year to start her Lectureship at University of New South Wales and is preparing for another summer of experiments.

The current lab:
Scott Keogh (Honours student). Scott is busy in his current role as Head of Evolution, Ecology and Genetics at ANU and takes particular pleasure in signing a well conceived form, in triplicate. He is working closely with Steve Donnellan and Conrad Hoskin on an ARC funding project on Australian frog phylogenomics and with Craig Moritz, SteveD, Paul Doughty and others on a number of projects on the phylogeography of northern Australian herps.

Maxine Piggot (ARC DECRA Fellow). Maxine began her ARC DECRA Fellowship this year and will be developing new methods for environmental DNA analysis of water samples to analyse freshwater fish and invertebrate assemblages in freshwater ecosystems in Western Australia. Maxine will be using a meta-barcoding approach and is currently trying to wrap her mind around the intricacies of next-gen sequencing and extracting DNA from degraded samples.

Mitzy Pepper (Postdoc). Mitzy has now finished describing two new *Heteronotia* species (with Paul D, Craig M, Matt F and Scott K) – welcome to the world *H. atra* and *H. fasciolatus* (see PLOS ONE very soon). She also managed to publish a culmination of 7 years of work in a Pilbara review in JBiogeog. Now she is busy helping to plan the ASH party meeting for next year, but will probably leave the majority of it for Scott K as she is walking across Spain for six weeks at the end of September.

Kiki Dethmers (Northern Australian Marine Research Alliance Postdoctoral Fellow). Kiki's research work focuses on the impact of ghost nets on sea turtle populations, funded under a North Australia Marine Research Alliance (NAMRA) stipend. This project aims to determine the spatial distribution and circulation of ghost nets in the Arafura and Timor Seas, and identify the demographic composition and origin of sea turtles found entangled in those nets. Global drifters, beach clean-ups, commercial fisheries and exiting new genomic technologies all contribute to untangling this cryptic problem.

Damien Esquerré (MPhil student). Damien arrived this year from Chile to do an MPhil. He will be building a hopefully well-resolved phylogeny (using literally hundreds of nuclear loci) of the Australo-Papuan python radiation (and sister groups from Asia and Africa) in collaboration with Steve Donnellan. On top of this, he will study the evolution of head and body shape and size and how it relates to their phylogeny and natural history. He has also been doing some side work on taxonomy and systematics of a group of South American lizards, and studied with Lisa Schwanz and Scott the effects of incubation temperature on jacky dragons.

Sandra Binning (PhD student). Sandra just finished her last field season at Lizard Island where she ran a large swim training/ respirometry experiment with everyone's favourite coral reef "tadpole", the Spiny Damslefish. Besides that, she's been busy presenting her PhD work on fish eco-morphology and physiology at conferences in Japan (The Indo-Pacific Fish Conference), Spain (The Society for Experimental Biology meeting), and Sydney (The Australian Coral Reef Society meeting). She hopes

to finish writing and submit her thesis in November.

Dan Hoops (PhD student). Dan has spent more time than he cares to recall this past year sectioning and imaging lizard brains. He spent two months conducting fieldwork in the James & Musgrave Ranges in central Australia and the Gawler Ranges and mallee of the Eyre Peninsula. Following that, he spent the first half of the year as a visitor at Macquarie University in Sydney measuring brain structure in various *Ctenophorus* species. He also acquired magnetic resonance images of each brain. Some of these images were used during a visit to the University of Queensland's Brain Institute to create a 3D model of an average agamid brain.

Marta Vidal-Garcia (PhD student). Marta has spent the past year gathering morphological data for all Australian hylid and microhylid species across different habitats in order to look at adaptive body shape patterns among and within genera. She has also gathered 3D data from myobatrachid frog specimens using a CT scanner, in order to estimate morphological ancestral states and reconstruct the phylomorphospace of this Australo-Papuan frog radiation. She will be soon expanding this work to all Australian frogs. She has also started conducting jumping kinematics trials in collaboration with Dr. Conrad Hoskin (James Cook University, Townsville), to find the correlates between morphology and locomotive abilities.

Gabi Openshaw (PhD student). Gabi finished her honours last year and is now a PhD student, still working on monitor lizards. With Scott and Steve Donnellan she is using anchored hybrid enrichment phylogenomics to reconstruct the evolution of all monitors, extending her geometric morphometric head shape work to 3D analysis, and undertaking a phylogeographic analysis of the ridge-tailed monitor species complex (*Varanus acanthurus*).

Catullo, RA, R Lanfear, P Doughty, JS Keogh. 2013. The biogeographic boundaries of northern Australia: evidence from ecological niche models and a multi-locus phylogeny of Toadlets (*Uperoleia*: Myobatrachidae). Journal of Biogeography. In press.
Pepper, M, P Doughty, MK Fujita, C Moritz, JS Keogh. 2013. Speciation on the rocks: Integrated systematics of the *Heteronotia spelea* species complex from western and central Australia. Plos One. In Press.
Morrison, SF, PS Harlow, JS Keogh. 2013. Spatial ecology of the critically endangered Fijian Crested Iguana, *Brachylophus vitiensis*, in an extremely dense population: Implications for conservation. Plos One. In Press.
Noble, DWA, K Wechmann, JS Keogh, MJ Whiting. 2013. Behavioral and morphological traits interact to promote the evolution of alternative reproductive tactices in a lizard. The American Naturalist. In Press.
Rosauer, D, S Ferrier, KJ Williams, G Manion, JS Keogh, SW Laffan. 2013. Phylogenetic generalised dissimilarity modelling: A new approach to analysing and predicting spatial turnover in the phylogenetic composition of communities. Ecography. In Press.
Pavlova A, N Amos, P Sunnucks, K Loynes, JJ Austin, JS Keogh, G Stone, J Nicholls, L Joseph. 2013. Perched at the mito-nuclear crossroads: divergent mitochondrial lineages correlate with environment in the face of ongoing nuclear gene flow in an Australian bird. Evolution. In Press.
Noble, DWA, JS Keogh, MJ Whiting. 2013. Multiple mating in a lizard increases fecundity but provides no evidence for genetic benefits. Behavioral Ecology 24:1128-1137.
Keogh, JS, KDL Umbers, EE Wilson, J Stapley, MJ Whiting. 2013. Influence of alternate reproductdive tactics and pre- and postcopulatory sexual selection on paternity and offspring performance in a lizard. Behavioural Ecology and Sociobiology 67:629-638.
Pepper, M, P Doughty, JS Keogh. 2013. Geodiversity and endemism in the iconic Australian Pilbara region: A review of landscape evolution and biotic response in an ancient refugium. Journal of Biogeography 40:1225-1239.
Bohm, M et al. (213 authors, including JS Keogh). 2013. The conservation status of the World's reptiles. Biological Conservation 157:372-385.
Binning, SA, DG Roche, C Layton. 2013. Ectoparasites increase swimming costs in a coral reef fish. Biology Letters 9:20120927.
Umbers, KDL, MD Jennions, MG Gardner, JS Keogh. 2013. Twenty-five new polymorphic

microsatellites for the eastern mosquitofish, *Gambusia holbrooki* (Actinopterygii: Poeciliidae), an invasive species in Australia. Australian Journal of Zoology 60:235-237.
Osborne, L, KDL Umbers, JS Keogh. 2013. The effects of perch height, time in residence and distance from opponent on aggressive display in male lizards. Acta Ethologica 16:41-46.
Umbers, KDL, L Osborne, JS Keogh. 2012. The effects of residency and body size on contest initiation and outcome in the territorial dragon, *Ctenophorus decresii*. Plos One 7:e47143.
Osborne, K, KDL Umbers, PRY Backwell, JS Keogh. 2012. Male tawny dragons use throat patterns to recognize rivals. Naturwissenschaften 99:869-872.
Edwards, DL, JS Keogh, LL Knowles. 2012. Effects of vicariant barriers, habitat stability, population isolation and environmental features on species divergence in the south-western Australian coastal reptile community. Molecular Ecology 21:3809-3822.
Keogh, JS, DWA Noble, EE Wilson, MJ Whiting. 2012. Activity predicts male reproductive success in a polygynous lizard. Plos One 7:e38856.
Kay G, JS Keogh. 2012. Molecular phylogeny and morphological revision of the *Ctenotus labillardieri* (Reptilia: Squamata: Scincidae) species group and a new species of immediate conservation concern in the southwestern Australian biodiversity hotspot. Zootaxa 3390:1-18.
Lukoschek, V, JS Keogh, JC Avise. 2012. Evaluating fossil calibrations for dating phylogenies in light of rates of molecular evolution: a comparison of three approaches. Systematic Biology 61:22-43.

New South Wales

Australian Museum
Sydney

Ross Sadlier (Collection Manager); Cecilie Beatson (Technical Officer); Jodi Rowley (Scientific Officer); Glenn Shea (Research Associate).

Jodi continues to investigate the diversity, ecology and conservation of Southeast Asian amphibians, has published seven papers this year, and is now co-chair for the mainland Southeast Asian branch of the IUCN Species Survival Commission Amphibian Specialist Group and Tier I Member for mainland Southeast Asia of the Amphibian Red List Authority. She has conducted three expeditions in search of amphibians in northern Vietnam in the last 12 months.

Ross has continuing research interests in New Caledonia with new skink and gecko species described or in press. Cecilie has been working on Western Brown Snakes focusing on eastern Australia. Glenn continues to frequent the lab, he still eats our biscuits, and occasionally look at specimens. The famed Friday night delivery by Dr Shea of 'Herpetologist of the Week' has been on hold while he focuses on more productive pursuits, such as the 2011 & 2012 editions of Herpetofauna.

Dau, V.Q., Rowley, J. J. L.., Hoang, Q.X. (2013). *Rhacophorus feae* (Thao Whipping Frog). Habitat. Herpetological Review. 44: 129
Gascon C., Collins J., Church D., Moore R.D., Andreone F., Bishop P., Biju S.D., Bolanos F., Feng X., Pipeng L., Zhang L., Shi H., Lotters S., Mitchell P.N., Mora-Benavides J.M., Garcia Moreno J., Randriamahazo H., Reardon J.T., Molina C., Ron S., Rowley J. J. L., Silvano D., Valdijo P., Verdade V.K. (2012). Scaling a global plan into regional strategies for amphibian conservation. Alytes 29 (1-4): 15-27.
Ocock, J.F., Rowley, J. J. L., Penman, T.D., Rayner, T.S. & Kingsford, R.T. (2013). Amphibian chytrid prevalence in an amphibian community in arid Australia. Diseases of Aquatic Organisms. 10, 77-81.
Rowley, J. J. L. & Alford, R. A. (2013). Hot bodies protect amphibians against chytrid infection in nature. Scientific Reports 3, 1515.
Rowley, J. J. L., Tran, D. T. A., Hoang D. H., Dau Q. V., & Le T. T. D. (2012). A New Species of Large Flying Frog (Rhacophoridae: *Rhacophorus*) from Lowland Forests in Southern Vietnam. Journal of Herpetology 46: 480-487.
Rowley, J. J. L., Tran, D. T. A., Le, D. T. T., Hoang, H. D, & Altig, R. (2012). The strangest tadpole: the oophagous, tree-hole dwelling tadpole of *Rhacophorus vampyrus* (Anura, Rhacophoridae) from Vietnam. Journal of Natural History. 46, 47-48.
Sadlier R.A., A.M. Bauer, P.L. Wood Jr., S.A. Smith & T.R. Jackman, 2013. A new species of lizard in the genus *Caledoniscincus* (Reptilia: Scincidae) from southern New Caledonia and a revision of *Caledoniscincus atropunctatus* (Roux). Zootaxa 3694 (6): 501-524.
Sunderasan, L., & Rowley, J. J. L. (2012). *Leptobrachium pullum* (Vietnam Spadefoot Toad). Situs Inversus. Herpetological Review 43: 464.


Michael B. Thompson
University of Sydney

Camilla Whittington joined the lab in February as part of Mike's ARC grant to study vascular endothelial growth factor in the uterus of the skink, *Saiphos equalis*. Camilla completed her PhD at Sydney where she used molecular techniques to study venom evolution and immunology in platypus. She then did a postdoc in Zurich where she studied pregnancy in male sea horses, before returning to Sydney.

Oliver Griffith's PhD project is going very well. He won a student prize at the World Congress of Herpetology last year for his oral presentation on placental function in the skink, *Pseudemoia entrecasteauxii* from NSW. Matt Brandley still "works" in the lab, but lives in Canberra! Van (James van Dyke) has almost completed two projects on the evolution of viviparity in Australian skinks as part of his NSF-funded postdoc. Shervin Aslanzadeh and Nadav Pezaro have both submitted their PhD theses. Jacquie Herbert continues to work two days a week in the lab, but still manages to be at the centre of managing most things. Bec (Rebecca) Bray, who is doing a PhD at Monash with David Chapple, co-supervised by Mike, is writing her PhD thesis.

Jess McGlashan is doing a PhD on turtles eggs with Ricky Spencer at the University of Western Sydney (co-supervised by Mike Thompson and by Fred Janzen at Iowa State) is currently in the USA working on turtle eggs as the final part of her PhD work. Celine Goulet has started her PhD on *Lampropholis delicata* with David Chapple at Monash, cosupervised by Mike. Jess McKenna completed her honours project on angiogenic genes in the uterus of lizards and is taking a break before taking up a PhD next year. Last year's honours student, Melanie Laird, won a university medal for her thesis on the uterus of marsupial dunnarts and has just begun her PhD, our current honours student, Jess Dudley, is also studying marsupials, and Fran van den Berg, is doing some great work on flat rock spiders for her PhD.

Mike, together with Chris Murphy and Bronwyn McAllan, received a new ARC Discovery grant to study the development of the uterus in marsupials, snakes and lizards. Mike was invited to give a presentation on the placenta of lizards at the recent meeting of the Australian Society for Reproductive Biology.

Griffith, O.W., B. Ujvari, K. Belov & M.B. Thompson. 2013. Lipid transport mechanisms in the placenta of a placentotrophic reptile. Journal of Experimental Zoology (published on-line August, 2013).
Andrews, R.M., M.B. Thompson & Virginia W. Greene. 2013. Does low gas permeability of rigid-shelled Gekkotan eggs affect embryonic development? Journal of Experimental Zoology 319A:259–267.
Griffith, O. W., Van Dyke, J.U. & Thompson, M. B. 2013. No implantation in an extrauterine pregnancy of a placentotrophic reptile. Placenta 34: 510-511.

Pezaro, N., J.S. Doody, B. Green & M.B. Thompson. 2013. Hatching and residual yolk internalisation in lizards: evolution, function and fate of the amnion. Evolution and Development 15: 87-95.
Chapple, D.G., K.A. Miller, F. Kraus & M.B. Thompson. 2013. Divergent introduction histories among invasive populations of the delicate skink (*Lampropholis delicata*): has the importance of genetic admixture in the success of biological invasions been overemphasized? Diversity and Distributions 19: 134-146.
Chapple, D.G., A.H. Whitaker, S.N.J. Chapple, K.A. Miller & MB. Thompson. 2013. Biosecurity interceptions of an invasive lizard: origin of stowaways and human-assisted spread within New Zealand. Evolutionary Applications (ISSN 1752-4571) 6: 324–339.
Ramírez-Pinilla, M.P., S.L. Parker, C.R. Murphy & M.B. Thompson. 2012. Uterine and chorioallantoic angiogenesis and changes in the uterine epithelium during gestation in the viviparous lizard, *Niveoscincus conventryi* (Squamata: Scincidae). Journal of Morphology 273: 8–23.
Stewart, J.R., K.J. Russell & M.B. Thompson. 2012. Development of yolk sac and chorioallantoic membranes in the Lord Howe Island skink, *Oligosoma lichenigerum*. Journal of Morphology **273**: 1163-1184**.**
Biazik, J.M., S.L. Parker, C.R. Murphy & M.B. Thompson. 2012. Uterine epithelial morphology and progesterone receptors in a mifepristone treated viviparous lizard *Pseudemoia entrecasteauxii* (Squamata: Scincidae) during gestation. Journal of Experimental Zoology 318B: 148-158.
Murphy, B.F., M.C. Brandley, C.R. Murphy & M.B. Thompson. 2012. Morphology and development of the placentae in *Eulamprus quoyii* group skinks (Squamata: Scincidae). Journal of Anatomy 220: 454–471.
Brandley, M.C., R.L. Young, D.L. Warren, M.B. Thompson & G.P. Wagner. 2012. Uterine gene expression in the live-bearing lizard, *Chalcides ocellatus,* reveals convergence of squamate and mammalian pregnancy mechanisms. Genome Biology and Evolution 4(3):394–411.
Stinnett, H.K., J.R. Stewart, T.W. Ecay, R.A. Pyles, J.F. Herbert, M.B. Thompson. 2012. Placental development and expression of calcium transporting proteins in the extraembryonic membranes of a placentotrophic lizard. Journal of Morphology 273:347–359.
Llewellyn, D., M.B. Thompson, G.P. Brown, B.L. Phillips, R. Shine. 2012. Reduced investment in immune function in invasion-front populations of the cane toad (*Rhinella marina*) in Australia. Biological Invasions 14(5): 999-1008.

Mike attended the International Congress of Vertebrate Morphology in Barcelona in July. The lab was very well represented at ASH this year, with members of the group presenting six papers. Oli , Camilla and Jess McKenna gave presentations at this year's Genetics Society .Conference in Sydney. Van attended the Joint Meeting of Ichthyologists and herpetologists (JMIH) where he presented a paper on nutrition during pregnancy in a placentotrophic skink. Matt Brandley attended the American Evolution meetings where his paper on the transcriptomic analysis of the evolution of viviparity in *Lerista bouganvillii* was very well received.

The Shine Lab,
University of Sydney

Deep within a whirling maelstrom of invasive cane toads, endangered lizards, reptile brains and sea snake ecology, the Shine Lab continues to thrash around in frenetic activity (with an occasional break for a relaxing cold drink). Essentially, over the last 12 months we completed a major research program on invasive cane toads (funded by Rick's Federation Fellowship), took a deep breath (during which time the cohort of Ph D students who were part of the first adventure, finished their theses and disappeared to new phases of their careers), and then hurled ourselves into the next phase of the toad work (funded by Rick's new Laureate Fellowship). That has involved a major influx of new people. So, here's a blow-by-blow account of the main players and what they are up to …

Rick Shine has just started his new Laureate Fellowship from the Australian Research Council. It will run until 2018, and funds Rick to explore the rapid evolution of cane toads during their Australian conquest. Rick also obtained an ARC Discovery grant (2013-15) on population ecology of toads. As before, the main geographical focus of the cane toad work will be our Middle Point research station (near Fogg Dam, outside Darwin), but we are also looking at the toads closer to home (in the Sydney suburbs, and in northeastern NSW). The work encompasses studies on the ecological impact of toads, the biology (especially, rapid evolution) of toads, and new ways that we might reduce the numbers of these pesky anurans (or at least, reduce their impact on native wildlife). Rick is quivering with fear at the prospect of the work extending into genetics and epigenetics. He firmly intends to look up Wikipedia some time soon to find out what a transcriptome is, since he'll be paying so much to generate 'em. On the non-toad front, Rick continues to work with endangered lizards in the Blue Mountains and seasnakes in the Pacific (especially New Caledonia). And front up for a never-ending round of TV and radio interviews, mostly on cane toads (creating abundant media exposure for Gwendolyn and Lancelot, our two camera-friendly lab toads). Rick's herp highlight of the year was snorkeling with (and catching) Japanese turtle-headed seasnakes *Emydocephalus ijimae* off Okinawa. This beautiful species is a close relative to the seasnake species that Rick harasses every year in New Caledonia.

Melanie Elphick has notched up her 18th year as Rick's senior research assistant and is still smiling, despite the ever increasing challenges of keeping Rick's life organised and the lab running smoothly. After admin and WHS, Mel's favourite jobs are formatting and proof-reading manuscripts. So, she's in the right research group (see publication list below; Mel has ruthlessly eradicated split infinitives from every single one of them). She is also continuing field studies on the oviposition biology of the three-lined alpine skink *Bassiana duperreyi* in the Brindabellas, as well as gathering a long-term dataset on the thermal properties of lizard nests. And after five years dogged determination, she has finally made another senior-authored contribution to the research output of the lab, having had a paper published on communal laying in *Bassiana*.

Chalene Bezzina finished her Masters in Wildlife Health and Population Management with a research project on lizard intelligence (comparing *Lampropholis delicata* and *L. guichenoti*) last year, and is now working as an RA in Rick's lab – and sometimes further afield. She, Damian Lettoof and Chris Jolly spent a couple of months refining our new cane-toad control methods in Kakadu National Park mid-year.

Postdoctoral Fellows

There have been some comings and goings (mostly comings). Our resident Bayesian mathematician Tom Lindstrom has returned to Sweden to take up another postdoc, and continue his passion for heavy metal music. He managed to get his big paper on cane toad dispersal accepted in PNAS just before he left, cushioning the blow of leaving our merry throng. On the plus side, we have been joined by a couple of new postdocs funded under Rick's Laureate Fellowship; and some of the old-timers continue to hang in there.

First, the old-timers. Greg Brown is still based up at Middle Point near Darwin. He was awarded an ARC Future Fellowship to expand his toad immunology studies into snakes. When he is not running the research station, feeding marshmallows to his pet water buffalos, or playing guitar to his near-featherless pet cockatoo, Greg can be found strolling along the dam wall in the evening picking up snakes, counting toads, and fondly reminiscing about his childhood on the Canadian prairies. When the weather becomes suitably warm, Greg also engages in a bit of radio-tracking to document dispersal patterns and other behaviours of his beloved cane toads. His newfound passion for ecoimmunology has the Middle Point lab looking a bit more like a scientific establishment rather than a field camp.

Michael Crossland is also a longterm Middle Point resident, working with Rick and chemists from University of Queensland on the chemical ecology of cane toad tadpoles. The team are refining the use of attractant chemicals to selectively remove toad tadpoles from waterbodies, and with Honours student Greg Clarke are also investigating the ability of toad tadpoles to suppress growth and survival of conspecific eggs.

Matt Greenlees runs the NSW side of the toad operation, as well as handling a ludicrously large volume of work associated with animal ethics permits for the group (thanks Matt!). By comparison with the lab tasks, fieldwork on the north coast looks pretty cruisy. Matt already has extensive mark-recapture programs running, as well as a range of other programs under our Linkage grant on toad biology, impact and control on the southern front. He supervised Damian on toad parasite research, and Sam on the physiology and ecology of high-elevation toads.

Turning to the newbie postdocs, we have been joined by Camila Both and Jayna DeVore. Camila is from Brazil and did her Ph D on the spatial distribution and ecological impact of invasive bullfrogs over there. She will work with Rick on the Laureate Fellowship study, examining behavioural divergence in cane toads during their Aussie invasion. She is especially interested in studying how invasive species can promote behavioral changes in native species, and the potential consequences of these changes at different time scales. Jayna is from the USA, and will also work on toad evolution – probably focusing on our ambitious plan to collect toads from a range of sites, breed them in captivity (at Middle Point), and raise their kids under common-garden conditions to tease apart genetic from environmental influences. Simon Ducatez also will join us in a postdoc position (again, part of the Laureate work on toad evolution and dispersal), starting in February 2014. Jivanildo

Miranda has joined us for a year, from Brazil, to conduct studies on montane lizard ecology. Jiva is looking mostly at the woodland *Eulamprus* species in the Blue Mountains, integrating with Sarsha's studies on the endangered *Eulamprus leuraensis*. At the moment, though, Jiva is in thermal shock – Sydney is a lot colder than his home in Brazil.

Postgraduate students

2012 saw the completion and graduation of an entire cohort of Ph D students – most of them members of the first cohort for the mighty toad studies, conducted under the auspices of Rick's Federation Fellowship. These included Ruchira Somaweera (2008 to 2012), Cane toad impact on crocodiles; Samantha Price-Rees (2008 to 2012), Biology of bluetongue lizards; Crystal Kelehear (2008 to 2012), Host-parasite interactions; Reid Tingley (2009 to 2012), Cane toad invasion biology; Ben Croak (2009 to 2012), Habitat restoration for an endangered snake; Elisa Cabrera-Guzman (2009 to 2012), Cane toad larval ecology and control; Edna Gonzalez-Bernal (2009 to 2012), Cane toad habitat use. We are sorry to see them go, and wish them all well in their future endeavours. Ruchira and Sam are currently working in Perth; Reid is doing a postdoc at the University of Melbourne; Crystal has just started a postdoc in Panama (with the Smithsonian Tropical Research crowd), and Elisa has just begun a postdoc in Spain.

That mass exodus brought the number of continuing students down dramatically, but we are moving back into a growth phase. A couple of more people (Josh and Cissy) are about to submit their Ph Ds, but a new cohort has arrived to start their own investigations. In alphabetical order, here goes …

Joshua Amiel (Ph. D, 2010 to 2013) has recently completed his doctoral candidature with Rick. During his PhD, Joshua explored the causes and consequences of differences in intelligence within and among species of amphibians and reptiles. One of Joshua's main findings was that species with relatively large brains (that are presumably more intelligent) are more successful at invading novel environments than species with relatively small brains. He also found that hatchling lizards (*Bassiana duperreyi*) from warm thermal incubation regimes outperformed hatchlings from cool incubation regimes on several learning tasks. Moreover, Joshua found that cognitive disparities between lizards from warm and cool incubation regimes may be explained by temperature-induced differences in the structural organisation of the hatchling's brains. Joshua has now been sucked into the almighty cane toad vortex and for the next few months he will be assessing neurological differences between invasion-front toads and their stay-at-home counterparts. Joshua will also use EEGs to determine whether or not toads sleep and if cooling and freezing is an ethically acceptable method of euthanizing invasive toads.

Cissy Ballen (Ph. D; major supervisor Prof Mats Olsson, 2009 to 2013) also has just handed in her thesis. Cissy worked on dragons and chameleons. Her topics ranged from the role of reactive oxygen species (ROS) through to colour signaling, plus a host of related topics (including developmental plasticity, and the discovery of a new type of TSD system). If you ever want to know what a chameleon is thinking, ask Cissy.

Sarsha Gorissen is a first-year PhD student in the Shine Lab, undertaking a landscape field-ecology project in the Blue Mountains area on threatened herpetofauna and fire and hydric regimes. Broadly she is researching the ecology of the threatened fauna of Temperate Highland Peat Swamps on

Sandstone, and more specifically, that of the endangered and iconic lizard species, The Blue Mountains Water Skink, *Eulamprus leuraensis*. In her first summer of field-work, she surveyed 12 swamps in the Blue Mountains and Newnes Plateau with a team of 4 staff and volunteers, resulting in the current write-up of a paper (with Jacqueline; see below) on the impact of fire regimes on *E. leuraensis*.

Having survived Tasmanian temperatures during her Honours in Erik Wapstra's lab, Jodie Gruber is moving to a warmer climate for her Ph D. It will focus on the rapid evolution of behavioural traits such as cognition, learning and personality in the cane toad. Cognitive abilities and certain personality traits (such as bold and explorative behaviours) may be important drivers of invasion success in cane toads, and yet almost nothing is known about these traits in this species. Previous research on a range of taxa (e.g., mammals, birds, reptiles and amphibians) has shown that individuals with strong cognitive abilities (such as learning, memory and problem-solving) are better at adapting to novel environments. Personality traits (such as bold and explorative traits) have also been shown to influence dispersal in many species and may therefore influence invasion success. Previous work by Rick and his team reveals that individual toads at the invasion front differ from individuals in long-colonised areas in morphology, behaviour and physiology. Jodie will examine cognitive abilities and personality in cane toad populations across the invasion range in Australia and their native range. Do cane toads at the invasion front have higher cognitive abilities (due to the frequent pressures of encountering novel environments) than toads from long-colonised or native populations? Do individual personality traits consistently combine across contexts to form behavioural syndromes that may aid dispersal (such as bold, explorative and high activity levels), and do these behavioural syndromes vary in frequency within and between populations? A combination of evolutionary theory and laboratory and field-based empirical research will be used, to include experiments with common-garden-raised offspring from field-captured cane toads, to disentangle environmental effects from underlying genetic and epigenetically controlled shifts in these traits.

Cameron Hudson is another new postgraduate student in the Shine lab. He hails from Ontario, Canada. His project is focused on phenotypic evolution of cane toads across their invaded Australian range, with emphasis on morphology and locomotor performance. He plans on sampling populations from a variety of habitat types to examine how the toads are adapting to the environmental challenges that differ throughout Australia. Cam will be based at the Tropical Ecology Research Facility near Fogg Dam, where he plans to spend his time conducting common garden experiments, and racing toads on treadmills. His past research has involved male alternative reproductive tactics in spring peepers, and resource defence polygyny in the Emei moustache toad.

Serena Lam will be looking at genetics and epigenetics of cane toads, relying on the fact that Lee Ann Rollins knows about such things even though her official supervisor (Rick) gets a glazed look in his eyes whenever anyone says "epigenetics." Serena's research interests span the fields of evolutionary biology and evolutionary ecology, particularly in the context of invasive species and endangered species. Her PhD will focus on the genetic and epigenetic drivers of range expansion in the cane toad. Studies have demonstrated rapid evolution in dispersal rates and dispersal-related traits at the cane toad invasion front, but the substrates for these evolutionary increases in dispersal ability are poorly understood. Her study will elucidate the relative roles of genetic and epigenetic variation in promoting the rapid evolution of increased dispersal ability in cane toads. This will allow us to better understand the drivers of accelerated range expansion in this species, and will also shed light on the dispersive potential of invasive species and endangered species, in general.

Jacqueline Mallison did her M. Sc. in Environmental Science in 2013, on the landscape ecology of montane lizards. She used GIS methods to work out the fire-regime history of the swamps in which Sarsha has been catching endangered skinks (see above).

Daniel Natusch (Ph. D., from 2013) is studying the ecology of tropical pythons in Cape York. He isn't planning to do anything with cane toads, but somehow decided that our group was a sensible base for his doctoral studies. Scrub pythons will be his primary study animal, and at least in the initial phases of his work he'll be looking at how these giant snakes (and other serpents) exploit the seasonal food resource offered by breeding colonies of metallic starlings that arrive from New Guinea each year. Dan writes: "I like the ecological and evolutionary sciences. I am undertaking a field-based PhD on the ecology of tropical snakes in Cape York Peninsula. Specifically, I hope to understand how they use seasonal resources in this wet/dry woodland/rainforest mosaic. I am also interested in incorporating thorough knowledge of species biology and ecology into management

plans designed to sustainably harvest wildlife populations. In my spare time I am working on revisions for green pythons and Leiopythons. I also like beer.
Georgia Ward-Fear (Ph. D., from 2013) did her Honours with us a few years ago (looking at how meat ants munch baby cane toads), and she has recently returned to start her PhD exploring the interactions between cane toads and varanids in Northern Australia. She will be working in collaboration with DEC (now DPaW) and the Australian Wildlife Conservancy. Georgia is currently gearing up for a wet season in the Kimberley, where she will be attempting to elicit a conditioned taste aversion response in a population of floodplain monitors (*Varanus panoptes*), to reduce the impact of the dreaded toad invasion.
Uditha Wijethunga (Ph. D, from 2012) came to us from Sri Lanka a little while ago, and has been working with Matt and Rick for a year regarding the southern invasion of cane toads. Embryonic and larval life history stages of cane toads might have to face to novel challenges such as cooler temperature, various acidic conditions and salinities. Her initial experiments looked at the effect of various acidic conditions on the development of cane toads. Toad eggs and larvae cannot tolerate extremely high or low pH, but they do have the flexibility to successfully reach metamorphosis over a wide range of pH conditions. The next step is to assess the effect of environmental variability in salinity in potential breeding ponds in northeastern NSW on reproductive success of cane toads.

Honours students
Samantha McCann completed her Honours in 2013, on thermal biology and dispersal of cane toads in the montane areas of northeastern NSW. Dave Newell (Southern Cross University) has been finding toads up in these superficially unsuitable sites, so Sam (supervised by Matt and Rick, as well as Dave) set out to work out how the hell they are doing it. Her acclimation and radio-tracking studies clarified the issues, and left us all even more amazed at the capabilities of this giant frog from the Brazilian rainforests. We expect to see cane toads at the South Pole quite soon.
Greg Clarke will look at how cane toad tadpoles respond to chemicals produced by conspecifics, creating a potential for management strategies to exploit this communication system. His study (supervised by Michael Crossland and Rick) focuses on a pheromone produced by cane toad tadpoles that suppresses the growth and survival of younger tadpoles. He will conduct laboratory-based experiments to clarify the nature and effects of this pheromone, so that we can ultimately use it as part of an integrated management scheme for invasive toads. Felicity Nelson's project (supervised by Greg Brown and Rick) investigates the potential spread of a parasite of native Australian frog parasite (the lungworm *Rhabdias hylae)* to cane toads. She will identify whether this spread is possible, whether it is likely to happen in the field and if so, what effects this process may have. *Rhabdias hylae* is a lungworm nematode congeneric with a species brought by cane toads from South America (*Rhabdias pseudosphaerocephala)*. Previous studies have shown that it is possible to infect native frogs with the cane toad lungworm but that the parasite becomes "lost" in the unfamiliar host. Unable to find the target tissue (the lungs) this parasite then fails to complete its life cycle and dies. If the same thing happens when the frog parasite (*Rhabdias hylae*) encounters a cane toad host, cane toads could reduce the abundance of this parasite and thus, the parasite load of native frogs. This novel process

could explain the recent puzzling finding (from Damian Lettoof's work) that frogs in toad-infested regions in NSW have lower parasite burdens than frogs in toad-free areas.
Chris Jolly has just started Honours also, supervised by Matt Greenlees and Rick, on the impacts of toads on native predators in northeastern NSW, at the still-expanding southern front. To quantify impacts of toads on native fauna in this area, he will be conducting fauna surveys on either side of the toad's invasion. His surveys will focus on predator populations, especially varanid lizards. Toad invasion in the tropics has consistently induced dramatic declines in varanid abundance, but anecdotal reports suggest that varanid populations at the southern front are relatively unaffected by toad arrival. Chris will conduct feeding trials to clarify the mechanisms underlying the ability of apex predators, such as lace monitors (*Varanus varius*), to persist after toad invasion.

Lastly, we have also set up some collaborative work with other groups. Lee Ann Rollins from Deakin University (toad genetics), and Martin Whiting from Macquarie Uni (toad cognition), are the chief offenders. We also continue to collaborate with Jonno Webb from UTS (aversion learning of predators), and have started some work on toad morphology with Colin McHenry (Monash Uni). On the Asian front, we are working with Takashi Haramura (Kyoto University, cane toads in Japan) and Yi-ming Li (Chinese Academy of Sciences, anuran larvae in China).

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Evolution and Assisted Reproduction Laboratory (EARL): Byrne Lab
University of Wollongong

The Evolution and Assisted Reproduction Laboratory (EARL) at UOW headed by Phil Byrne continues to study the evolution of gametes and mating systems, reproductive behaviour and assisted reproductive technologies. EARL is looking to expand in 2014 and is currently seeking expressions of interest from prospective PhD students. Eligible students would need to secure a university scholarship (applications close March 12, 2014).

Aimee Silla continues to develop assisted reproductive technologies for endangered anurans, with her most recent post-doctoral research focusing on refining spermiation protocols and short-term storage techniques for the critically endangered Booroolong frog.

Kate Umbers has commenced a 3 year post-doctoral position investigating the evolution of colour in Australian anurans. Welcome to the team Kate! Kate is also known as the ‘prodigal postdoc’, spending much of her time based in Perth, but is welcomed warmly upon her regular return to Wollongong.

In other news, Phil Byrne and Aimee Silla have received almost 200 Southern Corroboree frog

embryos from Melbourne Zoo, stay tuned as our new editions are used for nutritional, behavioural and artificial reproduction research over the next decade!

Congratulations:
Congratulations to Stephen Heap who recently completed his PhD, supervised by Devi Stuart-Fox and Phil Byrne. Several chapters of his thesis were dedicated to the evolution of territoriality in *Pseudophryne bibronii*. Steve has now taken up a post-doc at the University of Jyväskylä in Finland, joining a research team exploring cooperative behaviours in humans. Leesa Keogh and Craig Dunne have completed their honours degrees with first class. Leesa investigated sperm storage and sperm activation in *Litoria booroolongensis* and Craig looked at local adaptation to salinity in *Crinia signifera*.

Congratulations also go to Aimee Silla who received a prestigious UWA Conservation Research Award earlier this year. The award was in recognition of the outstanding contribution that her PhD thesis (completed in 2012) made to the field of conservation biology.

For more updates and news from the lab, check out our facebook page:
https://www.facebook.com/EvolutionAssistedReproductionLaboratory

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Australian Wetlands Rivers and Landscapes Centre
University of New South Wales

As of 13th of September, I (Jo Ocock), UNSW's current sole herpetological representative will have submitted her Phd, "Linking frogs with flow: amphibian community response to flow and rainfall on a dryland floodplain wetland", and be taking up a one-year postdoc position with Dr. Skye Wassens of Charles Sturt University in Albury, NSW on the Murrumbidgee ecological response monitoring project. *Crinia sloanei* are on campus and *Litoria raniformis* at the field sites, expect further secrets of inland frogs to be revealed!

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The Webb Lab
University of Technology Sydney

Jonno Webb's group is currently working on a range of conservation biology and behavioural ecology projects, including mitigating the impact of cane toads on northern quolls, understanding climate change impacts on rock-dwelling lizards, the effects of fire history on reptiles and mammals, conserving broad-headed snakes, and chemical communication in snakes and lizards.

Jonno is teaching Wildlife Ecology and Biocomplexity at UTS, and spends inordinate amounts of time writing field work risk assessments, travel forms, and animal ethics applications so that his students can do field biology. When he's not teaching, Jonno still finds time to work with collaborators and

students, on a range of projects. Recent visits to the physiotherapist have helped Jonno's bad back, and have enabled him to continue his long-term (22 year) study on broad-headed snakes and small-eyed snakes in Morton National Park.

Teigan Cremona (PhD student) has been monitoring the long-term survival of 'toad smart' captive reared quolls that were reintroduced to Kakadu National Park in early 2010. Teigan recently discovered that some toad-smart females have survived long-term, and their grandchildren are now happily breeding. Teigan presented her results at the 11th International Mammal Congress 2013 which was held in Belfast, Ireland in August 2013. Teigan can now confirm that Guinness ale does in fact taste better when imbibed in Ireland.

Buddhi Dayananda (PhD student) has recently arrived in the lab after working on human-elephant conflicts in Sri Lanka. Buddhi will be studying how future climatic changes may affect rock-dwelling reptiles in the Sydney region.

The lab has two new honours students who commenced in July 2013. Caitlin Austin is using remote cameras to estimate the distribution and abundance of northern quolls in the East Kimberley. Caitlin is co-supervised by Dr Katherine Tuft, from the Australian Wildlife Conservancy, and will be doing her field work at Mornington Wildlife Sanctuary in the east Kimberley. Sarah Gray is working closer to home, and will be investigating how incubation temperatures affect learning behaviour and survival in velvet geckos.

Media interest has mostly focused on the quoll research in Kakadu National Park, which featured in the documentary "Attenborough's Ark", which will air in Australia later this year.

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Amphibian Conservation Biology lab
University of Newcastle

Honours students include Madeleine Sanders who is looking at *Litoria aurea* tadpole ecology including predation, detectability and habitat choice. Amalina Abu-Bakar is studying the ontogenetic effects of chytrid on bell frogs in the lab and in wild populations at Sydney Olympic Park. Doug Webb is undertaking a project on extinction probabilities of bell frogs. Lachie Campbell has recently started a project on the sub-lethal effects of chytrid on frogs. Josh Green is investigating the impact of toads on Kimberley tree frogs. Some of our elite students have managed to combine their honours with work as research assistants including John Gould, who is beginning his honours on communal nesting in *Lechriodus fletcherii*; Loren Bainbridge who is looking at habitat choice of frogs in response to vegetation succession; and Hugh James who is studying goanna nesting behaviour in the Kimberley. Alexander Wray-Barnes is also research assisting around the laboratory with all things bell frog behaviour, while he undertakes a Masters on sharks. Jonathon Remon recently finished his Masters Internship using stable isotopes to assess Gambusia predation on tadpoles. Rodney Wattus is research assisting and looking at calling behaviour in *Crinia*.
Evan Pickett has recently finished his PhD and left us for a postdoc in Hong Kong, modelling a range of data. Current PhD students include Alexandra Callen looking at overwintering habitat of bell frogs; David Wright who is assessing the climatic activities of bell frogs; Melanie James studying conspecific attraction in frogs; Kaya Klop-toker who is looking at chytrid and *Gambusia* effects on frogs; and Jose Valdez who is focusing on bell frog habitat requirements on Kooragang Island. James Garnham is in the final throws of his PhD on spatial ecology of bell frogs at Sydney Olympic Park. Carla Pollard is not far behind him with her studies on adaptive management of the bell frog population at SOP.
Ligia Pizzatto do Prado is continuing her postdoctoral research on bell frog behaviour, looking at choices and responses to all kinds of stimuli. Simon Clulow is currently at burning man as we speak and, when not burning, is avoiding the finalisation of his PhD with bell frog work on Kooragang Island, a research program in the Kimberley surrounding toads, and research on subtropical rainforest frogs of NSW. Deb Bower has recently returned from 6 weeks in Brazil visiting a laboratory in Belo Horizonte and is preparing to finish up her post doc under the five year ARC on the Sydney Olympic Park bell frog population in December. Deb is heading off to Madagascar and beyond – so if you have any contacts over there, please let her know. Michelle Stockwell is usually project managing or growing up her baby zoospores of chytrid. John Clulow has been involved in a CRC bid for biodiversity and can be spotted roaming the campus at odd hours muttering words of science and frogs. Michael

Mahony continues to build his empire of froggers, with bell frog studies and his earth watch project on *Mixophyes* as his babies.
A recent cohort returned from the international congress of ecology in London, presenting talks of all things bell frogs and some things Kimberley. We used winter to run a writing retreat, which was supported by Arthur Georges' course notes, accommodation provided by the Sydney Olympic Park Authority and generous guest herpetologist speakers Rick Shine, Mike Thompson and Martin Whiting who shared their wise insights on writing (and Frisbee in Martin's case). We managed to produce a few papers and now we are madly working away before another big field season starts.

Frank Lemckert
University of Newcastle

Frank Lemckert has this year become an Official Conjoint with the University of Newcastle, recognising his long-term association with the University. This has allowed him to undertake ongoing works with the SA Museum and the Australian Biological Resources Study looking into cryptic species within the Australian frog fauna. This is involving delving into alcoholic museum frogs and collecting frogs and frog calls in the field to elucidate which frog is which. Frogs of particular interest are the accursed *Cyclorana* of NW NSW, *Litoria peronii*, *Limnodynastes dumerilii* and good old *Crinia signifera*. There is also work for the Office of Environment and Heritage on *Litoria littlejohni* and whether there are two species within this currently recognised Murray Littlejohn-like frog. Frank also continues to work on the management of frogs through his consultancy work, with ongoing works on the Green and Golden Bell Frog at Nowra and monitoring of frogs in the southern coalfields. Finally, he continues to run wildlife schools and monitor frogs in the Watagan mountains in his spare time. If only he could find more time to write up his work.

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Marion Anstis
Newcastle University

At last I have graduated with a PhD in Environmental and Life Sciences, Newcastle University. My thanks to supervisors Mike Mahony and John Clulow, and the whole lab for additional input at times.

My task now is to get this book published and into the hands of those who have ordered it. We have had a slight delay, and books are now not expected to arrive until October, so my apologies for the delay. It's a big book (more apologies!).

After I get all my specimens catalogued in spreadsheets for the various State museums (what a job!), I plan to look at doing some further articles for journals (including a new species of *Uperoleia* – hurry up Simon!) and have been asked to join in with Ronn Altig and Roy McDiarmid on a proposed future 'monstrous' website on tadpoles on a global scale. My contribution will be to a key to tadpoles of the islands in the southern Pacific Ocean.
Hope to see you all at the next ASH, and if you get my book, I hope it will be worth the wait. Meantime I might just quietly collapse….

Northern Territory

Northern Australia Herpetological Group
Charles Darwin University

Steve Reynolds has stopped feeding sausages to saltwater crocodiles and spends his time dreaming of the next wet season when he can start working on frogs again. In the meantime he is giving lectures on birds and mammals and trying to write up miscellaneous herp stuff, including some work on *Litoria dahlii*. Carla Eisemberg has joined the CDU fraternity and is expanding her horizons to freshwater turtle work in Timor-Leste, while working on long lost data of Amazon Turtles. Honours student Guillaume Puig is working on a project assessing the adhesive properties of geckos using a range of terrestrial and arboreal species. Adrian Gurra is working on an Honours project dealing with temperatures in crocodile nests and the possible influences of climate change. Matt Brien continues to publish on crocodile behaviour and will be soon finishing his PhD. Chris Gienger has written or is preparing papers from measurements of metabolic rates in crocs over a huge size range. He is now Assistant Professor of Biology at Austin Peay State University (US). Chris Tracy also left to the US and is now an assistant professor at California State University, Fullerton, but is still writing up some of his work from his long sojourn in Darwin. Apart from supervising projects, Keith Christian occasionally finds time to chase a frog or lizard.

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South Australia

Mike Bull's lab Group
Flinders University of South Australia

Mike Bull has been leading the team focusing on sleepy lizards and pygmy bluetongue lizards, and also started new project on Slaters skink in the Alice Springs, NT, in collaboration with Chris Pavey and Mark Hutchinson. 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 and bacteria like Salmonella sp. The pygmy bluetongue project continues with new insights into social interactions and the impact of grazing (by sheep) on lizard behaviour and conservation strategies including photographic identification of individuals, movement of individuals through the population

and the feasibility of translocation and relocation of this species. The slaters skink project will focus on the conservation of this species and the development of artificial refuges, with an aim to use this information in restoration and potential relocation projects in the future. Stephan Leu has been focusing on sleepy lizard social networks; most interestingly he experimentally manipulated social networks of wild populations to extend our current understanding of social networks beyond correlational evidence. He also had a grant from the Australian Geographic society to investigate pair fidelity effects in sleepy lizards which was done in collaboration with Mike, Dale and Martin Whiting from Macquarie University. Some very interesting results are emerging from both his focus areas. Stephan just started another field season and continues to work on social and transmission networks. Jess Clayton continue to work on the population dynamics of the lycosid (wolf) and mygalomorph (trapdoor) spiders associated with pygmy bluetongues and the impact of sheep grazing regime on spider burrow construction. Claire Treilibs has discovered that all you need for tracking Slater's skink is a camera (preferably one with a zoom lens). Using the skinks' unique facial markings, she's developed a key to identify the individuals within a study population. Some interesting patterns in social grouping, burrow occupancy and tenure are starting to emerge. Aaron Fenner continues his work on pygmy bluetongue lizards, focussing on translocation procedures and artificial burrow choice, as well as how olfactory recognition of kin and conspecifics is used in the social organisation of PBT's. Three new honours students have joined the lab Melissa Abela, Trish Wright and Peter Majoros, and are about to start their field season. Julie Schofield is using microsatellites and mitochondrial sequences to investigate the level of movement within and between populations and to investigate mating and parentage of the Pygmy Bluetongue lizard. Leili Shamimi, Caroline Wohlfeil and Mehregan Ebrahimi are in the final stages of writing up there Ph.D theses. Torbin Nielsen has begun his PhD investigating grazing pressures on pygmy bluetongue lizards. Dale Burzacott continues as Mike Bull's research assistant and lab coordinator.

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Tyler Lab
University of Adelaide

In collaboration with the palaeontology group at Flinders University, frog fossils have been recovered from a cave on the Nullarbor Plain. This is the first fossil material from the Nullarbor and provides evidence of periodic wet conditions 800 – 900,000 years ago.

Work continues on the skin secretions of *Notaden* in collaboration with CSIRO, and caerin 1 from five species of *Litoria*. The latter, in collaboration with Harvard University, has been demonstrated to prevent the transmission of HIV.

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James Menzies
The University of Adelaide

(with Mike Tyler) an application before the International Commission to have *Nyctimystes cheesmani* (Anura: Hylidae) set aside in favour of *Nyctimystes cheesmanae*. Evelyn Cheesman was woman and should be addressed properly. Doubtless this issue will be decided in the fullness of time but I'm not overly optimistic.
Systematics of *Nyctimystes* species. Two papers are 'in press', one dealing with species of the *cheesmanae* group (15 species, 4 of them new) and one dealing with species of the *narinosus* group (3 species, two of them new). I have no idea when the publications will appear.


Tasmania

BEER Group (Behavioural and Evolutionary Ecology Research Group)
Univeristy of Tasmania

Erik Wapstra has spent most of 2013 to date in the UK- just under 4 months in Scotland, with a side trip to Sweden to work on sand lizards with Mats Olsson, and a recent trip to INTECOL in Britain. Erik was awarded an ARC Future Fellowship in 2011, and is thus concentrating on research, primarily the long-running project on the snow skink, *Niveoscincus ocellatus*, now in its 15th field season. Geoff While, who has nicely been splitting his time between a post-doc at the University of Oxford with Tobias Uller, and work here at UTAS, has now returned to us (almost) full time as a lecturer. Geoff is busy developing his teaching profile as well as research projects both in Oxford and with the *Egernia whitii* system he developed. Erik is actively pursuing keen students to begin PhD projects in 2014 associated with his Fellowship.
Chloe Cadby-Bibari completed her PhD in 2012. Her project considered how maternal effects may buffer climate change in *Niveoscincus ocellatus*, and worked in collaboration with Erik, Geoff, Tobias and Alistair Hobday, combining both empirical and modeling approaches. She has now moved on with her family to Victoria, where we wish her all the best. Jo McEvoy has recently completed her PhD examining the proximate causes and ultimate outcomes of personality in *Egernia whitii*. Jo worked with Erik, Geoff and Sue Jones, and is currently a research fellow at UTAS, dipping her toes into some mammal research while investigating post-doc opportunities. Mandy Caldwell is in the final stages of her PhD project examining the potential for behavioural, physiological, and ecological traits to buffer climate impacts in snow skinks. She and her young family have recently moved back to New Zealand where she is currently writing up. Yuni Eswayanti is in the final stages of her PhD project examining the physiological flexibility of the spotted snow skink. Yuni has had to return home to Indonesia where she is currently writing up. Laura Parsley is in the process of handing in as we speak. Laura's PhD project with Sue Jones and Erik has examined the endocrinology of reptilian gestation, and specifically how embryonic hormone exposure may be modulated, and the potential for endocrine disruption in the

metallic skink, *Niveoscincus metallicus*. Mat Russell finished up his Masters in 2011 investigating the mechanisms underlying sperm storage and their consequences for mating tactics in snow skinks. Mat has since left us to return home to Canada, and his exuberance is missed. We have recently welcomed new PhD students Ben Halliwell and Hannah Macgregor to the group. Ben will be working with Geoff on the *Egernia* system investigating the evolutionary feedbacks between ecology, female promiscuity on social organisation. Hannah is working with Geoff and Tobias in Oxford investigating introgression and hybridization in wall lizards.

The BEER group has recently undergone an expansion to include some (at present) non-reptile people. We welcome Elissa Cameron, who is also our current Head of School. Elissa works on the ecology, behaviour and conservation of mammals, focusing on the different strategies adopted by males and females, and the impacts that these have on behaviour, ecology and social structure. This has resulted in three main current themes: a) Parental investment strategies, including sex allocation b) Impact of disease and predation on social ecology c) Impact of management strategies on behaviour and ecology. Although Elissa is a mammal person, we are hoping to convert her in time. Along with Elissa we welcome PhD student Amy Edwards. Amy will be working on sex allocation and conservation strategies using mice and sugar gliders with Elissa and Erik. As with Elissa, we are sure that in time, Amy will be converted to more cold blooded animals. We also welcome Scott Carver, a disease ecologist whose main interest is community ecology and the ecology of infectious diseases across both natural and anthropogenic environments. Scott is already in the process of being converted to the reptile side, as he and Geoff are currently advertising for honours and PhD students to work on collaborative projects.

The Comparative Endocrinology and Ecophysiology Group is the other area of herpetological research at UTas. Sue Jones is now part-time with us while she continues her work as an ALTC scholar, and is soon to retire. Sue's work has mainly focused on the evolution of viviparity in vertebrates and how environmental stressors affect the endocrine (hormone) system. Ashley Edwards continues her work on examining key components of the reproductive physiology of the blue tongue lizard, *Tiliqua nigrolutea*, and has also had an increase in focus on teaching and learning directives at the university level. Keisuke Itonaga completed his PhD in early 2012. Keisuke examined maternal effects on offspring phenotype in a grass skink with high placental complexity. Kesikue has since returned home to Japan and is currently at the Yokohama National University.

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Victoria

ARI herp group
Arthur Rylah Institute, DEPI

No new people as the government is downsizing.

We undertook some surveys to find the elusive Grassland Earless Dragon - no luck as yet. Fingers crossed the housing boom will encourage them to come out and enjoy their new found habitat. Current work includes surveys in the Grampians for threatened anurans and swabbing for chytrid, whilst working alongside Melbourne Museum during their Bioscan. We are trialling new GPS data loggers for freshwater turtles in Barmah-Millewa Forest and surveying the turtle populations of the Gunbower Lagoon System

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Western Australia

Nicki Mitchell's Lab
The University of Western Australia

Nicki continues to look after an ever-growing cohort of first year biology students at UWA, but research is ticking along nicely thanks to a bunch of hard working lab members and collaborators. Work on sea turtles is progressing on three fronts. Jessica Stubbs finished an honours project on a winter nesting population of flatback turtles in the East Kimberley, and identified some intriguing trends in primary sex ratios (more about that later). Lorian Woolgar finished her MSc on modeling beach temperatures and sex ratios of the WA Loggerhead turtle population, while PhD student Jamie Tedsechi is expanding her preliminary work on the genetic basis of thermal tolerance in embryos to include more populations of loggerhead and flatback turtles. Research on turtles of the freshwater variety (the embattled western swamp tortoise) is focusing on refining a suite of tools to identify optimum habitats for this species under future climates. Along with Michael Kearney at the University of Melbourne, many of the WA team members (including PhD students Sophie Arnall and Hasnein Tareque) were filmed for a 7.30 Report segment, flagging the use of supercomputing in conservation biology (the feel good story on a quiet news day). Sophie and Hasnein are busy writing up their research on ecophysiology and hydrology respectively for submission in 2014. MSc student Marie Dade has submitted her honours work on Multiple Criteria Analysis for publication, and has been in the field ground-truthing her mapping – and discovering that GIS is really no substitute for fieldwork. PhD student Anna Carter (Victoria University of Wellington) is nearing the end of her project on modeling the impacts of habitat restoration and heterogeneity on primary sex ratios of tuatara. As for Nicki, she finished a collaborative NCCARF-funded project on groundwater-dependent ecosystems and risk assessment of frog populations, and is also having fun working with a bunch of modelers and froggers on assessment of extinction risk in Australian amphibians. After two years of failure, she has finally had a decent field season on Dirk Hartog Island, where no equipment or loggerhead nest sites were lost to cyclones. Now she has no more excuses not to write this work up…

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Dale Roberts
University of Western Australia

Dales has moved to the University of Western Australia, Albany campus where he is working in the Centre of Excellence in Natural Resource Management.

From Dale -

Evan Thyer - Honours student, Brunoa Bruzatto, postdoctoral fellow, Leigh Simmons ARC Professorial Fellow, and me, are working together on more sex in frogs: critically looking at trade-offs in investment in muscles (to dominate matings by excluding other males or holding optimal positions to maximise fertilisation) versus investment in sperm to dominate fertilisation success. Most work has been done around Albany - Denmark - where it rained early!

I have also been working on *Geocrinia leai* looking at call variation - it looks like there are two call types - very reminiscent of the split between *G laevis* and *G victoriana* in south-eastern Australia. Needs calls analysed, more genetic work and call funcion analysis. Not surprisingly call differences seem to be associated with differences in relative testis mass.

Jen Francis has completed her Ph D on tadpole community dynamics in temporary ponds in the east Kimberley and is looking for a job!

Wtih Michael Rix, Mark Harvey (WA Museum), Dan Edwards (Yale), Margaret Byrne (Parks & Wildlife WA) and Leo Joseph (CSIRO) we have just completed a review of southwest biogeography - covering everything - plants and animals (with a serious herp content) to put the evolution of diversity in a global biodiversity hotspot in spatial and temporal contexts. We highlight the comparative wealth of data on animals (frogs and lizards are big players) compared with what is actually known about plant evolution rather than the spatial distribution of plant species richness.

No current Ph D students working on herps but I am learning a lot about plant genetics,millipedes, cockatoos, cats, pseudoscorpions, carnivorous marsupials, marine fish communities,climate change, bittern calls, Octopus population dynamics and pest management!!!

And, have you ever published in Computers and Electronics in Agriculture - I have!! At least it is accepted and in press!!

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WAM herps
Western Australian Museum

Research at the WA Museum has recently focussed on geckos, *Diporiphora* and *Eremiascincus*, with a fairly even geographic coverage of the main regions: South West, Pilbara, Kimberley and arid zone. Of note are two papers written with colleagues from DEC on Kimberley island herpetofaunal communities, and a paper on blind snakes written by a team led by the Paris Museum.

Fieldwork has been focussed in the Kimberley, again working with DEC (now DPaW) colleagues.

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Doughty, P., Palmer, R., Cowan, M., and Pearson, D.J. (2012). Biogeography of frogs of the Kimberley islands, Western Australia. Records of the Western Australian Museum, Supplement 81: 109–124.
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Pepper, M., Doughty, P., and Keogh, S.J. (2013). Synthesis: Geodiversity and endemism in the iconic Australian Pilbara region: a review of landscape evolution and biotic response in an ancient refugium. Journal of Biogeography 40: 1225–1239.

Random email
Welbourne, Dustin. 2013. A method for surveying diurnal terrestrial reptiles with passive infrared automatically triggered cameras. Herpetological Review. 44 (2): 247-250.

Minutes of the 37th AGM of the Australian Society of Herpetologists Inc.
ASH AGM 2013 – Point Wolstencroft, NSW.

Meeting opened at: 16:36 on Thursday 31st January 2013.
Apologies: Scott Van Barnevald, Nick Clemann, Erik Wapstra
Members present: Memento Hudson, Ben Phillips, Eridani Mulder, Frank Lemckert, Rick Shine, Rebecca Bray, Glenn Shea, Simon Hudson, Matt Greenlees, Riona Tindal, David Newell, Dale Roberts, Ligia Pizzato, Ryan Ellis, Mark Hutchinson, Peter Harlow, Danielle Edwards, Kate Hodges, Jo Ocock, Fabien Aubret, Carla Eisemberg, Stephen Reynolds, Gordon Grigg, Kate Umbers, Jonathan Webb, Martin Whiting, Renee Catullo, David De angelis, Edward Narayan, Bret Stewart, Michael Mahony, Ikkyu Aihata, John Clulow, Rodney Watt, Ross Alfod, Lynette Plenderleith, Aimee Silla, Phil Byrne, Rebecca laver, Maggie Haines, David Chapple, Joanna Sumner, Scott Keogh, Conrad Hoskin, simon Blomberg, Stewart MacDonald, Anders Zimny, Stephen Zozaya, Mitzy Pepper, Arthur Georges, Deborah Bower, Simon Clulow, Paul Oliver, Paul Doughty, Mike Thompson, Jean-Marc Hero.

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.

Minutes of the 2012 Minutes 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 Simon Hudson, all in favour, motion carried.

Presidents report
Frank Lemckert presented the President's report: The last AGM was held in Vancouver, during the World Congress of Herpetology and quite a lot of members attended. ASH presented a WCH Bid for 2016, the short report is that we didn't win it, report from Marc Hero to follow. Mark Hutchinson moved that the report be accepted, moved by Memento Hudson, all in favour motion carried.

Treasurers report
Ben Phillips presented a short slideshow on the financial status of the society. The last few financial years have been audited and accepted by the auditors as official. He has found a new auditor who charges a quarter of previous auditor. Last year we gave out $3000 worth of grants. Bank costs have been reduced by removing an extra account that we weren't using. Bank fees are around $12 per annum, mainly associated with Paypal credit card renewal. Glenn gave some money to Barmera conference which was bus hire, then Ben gave money to Paluma conference which went into the red, so then the money that Glenn gave was used for the Paluma conference which neatly sorted that out. In terms of liabilities, the Paluma conference ran at a loss – but the extent of this loss hasn't been fully resolved yet, partly because JCU hasn't asked for the money owed to them. We also have some uncashed cheques that were posted out to students but not banked.
This year we have already received $6000 in membership dues including Arthur Georges back membership. More than half the members are using their credit card to pay memberships. The society now has approximately 250 members. We need to generate interest on the money that is sitting in the bank, so then we can consider reinstating the ASH research grants. Renee Catullo asked how to find out how much a person owed, and Ben said that the easiest way is to wait for the next renewal notice, as they come out annually.
Matt Greenlees moved that the Treasurer's report be accepted. Seconded by Deb Bower, all in favour, motion carried.

Secretary's report
After some issues with log on and administration the email list-server was transitioned to google-groups and is now administered through the ASH secretary Gmail account, which means that it can be easily handed on to new office bearers when positions change. Please remember to inform the secretary if your email address changes….otherwise the system will just tell the secretary that your address is bouncing.
Many thanks go to Marc Hero for maintaining the old ASH list-server through Griffith Uni for so many years.
The 2012 year has been going pretty smoothly – the electronic system is working well, and we haven't had many hiccups from this round of renewals.
David Chapple moved that the secretary's report be accepted, seconded by Simon Hudson. All were in favour, motion carried.
Marc Hero summarised what happened with the WCH bid. The next WCH will be held in China.

GENERAL BUSINESS
HERPETOFAUNA (the journal)
Glenn Shea presented to the meeting information on HERPETOFAUNA (The journal).
Herpetofauna is the only journal specific to the Australian region. It was started in the 1960s and was produced by the amateur Australian Herpetological Society. In the mid to late 1970's an umbrella group of amateur societies was put together to be the subscription base.
It was set up for observational data and has now been going up to the present day. Glenn Shea has been editor for about 12 years, but unfortunately the amateur societies that constitute the majority of the members are tending to go away from observations and are moving toward keeping and husbandry. As a result many societies that used to subscribe to it no longer do so or order only very small numbers of copies.
Vol 31 subs: 1087 copies, 101 individual subscribers.

Vol 41 subs: 669 + 72
Most recently the NZ Herpetological Society ordered a lending copy for its members. And it also has fewer contributions from NZ people.
The issue is now that the journal has outgrown the herp groups that used to publish it, and if it is to persist it need a new funding base. ASH constitutes the majority of people who have submitted to Herpetofauna: It would be a shame to see the journal disappear – it holds a niche market, and no other journals publish this type of data.
Firstly we need a way of increasing the subscriptions: Societies are charged $450 per issue, then have to be mailed out by the society. Individuals fees are $7.50 per issue. The journal costs around $5000 per issue to print. Current receipts are about $3500, so there is a considerable shortfall. In the past there has been an amount of surplus in the system, but now is at the stage where that won't last. Would the society like to be involved in the journal? And how? Also Glenn has been editor for 12 years, and he is finding it hard to continue in this role due to other commitments – would be nice to expand this out to society members. Jo Sumner asked how many issues were published per year – answer is 2 per year. The last issue was Dec 2010, expecting next issue to come out soon.
Marc Hero asked how much it would cost if it was an electronic journal? Glenn said problem was to set up something that is permanent for the electronic record.
Dale Roberts commented that there has been multiple discussions over 40 years of ASH history about publishing, saying that it has been rejected each time, and he feels that the society should only approach the idea from within rather than having it thrust upon us from the outside, and would prefer to see the society money go towards students as there are plenty of outlets for publication.
Mark Hutchinson disagreed very strongly with Dale, as he felt that it is a valid journal and has an important role in publication of observational data in Australian herpetology.
Simon Hudson thought that these records are critical in conservation decision making so he felt that Herpetofauna is also important when compared to the viable alternatives for these kinds of observations.
Deb Bower agreed with both Mark and Dale – Herpetofauna is important, but doesn't hold much weight with ISO ratings, and it has no impact factor. But she still thought that it has an important role and that ASH should take it on.
Ryan Ellis said the biggest problem is that it is not indexed. Glenn responded that the majority of memberships in the past have been through amateur herpetologists, and thus it hasn't been directed towards the needs of scientific professionals.
Simon Hudson suggested that if ASH took it over we need someone to administer a website that is searchable. Stewart MacDonald reiterated an offer to assist with Herpetofauna administration.
Mark Hutchinson asked if Glenn had a proposal for the journal. Glenn said that he doesn't due to the number of discussions that have been had in the past on this issue.
Ben Phillips thought that there were not enough members from ASH to prop up the journal fully, so perhaps would be better to lump sum fund the journal to make it an official electronic publication.
Marc Hero said that if the journal is electronic, he would agree to join, but if it is hard copy then he would not.
Gordon Grigg said that there is a big difference to the society to contributing a couple of $K per year to whether we would take it over, and suggested there might be a case for the society providing a contribution toward the journal annually.
Marian Anstis moved that we add an option to the ASH membership to subscribe to Herpetofauna, seconded by Memento Hudson, all in favour, motion carried.
Memento Hudson moved that Glenn Shea and Stewart MacDonald start a working group to investigate options for the journal. Seconded Arthur Georges, all in favour motion carried.
Mark Hutchinson suggested that the issue be resolved by the next ASH AGM.
Rick Shine moved that the committee liaise with Glenn Shea to progress the Herpetofauna issue, seconded by Dan Edwards, all in favour, motion carried.

LIFE MEMBERSHIPS
Roy Swain, and Gordon Grigg received honorary life memberships in 2012. Two paid life memberships were received from Simon and Memento Hudson.

INTEREST ON ASH ACCOUNTS

The issue of what to do with the money in the bank was discussed further, suggestions of moving it to a high interest account were discussed.
Ben Phillips moved that the money situation be reviewed to increase interest in order to fund the student research grants, seconded by Conrad Hoskin, all in favour, motion carried.
Ben Phillips moved that the student research grant be reinstated. Seconded by Dale Roberts, all in favour, motion carried.
Memento Hudson moved that the process of reviewing accounts and reinstating the Research Grants be resolved by the next ASH meeting. Seconded Frank Lemckert, all in favour motion carried.

STANDARDISING NOMENCLATURAL PROCEDURES
The following information regarding taxonomic and nomenclatural issues was presented to the meeting, to give the society the opportunity to support the views of the following paper.
Best Practices: In the 21st Century, Taxonomic Decisions in Herpetology are Acceptable Only When Supported by a Body of Evidence and Published via Peer-Review. IN PRESS. Herpetological Review (March 2013)
Authors: Hinrich Kaiser, Brian Crother, Christopher Kelly, Luca Luiselli, Mark O'Shea, Hidetoshi Ota, Paulo Passos, Wulf Schleip, Wolfgang Wuster
ASH has been asked to support the Point of View and be listed with the other societies: namely that persons undertaking taxonomic and nomenclatural work;

1. Follow appropriate methods
2. Provide a list of publicly accessible specimens, including catalogue numbers
3. Appear in a regularly published outlet supported by an editorial team and publicly-listed expert scientific panel (editorial board)
4. Are peer reviewed by experts in the field
5. Are listed in the Zoological Record
6. Meet the conditions of the ICZN for publication, including electronic publication

The paper provides a table of all names, going back to 1 January 2000, that do not meet the above criteria
Proposes that these names should not be used as they have not followed this approach and table lists the appropriate taxonomy for use at this time.
The meeting was suspended at 17:34h, to be reconvened at 1930 on Thursday 31st January 2013.
The meeting was reopened by Frank at 19:42h Thursday 31st January 2013.
The taxonomy issue was reopened to discussion, until consensus was reached on the wording of the following decisions:
Whereas the Australian Society of Herpetologists recognises the importance of peer-review when proposing taxonomic decisions and the nomenclatural acts that follow from them,
acknowledges that works published outside of the peer-review process are damaging the integrity of herpetological science,
does not condone the naming of taxa for reasons that are unscientific or not based on a trail of evidence, and
applauds the efforts by the International Commission on Zoological Nomenclature to curb the misuse of nomenclature,
and a motion was proposed by Mark Hutchinson that
" **therefore, be it resolved** that the Australian Society of Herpetologists joins the other listed societies in endorsing the point of view presented by Kaiser *et al*. in the March 2013 issue of Herpetological Review, namely that in the 21st Century, taxonomic decisions in herpetology and their nomenclatural consequences are acceptable only when supported by a body of evidence published within the peer-review process".
The motion was seconded by Glenn Shea. All in favour (with one abstention by Glenn Shea), motion carried.
The ASH secretary will forward this information to Marc Hero to present to the World Congress of Herpetology.
POINT OF ORDER
Dan Edwards moved that Dale Roberts be ejected from the meeting, seconded by Paul Doughty. All in favour, Dale was duly ejected, his replying remarks being unprintable.
OTHER BUSINESS:

It was brought to the attention of the meeting that Ric Longmore received an Order of Australia in the Australia Day Honours list.
Simon Hudson moved that a letter of congratulations be sent on behalf of the ASH , seconded by Jo Sumner, all were in favour, motion carried. The secretary will follow this up.
Rick Shine spoke about the journal Asian Herpetological Research.
Rick Shine also made the point that it would be useful to put standard operating procedures for toe clipping and other ethics requirement on the ASH website.
Simon Hudson moved that that we have support to put ethical SOP's on the society website. Seconded by Gordon Grigg, all in favour, motion carried.
Frank Lemckert opened the discussion on whether the society should nominate to have an annual meeting rather than an 18 month turnaround. He suggested it be brought up for discussion at the next AGM. There was support from the membership through a show of hands. Frank will discuss the issue with the next president.
Scott Keogh brought it to the attention of the meeting that Dick Barwick passed away. Dick was a foundation member of ASH, and also Rick Shine's honours supervisor.

NEXT CONFERENCE
Nomination received for the next conference from Scott Keogh (ACT) – so disappointed after the WCH. Scott said that they were aiming to hold the next conference in 12 months' time.

ELECTION OF NEW OFFICE BEARERS
The committee was stood down.
Nominations were received by the President 21 days before the AGM as listed below.
President: Scott Keogh
Vice President: Frank Lemckert
Treasurer: Conrad Hoskin
Public Officer: Mitzy Pepper
Ordinary Member: Kate Umbers
As there were no other nominations, the nominees were elected unopposed, with the full executive listed below.

President: Scott Keogh
VP: Frank Lemckert
Treasurer: Conrad Hoskin
Secretary: Eridani Mulder
Ordinary Members: Kate Umbers
Ordinary Members: Matt Greenlees
Newsletter Editor: Deb Bower
Public Officer: Mitzy Pepper
Scott Keogh accepted the presidency, however Frank Lemckert continued to run the meeting.

OTHER BUSINESS: None further business was brought forward.
The meeting was closed at 20:23h.

ADDENDUM:
Prize winners at the 2013 conference were as follows:
The **Peter Rawlinson Prize for PhD** presentation was awarded to Kate Hodges for her talk entitled: "The biogeography of introgressive hybridisation in east Australian long necked turtles"
(Hodges, Kate, Georges, A & Donnellan, S.C.)
There were two honourable mentions for this category:
Melissa Bruton – "Space, time and temperature: ecology and thermal biology of free-ranging woma pythons in a recovering landscape" (Bruton, Melissa J., McAlpine, C.E., Maron, M., & Franklin, C.E.)
Claire McLean – " Geographic Variation in Colour Morphs and Genetic Divergence among Populations of the Tawny Dragon Lizard, *Ctenophorus decresii*" (McLean, Claire A., Moussalli, A. & Stuart-Fox, D.)

The **Murray Littlejohn Prize** for best Honours presentation was awarded to Grant Webster for his talk:
"Dynamic colour change as a sexually selected signal in the Whirring Tree Frog (*Litoria revelata*) (Webster, Grant & Whiting, M.J.)
An honourable mention in this category went to Matt McCurry for his talk on:
"The cranial mechanics of varanoid lizards" (McCurry, Matthew R., Mahony, M.J., Clausen, P., Wroe, S., Wlamsley, C.W., Quayle, M.R., & McHenry, C.R.)

The Ric Longmore Prize for best Poster was awarded to Claire Treilibs for her poster:
"Conservation management of the endangered Slater's skink, *Liopholis slateri*, in Central Australia" (Treilibs, Claire, Bull, M., Pavey, C. & Hutchinson, M.)


VIVA LA DEAD