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Newsletter of the Ecological Consultants Association of NSW



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Design and Layout: Amy Rowles



Malleefowl chick leaving the mound (see page 10). Photo courtesy of Narawan Williams



Front Cover Photo: A Green and Golden Bell Frog (*Litoria aurea*) in a Swamp Lily, Narawang Wetland, Sydney Olympic Park, NSW. Photo Courtesy and Copyright of Katie Oxenham.

Swamp Foxglove (Centranthera cochinchinensis) (see page 24). Photo courtesy of Leonie Blain.

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Message from the President

Mark Couston

February 2012

Dear members

Welcome

I take this opportunity to bring you a belated welcome to the new year. This is the first of the 2012 newsletters to bring you up to date on what is happening and planned this year as well as providing snippets of relevant information such as the impact of Lymes disease, an account of watching an active Malleefowl mound, more information from the *Botany Desk* and an article on how one suburban tree can provide habitat for a range of species. This edition also has a book review and some interesting entries in the Euroky column.

Accreditation for Ecological Consultants

As many of you are aware the Greens Bill for Accreditation of Ecological Consultants was debated again in the Legislative Council. The Bill was brought forward by the Hon. Cate Faehrmann and the Bill proposed to make it mandatory for all ecological consultants to be accredited and the accreditation scheme was to be run by the chief executive officer of the Office of Environment & Heritage (OEH). After a 2hr debate the Bill was narrowly defeated, 19 for: 22 against. Despite the result, it was encouraging to hear the level of interest in our industry and the fact that the Ecological Consultants Association of NSW was referred to by several members of Parliament who spoke. Full transcripts of the debate in the Legislative Council can be found at http://www.parliament.nsw.gov.au/prod/parlment/hanstrans.nsf/ V3ByKey/LC20120216?open&refNavID=HA1_1

This result now leaves it clear to progress with the implementation of the ECA's industry based accreditation scheme. Discussions with OEH have recently recommenced and we are looking at the preparation of a financial plan to ensure the accreditation scheme runs effectively. Feedback from OEH is that they are happy to continue to provide support to the ECA to implement the scheme.

ECA Website

Other news is that the ECA's website is to receive a major overhaul in the near future with concept pages currently prepared. The new website will take on a more user friendly attitude and will be able to be updated more easily by the ECA to bring you the latest information.

University Liaison Sub-committee

The ECA Council has met on several occasions since the last newsletter and has recently set up a University Liaison Sub-Committee. The purpose of the new Sub-Committee is to form a closer relationship with academic staff and provide a post graduation link for students considering a career in our after a bout of prolonged rainfall, with a 1st order industry. ephemeral stream <50m away. I presumed this from the stream st

ECA's Workshops

The Bat Identification and Survey Techniques Workshop was held at Jenolan Caves on the 2^{nd-4th} March 2012 with a rainforest species workshop being planned for later in the year. Discussions of an orchid workshop and shorebird workshops are also being considered.

2012 Conference

This years conference theme is "Road side ecology" and is planned to be held at Wollongong City Beach Function Centre on Monday 30th of July. The conference is coming together well and looks as though it will be another informative and interesting event.

2012 AGM

The AGM will also be held during a break at the conference at Wollongong on the 30th of July.

EUROKY

Euroky: ability of an organism to adapt to changes in the environment

If you have any interesting observations or useful hints and information that you would like to share in the euroky column, please forward them to the newsletter editor or administration assistant to be included in the next edition.

I look forward to seeing you at the 2012 Conference and AGM in Wollongong.

Green-Thighed Frog (*Litoria brevipalmata*) in a cicada nymph hole.

Jason Berrigan Darkheart Eco-Consultancy

While undertaking a Spot Assessment Technique assessment, by chance under the first tree I checked (which was right next to where I'd parked), I found a Green-Thighed Frog looking at me from the entrance of a cicada nymph hole. This occurred in December just

after a bout of prolonged rainfall, with a 1st order ephemeral stream <50m away. I presumed this frog was likely to be present and to try breed with the ideal conditions.

Full details of this finding will be presented in a paper to *Herpetofauna*, but the habitat was dry sclerophyll forest within a semi-isolated remnant highly



Photo 1: Peekaboo - I see you

fragmented by rural-residential subdivisions. There is no wet sclerophyll within 1km of this site.

An unexpected mining exploration impact in the US

Jason Berrigan Darkheart Eco-Consultancy

Large numbers of birds are being killed in uncapped metal or PVC mining claim marker pipes in Nevada deserts. Small birds see the opening of the pipe as a hollow for nesting, but once inside are unable to escape. Dead reptiles and mammals have also been found inside these pipes. An investigation of 854 pipes revealed 879 killed birds (including 43 species), 113 reptiles and 20 mammals. It has been estimated that numbers of dead birds in Nevada could exceed 1 million. Information was sourced from the following website, where more details may be found. http:// focusingonwildlife.com/news/mining-claim-markerscause-millions-of-bird-deaths-in-nevada/

Upcoming Events in 2011

ECA Events

• ECA 2012 ANNUAL CONFERENCE AND

AGM (see page 9)

'ROADSIDE ECOLOGY'

- 30th July 2012
- City Beach Function Centre Wollongong
- \$155 members \$200 non-members

• PROPOSED ECA WORKSHOPS 2012 / 2013

- Terrestrial Orchids (2012)
- Rainforest Plant ID
- ♦ 7-part Test
- Shorebirds (Feb 2013)

The dates and venues for these workshops are yet to be determined. You may register your interest in any of these workshops by emailing admin@ecansw.org.au.

Non - ECA Events

Australasian Wind and Wildlife Conference
Date: 9th October 2012
Venue: Melbourne
Cost: \$130
Details: www.windandwildlife.com.au
Contact: windandwildlife@mail.com

• Erin Brockovich

Date: 19th March 2012

Venue: Sydney Law School, University of Sydney *Theme:* Distinguished Speakers Program 2012 *Cost*: \$25 student \$10

• 15th Australasian Bot Society Conference and AGM

Date: 11-13th April 2012 *Venue*: University of Melbourne *Cost*: \$200 *Details*: http://ausbats.org.au/2012-conference *Contact*: jsta@unimelb.edu.au

• Powerful Owl Uncovered

Date: 17th June 2012 Time: 10.30am-12.30pm Details: www.birdsaustralia.com.au Contact: southernnsw@birdlife.org.au

• BASNA 2012 Seminar and AGM

Date: Saturday 14th April 2012 *Venue:* Pridham Conference Centre, Cowra *Details:* southernnsw@birdlife.org.au

 Australian Mammal Society Symposium and AGM

Date: 23rd - 26th September 2012 *Venue*: Port Augusta, South Australia



After surveying in Berowra Valley Regional Park and Garigal National Park for 10 days with no sign of a Heath Monitor, this individual was spotted in suburban Berowra, sniffing out our trailer containing rotting chicken necks. Courtesy of Narawan Williams.

Membership Report

In total we have 149 members. We have had twelve new members and four current applicants over the last six months. The new members are introduced below:

- Naomi deVille
- Shawn Caporaro
- Liza Miller
- Claire deLacey
- Samantha Parsell
- Thomas Pollard
- Jodie Cooper
- Vanessa Orsborn
- Katrina Wolf
- Andrew Lothian
- Luke Baker
- Liz Powell

Recent Literature and New Publications

Desert Fishing Adventures by Adam Kerezsy

A Review by Martin Denny

I met Adam Kerezsy in 2008 at a conference, cum workshop, cum protest meeting in Windorah in western Queensland. The Cooper Creek Protection Group and the Australian Floodplain Association had brought together a group of scientists, pastoralists and bureaucrats to develop a plan of management of the rivers of the Lake Evre Basin that insured the longterm conservation of these exceptional watercourses. Basically the plan of management was to prevent any water extraction from the currently pristine rivers. Many people talked and showed the devastating impacts from "water management" of the rivers within the Murray-Darling Catchment. Pastoralists described how their properties no longer supported the vast wetlands that once flourished and scientists showed how the decline in water flows had destroyed fish and bird populations.

In contrast, Adam spoke of the abundance and variety of fish within the westward-flowing rivers of the Lake

Eyre Basin. He was finishing off his PhD on fish distribution within the Basin and could describe what the aquatic environment of the inland should be like. Adam illustrated how things should be without river regulation and made a strong case against any moves to manage these beautiful rivers. What came across was his enthusiasm for his work and his love of the country and people of inland Australia.

Adam has the ability to speak directly to the listener in a no-nonsense fashion and this characteristic comes across strongly in his recently published book "Desert Lessons – Adventures Fishing in Australia's Crawley, Rivers" (UWA Publishing, Western Australia). One feels whilst reading the book that Adam is sitting with you next to a camp fire or a bar stool holding a can or stubby, and talking about things that excite and concern him and you certainly can be easily convinced. The style was once called didactic but it is better considered as personal. However, that does not mean that the content is simple and the book is not pitched at the un-educated: percichthyids, terapontids, speciation, genetics are mixed in with tales of fishing, shooting and camping. In fact the book reads not only as a description of the inland fish fauna but as a story of Adam's life.

The book is in three parts. The first is depressing as it deals with the state of the rivers and fish within the Murray-Darling Basin (MDB). Much of this part is based upon experiences at Lake Cargelligo, where Adam lived for many years. It deals with river regulation and the invasion of alien fish and certainly provides a good over-view of the impacts from such changes. Information is provided about introduced fish such as goldfish (they revert to their larger carp cousins in the wild) and gambusia. Perhaps more information about the impacts from introduced species upon animals other than fish (e.g. gambusia and Green and Golden Bell Frog) would have been good, but Adam is an ichthyologist. In the first section, Adam takes us through a short history of the MDB, the devastating effects from the introduction of carp and other fish and what river regulation has done. He ends this section on the brighter note, pointing out that despite all these impacts the native fish are 'still hanging in there'.

The second part is much more positive as it tells of his work within the Lake Eyre Basin. Again the writing is a mix of the personal anecdote and scientific reasoning, a good mix that makes it hard to put the book down. The erratic changes in conditions in the inland rivers are well described, as many of them move between dry creek beds and roaring torrents. He describes and discusses the five main water catchments in the region – the Mulligan, Georgina, Diamantina and Bulloo Rivers and Coopers Creek. Each catchment is themed to a certain fish or phenomenon and each chapter raises questions about speciation and survival strategies. Again the arguments are persuasive and are inter-dispersed with stories of personalities, adventures and misadventures in this largely unknown part of Australia.

The final section deals with the road to recovery for many of the fish and the rivers. Adam is not reluctant in pointing out the faults that have occurred in the past (and are still going on) and the inevitable bungling by bureaucracies over the years. However he does provide an insight to future river (and fish) management that should be considered by those in charge.

Overall the book is well written with plenty of challenges, in terms of ideas and in the information that needs to be grappled with. Adam does not try to talk down to the reader but expects us to follow his discussions as enthusiastically as he presents them. Yes, there are plenty of scientific names and concepts to be wrestled with, but these make the book all the more valuable to the general reader. No compromises are given and none should be expected.

The production of the book appears to be below the usual standard in today's world. There are a few coloured photographs, with the remainder given as fuzzy grey images. Also, the lack of detailed maps, particularly of the locations of the various waterholes mentioned in the text is disappointing. Some parts of the book could have been fleshed out with more information e.g. introduced species; or with more diagrams e.g. speciation with the catchments. However, overall an enjoyable and informative book that not only reflects the knowledge of the author but also his dedication and enthusiasm.

Recent Journal Articles / Literature

Furlan et. Al., (2012) Is body size variation in the platypus (Ornithorhynchus anatinus) associated with environmental variables? *Australian Journal of Zoology* http://dx.doi.org/10.1071/ZO11056

Carter A., Luck G. and Wilson B. (2012). Ecology of the red fox (Vulpes vulpes) in an agricultural

landscape.1.Den-siteselection.AustralianMammology http://dx.doi.org/10.1071/AM11038

Boyle M. and Hone J. (2011) **Contrasting effects of climate on grey heron, malleefowl and barn owl populations.** *Wildlife Research* **39(1):**7-14 http:// dx.doi.org/10.1071/WR10233

Allen B. and Fleming P. (2012) **Reintroducing the dingo: the risk of dingo predation to threatened vertebrates of western New South Wales.** *Wildlife Research* **39(1):** 35-50 http://dx.doi.org/10.1071/ WR11128

Banks P. and Hughes N. (2012) **A review of the evidence for potential impacts of black rats (***Rattus rattus***) on wildlife and humans in Australia**. *Wildlife Research***39(1)**: 78-88 http://dx.doi.org/10.1071/WR11086

Eldridge M. (2011) **The changing nature of rockwallaby (Petrogale) research 1980–2010** *Australian Mammalogy* 33(2) i - iv.

Molyneux J. et.al, (2011) Home-range studies in a reintroduced brush-tailed rock-wallaby (*Petrogale penicillata*) population in the Grampians National Park, Victoria Australian Mammalogy 33(2) 128-134 http://dx.doi.org/10.1071/AM10039

Warman D. and Beckers D. (2011) Status of the Vulnerable shrub Astrotrichacrassifolia(Araliaceae) in Brisbane Water National Park, NSW: an update. *Cunninghamia* **12(2)**: 129

Benson D. (2011) Native plants of Sydney Harbour National Park: historical records and species lists, and their value for conservation monitoring. *Cunninghamia* **12 (1):** 61-84

Hosking J. et al., (2011) **Plant species first recognised as naturalised or naturalising for New South Wales in 2004 and 2005**. *Cunninghamia* **12 (1)**: 85 - 114.

Barking Owl Diet in the Pilliga Forests of Northern New South Wales.

Stanton M. (2011). Masters Thesis.

Abstract

The Barking Owl 'Ninox connivens' population in the Pilliga forests of northern New South Wales is the largest known in southern Australia. Breeding pairs in this population occupy large home-ranges across less than half of the forest. In this thesis, I quantify the diet of Barking Owls in the Pilliga. I consider a number of hypotheses that could explain the species' large home ranges and restricted distribution, particularly those that are related to prey availability. This is the first diet study of a Barking Owl population to incorporate data from many territories over several years and all seasons of the year. Radiotracking of nine owls provided the opportunity to begin a substantial collection of prey remains (regurgitated pellets, food debris and faecal material). Ultimately, the collection period spanned 2003 - 2009, with prey remains from 19 territories in the Pilliga and one territory in a small forest to the south near Dubbo. In total, 1546 regurgitated pellets and 315 faecal samples were collected and examined. Foraging observations improved the understanding of the results. Barking Owls in the Pilliga forests preyed on most species of diurnal and nocturnal birds, as well as Sugar Gliders, bats and insects, with a few items being taken from the ground. Prey size ranged from 0.3 gram insects to ~800 gram cockatoos and mammals, a similar size to the owls. Most prey were native animals in contrast to some other studies. The proportions of consumed prey, as determined by pellet analysis, were compared with available prey, as determined by bird counts, spotlight surveys, small mammal trapping, bat surveys and insect netting. Prey items from all prey groups were available from all sampled areas of the Pilliga. Barking Owls distribution was positively associated with prey availability: significantly with the biomass of birds and with flying insect numbers. Mammal groups were not significantly different but showed the same positive trend. Spatial availability of total prey biomass offered a good explanation for the distribution of Barking Owls within the Pilliga forests. Crucial food resources, particularly available biomass of diurnal birds and nocturnally active prey, may limit the population density and distribution of owls in what appears to be marginal rather than prime habitat. Land cleared for agriculture, because of its higher productivity, may have previously supported higher densities of Barking Owls when wooded.

Recent Book Releases

Information Source: CSIRO Publishing Website http://www.publish.csiro.au

Title: <u>Queensland's Threatened</u> <u>Animals</u> Author: Curtis L. et al. **RRP**: \$120 No. Pages:472 Publisher: CSIRO Publishing Date: February 2012

Title: <u>Australian High Country</u> <u>Owls</u> Author: J. Olsen RRP: \$69.95 No. Pages:376 Publisher: CSIRO Publishing Date: November 2011

Title: Flammable Australia Author: R Bradstock, M. Gill and R. Williams RRP: \$79.95 No. Pages:344 Publisher: CSIRO Publishing Date: February 2012

Title: <u>Reducing the Impacts of Development on Wildlife</u> Author: J Gleeson and D Gleeson. RRP: \$89.95 No. Pages:248 Publisher: CSIRO Publishing Date: April 2012

Title: <u>A Handbook of Global Freshwater Invasive Species</u> Author: Ed. R. Francis **RRP**: \$238 No. Pages:460 Publisher: Earthscan Date: February 2012



ΓHREATENED

Title: <u>Marine Conservation Ecology</u> Author: J. Roff and M. Zacharias RRP: \$80 No. Pages:320 Publisher: Earthscan Date: January 2012

Title: <u>A Natural History of Australian</u> <u>Bats: working the night shift</u> **Author**: G. Richards, L. Hall and S. Parish **RRP**: \$79.95 **No. Pages**:192 **Publisher**: CSIRO Publishing **Date**: June 2012

Conservation Ecology

Marine



Title: <u>Biological Control of Weeds in</u> <u>Australia</u> Author: M. Julien, R. McFadyen and J. Cullen **RRP**: \$180 No. Pages:648 Publisher: CSIRO Publishing Date: March 2012

Title: <u>Rainforest Country: An</u> <u>Intimate Portrait of Australia's</u> <u>Tropical Rainforest</u> **Author**: S. Breeden and K. Breeden **RRP**: \$75 **No. Pages**:240 **Publisher**: Fremantle Press **Date**: March 2012



Title: <u>Plants of the Victorian High Country: A field guide</u> for walkers Author: J. Murphy and B. Dowling RRP: \$29.95 No. Pages:152 Publisher: CSIRO Publishing Date: May 2012



If you have 2nd hand ecological equipment that you would like to sell or would like to purchase you can place an ad in this newsletter. Free for members or \$40 for non-members.

Contact admin@ecansw.org.au.

Title: <u>Biodiversity Monitoring in Australia</u> Author: Ed. D. Lindenmayer and P. Gibbons RRP: \$49.95 No. Pages:224 Publisher: CSIRO Publishing Date: April 2012

Title: <u>The Value of Water in a</u> <u>Drying Climate</u> **Author**: Ed. T. Hundloe and C. Crawford **RRP**: \$59.95 **No. Pages**:256 **Publisher**: CSIRO Publishing **Date**: June 2012





rhotos entered in the competition may also be used on the ECA website

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The ECA Forum Summary

Compiled by Amy Rowles

The ECA Forum on the ECA's website is one of the many privileges of membership, and is intended:

•*To encourage discourse within the membership.*

•*To enable a forum for members to raise issues that affect members, the industry and the ecologist.*

•*To provide a venue for depositing information eg anecdotal sightings, interpretation of legislation, etc.*

•*To inform members of changes to legislation, upcoming events, draft reports, etc on public exhibition.*

•To reduce some of the email generated by in-house chat within the membership.

•To provide a means of archiving information shared within the membership for future reference.

The Forum features a range of issues from legal to anecdotal, comments and questions by some members seeking some clarity on some issues or assistance in a work-related matter or some hotly debated issues.

If you haven't had time to log on and catch up, here's a summary of some of the recent and most commented on topics up to the 27th *January 2011. See the forum at <u>www.ecansw.org.au</u> for details.*

Recent activity on the forum has included an interesting link to a Painted Snipe in Canberra <u>http://</u>www.canberratimes.com.au/news/local/news/general/ <u>surprise-visit-makes-wetlands-centre-of-attention-for-</u>twitchers/2316080.aspx, a discussion on the Golden Sun Moth, a reference to enlisting the help of Winnie the Pooh to control bees in nest boxes and using the Song Meter in conjunction with call playback.

Golden Sun Moth

Kath Chesnut has asked for anyone with information about the Golden Sun Moth around the Southern Highlands, particularly knowledge of a reference site. Steve Sass provided a link for a site in Canberra, that might give some assistance <u>http://</u> www.actpla.act.gov.au/ data/assets/ pdf file/0017/21572/APPENDIX 6 -

Letter of advice from Bluegum -

<u>Golden Sun Moth - 13 October 2010.pdf</u>. Nathan Garvey noted that by the 28th November 2011 the Golden Sun Moth was flying in Victoria, but had not heard of any in Canberra as yet. York Park in Barton, Canberra is a preferred reference site.

Bees in Nest-boxes

Jason Berrigan is considering engaging a pest control person to remove bees from nest boxes, but has the following concerns:

does the spray/chemicals used leave a smell that

may deter fauna usage?

• does the spray/chemicals have any potential to cause harm to fauna that may use the treated and cleaned (hive removed) box eg. via contamination of eggs, irritation to eyes, etc

• if the nest box is at a decent height (I've got boxes mostly 6-8m high) - do they spray from the ground or are they prepared to climb a ladder (no access for a cherry picker)

Deryk Engel responded with the following : 'Have you tried contacting Mr W. T. Poo? You can find him by searching the Hundred Acre Woods or ask his friend Piglet.....'. Deryk continued that he had previously contacted a local bee keeper, who came and removed the hive. This was a lot less messy than spraying with chemicals and he received a free jar of honey.

Song Meter Vs Call Playback

Deryk Engel recently completed a study here he used both call playbacks (targeting owls) and a SongMeter. For those who don't know what a SongMeter is, basically it is a digital recorder that is voice activated and waterproof. He left the SongMeter out for 10 nights and did call playbacks for 4 nights. The call playback resulted in a response from a Sooty Owl. Analysing the calls of the SongMeter also recorded Sooty Owls. The dates of each detection were different, that is, the Sooty Owl was recorded by use of the SongMeter when it was "naturally" broadcasting its call. Using the SongMeter was less labour intensive and achieved the same result, as well as recording other nocturnal species including Yellow-bellied Gliders, Owlet Nightjars, Tawny Frogmouths and Boobook Owls. Deryk also notes that SongMeters are less invasive and stressful to nocturnal raptors, and as a "shot gun" approach to identifying species present, more effective. Deryk feels that the combined use of the call playback and SongMeter may go a long way to increasing the probability of recording owls at a location whilst minimising survey effort and costs. Combined use may also be a realistic way of "complying" with the OEH survey guidelines.

Kirsten Velthuis has asked whether the SongMeter records the whole time or only when there are calls (i.e. do you have to sit through hours of recordings)? So if anyone would like to answer this question, please log onto the forum.



Ecological Consultants Association of NSW Inc.

Invites you to attend the 2012 Annual Conference and AGM

'Roadside Ecology'

Monday 30th July 2012 City Beach Function Centre, Wollongong

Cost: \$155 Members \$200 Non-members (*cost includes morning tea*, *buffet lunch and afternoon tea*)

9am - 5pm (Registration 8.30-8.50am) Conference Drinks and Dinner from 5.30pm (\$25 at the Lagoon Restaurant, Stuart Park, North Wollongong)

Conference enquiries should be directed to Amy, ECA Administration Assistant at admin@ecansw.org.au or phone 0418 451 488

The City Beach Function Centre is located on Marine Drive, City Beach, Wollongong WWW.citybeachfunctions.com.au

Program soon to be confirmed and Registration opening soon!

The Great Jenolan Workshop Debarcle!

I am sitting here in hospital with appendicitis contemplating what might have been for the potentially invigorating and stimulating bat workshop set down for 2-4th March at Jenolan Caves. The writing was probably on the wall when I received a phone call from Michaela Jones (NPWS Oberon), to say that it was "'chucking it down'' but not to worry as the forecast was clearing by Friday afternoon.

Full steam ahead I thought - that was until I awoke early Thursday morning with a re-occurring abdominal pain - the workshop was off for me. The plan was to head down to Jenolan on Thursday with supplies and confirm that everything was in readiness. Amy kindly re-scheduled and headed down later in the day with toddler India and a visiting UK consultant, Hannah Procter. They picked up Narawan, a welcomed extra help, who could now attend since his field work was cancelled, due to the rain.

Fríday came and ít was still raining heavily and with it came the devastating news that the main presenter Michael Pennay was trapped by the floods. Thankfully Glenn Hoye had agreed to do a presentation at short notice and Narawan, having been involved with previous bat surveys in the area could lead field work - if only the rain would stop!

A Lucky Malleefowl Viewing Session

Narawan Williams Ecotone Ecological Consultants

It was about 8am when we set ourselves up near a malleefowl mound. We tucked ourselves next to a young mallee tree, but we were still going to be very obvious and I was unsure if the birds would come onto the mound. I put bunches of mallee leaves on my lap and in front of my legs and covered the purple coloured chair I was sitting on with my green and black raincoat. I still knew this would not fool them totally, however we were in luck this morning as the female was doing persistent wooing calls to the male to encourage him to get on the mound and work it. After ten minutes, the male was on the mound scratching away the sand from the inside to the outside. About five minutes later. the female came onto the mound to join the male. She was continuously doing very soft "om" calls to the male whenever she was on the mound. It was interesting watching their pattern of scratching: while one of them was scratching from the centre towards the top edge, the other scratched soil from the top edge down the sides. Then they would swap with always one bird being able to see everything that was going on around them in case they had to slink off into the Spinifex to avoid danger.

About half an hour into the viewing, I noticed something small and fluffy pop out from a Spinifex bush only a few metres from the front of the mound. I couldn't believe it: it was a malleefowl chick, all wobbly and sleepy looking. It stood there for a while looking very dazed until after a few minutes it took a few weary steps out in the open and had a bit of a peck on the ground. The eye I could see was closed, and then it suddenly sprung into action and scurried a few metres towards us, leapt in the air around an old mallee root, and then stopped again. A local raven swooped over and pecked the chick a couple of times. I was not sure what to do: do I interfere or just watch what happens?

Luckily the raven flew a few metres away and did not attack it again. Perhaps our presence kept it at bay. The

little chick, while still a little wobbly, had its eyes open and scurried towards us to within a metre away, under the mallee tree and then off into the Spinifex. What an amazing site and I wished it good luck as it went past us.







After that excitement, we continued to watch the adults who did not blink an eye at the raven attacking the chick. This behaviour is normal for the species, as once the chicks hatch they are on their own and are even capable of flying within a couple of days. There were a few skinks that caught my eye while watching the mound. Two Desert skinks stayed near the entrance of a burrow running out to grab invertebrates and then darting back again to the safety of the burrow. I also watched a Ctenotus schomburki. pushing it's head into the sand a number of times to grab some type of invertebrate just under the surface.

We watched the pair of birds working on their mound methodically and calmly, with their throats panting as the temperature got warmer. During this time, taking a toilet break and goats wandering through created disturbances, resulting in the birds slinking off the mound and into the Spinifex. After a few minutes with the female calling "wooo00, wooo00...... ", the male was back on the mound with the female following soon after.

Gradually the hole in the centre of the mound became deeper and deeper until you could not see the adult bird that was digging in the centre. Again, there was always one bird on the top as look out and then they would swap. As one bird walked forward into the centre digging, the other one would walk out and start digging from the top.

After three and a quarter hours of watching the mound, the male walked off into the spinifex and the female slowly walked towards the centre scratching sand backwards as she moved forward. She disappeared out of site and after a minute or two appeared again, filling a bit of sand back in. She then walked out of the mound and off into the spinifex. I can only assume by the behaviour, that she had gone into the centre to lay an egg. The fact that we did not see any malleefowl at the mound in the following days also suggests that the female did lay an egg that day. And what a morning it was!

Are swimming pools a potential threat to ground-dwelling frogs?: A case study from the NSW south coast

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Introduction

Swimming pools are popular inclusions for many homeowners and property investors across Australia. A quick peruse of the internet details hundreds of accounts of frogs becoming trapped in Australian swimming pools particularly in online forums. In most accounts, frog mortality is common, predominantly due to being trapped within the swimming pool and entering the filtering system. However, no detailed accounts of frog entrapment and swimming pools are known. An opportunity arose in the Summer of 2010/11 to monitor a newly installed swimming pool located in the Bega Valley local government area (LGA) after the pool owners identified eleven dead frogs in the skimmer box upon a routine check of the filtration system.

This short paper documents the results of the monitoring program, and provides discussion as to the relevance of these results for threatened frog fauna and future swimming pool installations.

Methods

The swimming pool the subject of this study was located in the village of Kalaru in the Bega Valley LGA. The study area was located on rural-residential zoned land comprising an existing dwelling and a portion of retained regrowth forest best described as Far South Coast Foothills Dry Shrub Forest ecotonal with Southeast Lowland Dry Scrub Forest. The regrowth forest is dominated by an overstorey of Rough-barked Apple (*Angophora floribunda*), White Stringybark (*Eucalyptus globoidea*) with occasional Woollybutt (*E. longifolia*). The swimming pool is located approximately 10 metres from the edge of this regrowth forest (separated by a manicured lawn) and is located within 40 metres of an ephemeral gully noted as a first-order stream.

The swimming pool was installed on the 24th December 2010. The pool was an in-ground saltwater swimming pool with approximate dimensions of 7 metres by 4 metres (Figure 1).



Figure 1. The swimming pool, the subject of this paper

Depth of the pool varies between 1 metre and 1.7 metres. The pool is surrounded by a standard aluminium pool fence with a gap of 100mm between the ground and bottom rail. As with all standard inground swimming pool installations, no physical barrier is present between the existing ground level and the swimming pool allowing for free movements of frogs and other small terrestrial fauna.

Monitoring of the pool began on the 28th December 2010 after the pool owners discovered a number of dead frogs in the pool skimmer box. The skimmer box and swimming pool were then checked daily, prior to the filtration system activating at 8am. All frogs were identified to species level with abundance recorded and live individuals were released adjacent to the first -order stream. Frog mortality was also recorded.

Results

During the 32 days of the monitoring program, a total of 186 frogs comprising five species were detected within the swimming pool or the skimmer box (mean 5.81 individuals per day) (Table 1). Of these, the Striped Marsh Frog (*Limnodynastes peronii*) was most frequently detected (n=167, 89.8%). Frog mortality was also recorded. Of the 186 frogs, 24 individuals were found dead (12.9% of the total; mean 0.75 frogs per day) dominated by Striped Marsh Frog (n=19) (79.1%) (Table 2). Dead frogs were observed floating in the pool and within the skimmer box. Given that no

marking of individuals took place during this study, it is uncertain if individuals were detected on numerous occasions therefore suggesting that the results of this study are indicative of activity rather than inferring population size.

Discussion

The results of this study confirm that swimming pools have the potential to pose a significant threat to frog fauna. It would appear that frogs were attracted to the newly installed 'water source' given that the swimming pool was not located within a potential movement corridor based on our interpretation of available resources within the study area.

Despite the pool being saltwater, large numbers of frogs were attracted to this new water body. The Striped Marsh Frog dominated both the individuals detected and the number of frogs that were found dead. During the study, only members of the Myobatrachidae and Limnodynastidae families were entrapped suggesting that members of the Hylidae can climb out of swimming pools.

Observed mortality was greatest when frogs entered the skimmer box. Almost half of the frogs that died during the monitoring period were recorded on the Table 1: Species and abundance of frogs entrapped within a swimming pool on the NSW far south coast between 28/12/2010 and 28/01/2011 (C.s=Crinia signifera; L.d=Limnodynastes dumerilli; L.p=Limnodynastes peronii; P.h=Paracrinia haswelli; P.b=Pseudophyrne bibroni)

Sp.	28/12	29/12	30/12	31/12	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1	9/1	10/1	11/1	12/1
C.s	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.d	2	1	3	1	3	0	0	0	0	0	2	0	0	0	0	0
L.p	8	13	25	8	11	3	7	6	4	6	2	0	8	4	6	0
P.h	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
P.b	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tot	11	15	29	9	14	3	7	6	4	6	4	0	9	4	6	0

Sp.	13/1	14/1	15/1	16/1	17/1	18/1	19/1	20/1	21/1	22/1	23/1	24/1	25/1	26/1	27/1	28/1
C.s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.d	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.p	4	3	4	1	3	7	4	6	9	1	0	1	3	5	1	4
P.h	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P.b	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
Tot	5	3	4	1	3	7	5	6	9	1	0	2	3	5	1	4

Table 2: Number of dead frogs detected within a swimming pool on the NSW far south coast between 28/12/2010 and

28/01/2011.

Species	No of dead Individuals
Crinia signifera	0
Limnodynastes dumerilli	3
Limnodynastes peronii	19
Paracrinia haswelli	0
Pseudophyrne bibroni	2
Total	24

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If you did not receive your subscription renewal in the post please contact administration admin@ecansw.org.au first day when the pool owners cleaned out the skimmer box. Subsequent mortalities were dominated by individuals found floating in the pool, prior to the filtration system activating. It is assumed that these individuals either drowned given they had no way of exiting or died as a consequence of the salt content. Salinity has been attributed to the death of both tadpoles and frogs with some species known to die within an hour of being placed in seawater (Bentley & Schmidt-Nielsen 1971). Increased exposure to saline conditions has been suggested as a partial explanation of decline in some species such as the green and golden bell frog (Christy & Dickman 2002). While tadpoles of green and golden bell frog were found to tolerate salinity levels of up to 4% (seawater) without apparent effect, these authors established that decreased growth and increased mortality was the result of increased exposure time to saline water.

Given the results of this study, we suggest that inground swimming pools or above-ground swimming pools that are installed at ground level, have the potential to negatively impact threatened frog species. Species such as the Giant Burrowing Frog and Redcrowned Toadlet are likely to be at high risk, given the proximity of existing residential development to potential and known habitat for both species and that they would be unable to climb out of a swimming pool should they become entrapped. We also suggest that this threatening process is widespread and likely to operate wherever ground-dwelling frogs occur, particularly in areas where native vegetation is adjacent.

The owners of this pool are now actively removing frogs on a daily basis to minimise mortality. With consent authorities having a legal obligation to consider the effects of any development on threatened species, physical assets are likely to provide a greater level of certainty in minimising this risk than reliance on daily intervention. We suggest that the installation of a physical barrier at ground level such as a strip of clear plastic sheeting attached to the pool fence to a height of 100mm, or an escape ramp to allow grounddwelling frogs to free themselves, as minimum standards for in-ground installation to reduce the risk of frog entrapment. These strategies have been applied with success in other countries. In the absence of further study to determine the success of such measures in an Australian context, these measures are considered appropriate for future installations wherever a potential risk is identified.

Acknowledgements

We thank Holly Sass for her assistance during the monitoring program, particularly those early starts checking for frogs during her school holidays.

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The Humble Suburban Tree

Dr Stephen Ambrose Ambrose Ecological Services Pty Ltd

As ecological consultants, we are often asked to assess the impacts of the removal of mature trees from residential allotments, particularly in urban areas. This usually involves an investigation of whether or not the tree(s) to be removed is a (are) threatened species or part of a threatened ecological community; habitat trees for threatened or migratory fauna, and/or part of a wildlife corridor. But how important are they in maintaining native fauna species richness and diversity in inner suburbs of a big city? Anyone who doubts the value of a single mature eucalypt in a suburban garden as habitat for native fauna should read on.

My wife and I have a villa unit with an L-shaped garden in an inner suburb of Sydney. Our garden is landscaped with a broad range of mostly locally-native shrubs, bushes and small (<5 m) trees. The relatively small size of our garden prevents us from having larger trees. However, our next door neighbour has a much larger garden which backs up onto our own. That garden is dominated by a Sydney Blue Gum (*Eucalyptus saligna*), which is approximately 16 m tall. In the 7.5 years we have lived here, we have recorded the

following species nesting in this one Sydney Blue Gum:

- Rainbow Lorikeet
- Crimson Rosella
- Red Wattlebird
- Common Koel
- Noisy Miner
- Pied Currawong
- Channel-billed Cuckoo
- Grey Butcherbird
- Australian Magpie

Of course, they do not all nest in that one tree at the same time. In fact, the Rainbow Lorikeets and Crimson Rosellas have not nested in the tree for the last 4 years because the large tree limb that contained hollows used by these parrots broke off in a storm. Although the Red Wattlebird and Common Koel have been absent this year, the Pied Currawong and Noisy Miner nested at the same time, both species producing fledglings in the last few days, but in the case of the Currawong the fledgling it produced was a Channel-billed Cuckoo. I find it amazing that the Noisy Miners prevented the Pied Currawongs from raiding their nest.

It has also provided vantage points, foraging habitat and/or shelter for a much broader range of bird species, including Powerful Owls, Boobook Owls, Sulphur-crested Cockatoos, Galahs, Little Corellas, Yellow-tailed Black-Cockatoos and at least one Ganggang Cockatoo.

Ring-tailed Possums, Grey-headed Flying-foxes and microchiropteran bats also regularly use this one tree. I suspect it also provides habitat for reptiles, frogs and invertebrates too, but I haven't had the opportunity to investigate them yet.

Our garden and our neighbour's garden are located only about 250 m up the road from the edge of The Field of Mars Nature Reserve, a forest remnant along Buffalo Creek, a watercourse which drains into the Lane Cove River. This nature reserve is part of a much larger bushland corridor through the inner northern suburbs of Sydney, which probably explains why our neighbour's Sydney Blue Gum is visited and used frequently by local native fauna. The tree is also located high up on the slopes of the Buffalo Creek Valley, so birds perching or nesting in the canopy have expansive views of the entire valley – an important feature when looking out for predators, competitors or prey. and nearby shires (Ku-ring-gai, Lane Cove, Hornsby) are very leafy suburbs, with retained areas of bushland and, collectively, there are lots of mature eucalypts, angophoras, turpentines and she-oaks in urban gardens. The point I wish to make here is that even single, isolated trees in peoples' gardens are important for maintaining native biodiversity in our suburbs. There seems to be an increasing desire in these shires and others around Australia to subdivide larger residential allotments for further housing, or building large apartment blocks on them, which ultimately means the removal of some or all of these trees from peoples' gardens. I wonder what the cumulative longer -term impact of this practice is going to be on the richness and diversity of native fauna in these suburban areas. I also wonder what opportunities would be missed in educating suburban/inner city residents about the identification and ecology of native species if too many garden and street trees are removed from these areas.

From a professional perspective, we are faced with a dilemma. Suburban gardens and streetscapes are often populated with mature trees that are similar in age, and there is often no or little population recruitment by younger trees. A significant proportion of mature suburban trees are also in poor health as a result of the increasing pressures of urban development. Therefore, lack of sensible environmental planning by Councils could potentially result in leafy suburbs becoming "urban deserts" over a short period of time. So there is a need to landscape our suburbs with younger trees.

But here lies the problem. Many of us quite happily say that large, mature native trees can be removed from a suburban allotment if we plant four, eight or more times as many as compensation. Compensatory trees are often planted in areas that are too small to allow them to grow to full size and, if they do, it is going to be at least 50 years before they are fully functional as habitat trees for a broad range of native wildlife species.

Therefore, there needs to be an appropriate ecological balance between keeping mature native trees in suburban landscapes and introducing young replacement trees that have the physical capacity to grow to full size. So please think twice about the conservation, educational and enjoyment values of native garden trees before deciding if one should be removed and how many younger trees should be planted.

On a broader geographical scale, Ryde (our local shire)

Lyme's Disease is in Australia: Why <u>YOU</u> should be <u>VERY</u> concerned and <u>VERY</u> careful.

Jason Berrigan Parkheart Eco-Consultancy

Around this time last year at the ECA's reptile workshop, the subject of "*is Lyme's Disease in Australia*" came up in discussion amongst a group sitting at a picnic table in some downtime. I managed to get involved in a rather infantile banter (literally saying "*yes, it is*!" followed by "*no it isn't*!") with a fellow from a certain State Government corporation.

My passion for this argument arose from the chance that my family GP has been researching this disease and its origins in Australia (with cases documented since the early 1980's but attributed to overseas travel). I also had another unique insight in that my sister-inlaw is one of the receptionists at his medical centre and has seen most of the patients diagnosed with the disease, so it's been a common dinner table topic at family gatherings, especially given I fall into a high risk employment field. So I considered myself relatively well informed on the latest developments on this disease at the time. Most significant being recent cases of people becoming infected in my local area in the last 24 months.

As I'll get to subsequently, there has and still is a great scientific and at times emotional debate of whether this disease is endemic to Australia. My doctor, Dr Peter Mayne, has actually trained in the US on the disease and is a member of the International Lyme and Associated Diseases Society, and to date and as recently published (see his paper below), diagnosed >50 patients (most of which were referred to him), including a child who contracted it from her mother. The patients generally range from the east coast of Australia.

As of the 8/2/12, the latest local patient is *me*.

I'm currently trying to process reams of often conflicting information on this disease; what it can mean for my long term health; how its treatment will turn my life into hell; and what implications it may have not just for my career and business, but for my partner and youngest children who may also be infected. It's obviously a difficult time for me in all aspects, and I provide this article for your information and awareness. Considering the aforementioned and the limited allowance of time to comprehensively review and present all the information; I <u>strongly</u> recommend you follow up with your own reading of the references I list below and your own literature review to ascertain your opinion and risk evaluation.

So what is Lyme's Disease?

Lyme's Disease (LD) is one of several diseases borne by ticks (that most of us blissfully never even knew about), and caused by members of the spirochete bacteria genera *Borrelia*. The carrier tick genus is *Ixodes*, which includes our paralysis or shellback tick (which is generally restricted to the east coast of Australia). The disease is well documented in the US where it was first described, but is also known to occur in Europe and the UK, most commonly via ticks from deer and sheep.

Two main strains of *Borrelia* have been identified in the northern hemisphere as the pathogens, and infection rates in ticks have been reported to be <20%. To date, the 'mythical' endemic strain in Australia has not been identified or isolated, but give it time.

Unfortunately, the disease is extremely hard to diagnose for a range of reasons.

If you're lucky, you'll develop the classic 'bulls-eye' rash (*erythema migrans* or EM) shown below within a few days or weeks of the tick bite (most people don't).

This rash is usually accompanied with a range of symptoms (see below) such as headache, stiff neck, fever, flu-like symptoms, fatigue, etc. If you get these – see a doctor ASAP, and then buy a lottery ticket. You've been *very* lucky.

If you're a little less lucky, you'll manifest these and/or worse symptoms within a few weeks, months or within the year. If you're <u>really</u> unlucky, like me, you may go years, or over a decade, and *then* develop symptoms.

Photo 1: An example of the bulls-eye (EM) rash

(Source: http://karlmcmanus.org/lyme-disease-information/index.php?id=3). Note this picture is not definitive but one example – check the slideshow at <u>http://lymegreenaustralia.blogspot.com.au/2011/06/could-i-have-lyme-disease-doctor.html for a much better range of examples.</u>



So what are these symptoms? Well, everything and anything, and they can occur all of a sudden or incrementally and cumulatively over years. Here's just a sample:

(a) Short term:

- EM rash.
- Tender glands.
- Chills and fever (flu like symptoms).
- Headache.
- Muscle twitches and swellings.
- Problems with eyes eg conjunctivitis, poor focus, double vision, pain in the back of the eyes, light sensitivity.
- Fatigue
- Body and joint aches.

(b) Long term:

- All of the above, and;
- Carditis,
- Chronic meningitis,
- Mononeuritis (eg Bell's palsy)
- Encephalitis.
- Depression and irritability.
- Brain fog and memory loss.
- Carpal tunnel syndrome.
- Problems with forming words.
- Jaw and tooth pain.
- Light sensitivity.
- Noise sensitivity and tinnitus.
- Difficulty swallowing
- . Extreme effects of alcohol (one ray of

sunshine in a dark stormy night)

- Pain in glands.
- Dementia.
- Paralysis and major muscle problems, often in legs.
- Sore feet, pain in joints of knees, elbow, etc.
- Arthritis.
- Genital pain (mostly for the boys)
- Persistent cough.
- Fatigue.
- Vertigo
- Shooting pains, back/neck pain, major muscle spasms.
- . Insomnia and poor sleeping habits.

For the full list, see <u>http://</u> www.lymediseaseaction.org.uk/about-lyme/symptoms/. If you want to bring on an anxiety attack, check out the Youtube videos of LD patients, or have a look at the *Today Tonight* link below of Australian patients. The disease can be extremely debilitating both physically and psychologically. You'll want to avoid it.

The delayed onset and commonness of most of these symptoms to other conditions is what makes this disease so devious and so dangerous. It can and is mistaken (even widely throughout the US and Europe) for everything from stress, sleep deprivation, Chronic Fatigue Syndrome, MS, rheumatoid arthritis, various auto-immune disorders, to influenza.

It can also be asymptomatic for a long time, or appear so. I think I've had it and not known for a decade. I can recall two major shellback ticks in 1998-1999 that produced welts like goose eggs on my neck and hip (I recall having vertigo for a few days with the one on my neck), and itched like hell for weeks. Then again, I've have also had several bites and lumps annually about 3-4cm wide which itched like crazy up to about 2004-05. With the business expansion, I've generally been stuck in the office since then playing manager, and can't recall any major bites since. Based on my core working area, I could have been infected somewhere from Laurieton to Coffs Harbour.

How is it diagnosed?

Next to the debate of "*IF it occurs in Australia*", is demonstrating unequivocal diagnosis.

Up until recently, standard blood testing results in Australia have supported denial of this disease occurring endemically by NSW Health (see reference below) and much of the medical fraternity. Reviewing the literature below you can understand the origins of this ie a major tick survey done nearly 20 years ago which failed to detect the pathogen is argued to have used incorrect survey techniques. Then there's the added difficulty of using the right scientific test to detect the bug in blood samples.

As scientists (especially those with lab experience), we know that some tests need to be very specific to find something that is not easy to find; and we need to eliminate all the variables. LD is a classic example.

The first complication is that the bacteria usually resides not cooperatively out in plain sight in the bloodstream, but covertly in deep tissue. Muscle, brain, spinal cord, connective tissue, heart – all the good ones.

The second complication is the nature of the beast: depending on lifecycle stage it's at and your stage/and or level of infection, the bacterium can be in one of 3 forms. So it's hide and seek.

The third complication is that co-infection with other tick borne diseases may also occur and mask both symptoms and test results. It's reported that 60-95% of LD patients also have Babesia, Erhlichia, Bartonella, Ricksettia, etc. My recent round of and most expensive blood tests, to date is screening for this and a tickborne bovine disease to eliminate the variables. Babesia is one of the worst – it's a protozoa like malaria, and 60% of LD patients have this kamikaze co-pilot. Its symptoms are (you guessed it): tiredness, loss of appetite, feeling like crap, fever, night sweats, aches and pains, etc. You'll also notice some sudden but periodic trouble breathing. Long term, it causes things like liver problems and haemolytic anaemia, and it provides a great environment for *Borrelia* to boom.

Hence if you're at risk (ie been bitten by a tick), and especially if a preliminary test called a CD57 test comes back with a low reading, you'll probably need a barrage of tests to not only detect the LD bug, but to rule out or detect the other ones to ensure you get the right mix of antibiotics (essential as presence of one or more of the other bugs can interfere with treatment of the others in various ways). So far its looking like I may have Babesia as well based on my symptoms.

Consequently, false positives have been a major problem due to a range of reasons, including confusion with other spirochaetes, but mostly due to the types of tests used (as explained in the references below). Fortunately a standard has been relatively recently developed which appears to be accepted as the international standard, but it's only commercially used in the US to date. So your blood has to go over there to be tested for confirmation of LD. The main thing they are looking for are anti-bodies to the bug. Mine is apparently full of them, indicating I've had it for a long time.

Some appear to argue even the specialised tests are not 100% certain of LD (which is why the blood is sent to a LD specialist lab called IGeneX). My reading of the literature has noted an emphasis on a physician considering <u>both</u> the blood test results and demonstrated symptoms to confirm the diagnosis. Given the symptoms of the disease can mirror a myriad of other pathogens and physiological problems, this is not an easy task especially when the onset is delayed, and you're not presenting in a wheelchair and/or in painful muscle spasms. Hence why you're lucky if you walk in the doctor's with the rash.

In my case, the classic physical symptoms I've been demonstrating match fatigue, stress and sleep deprivation. I've worked at least 50hrs a week most of my 15 years in this business, but the last 2-3 years has seem me consistently working at least 60 to >72hrs a week. In the last 7 years, I've also raised two more children, the latter being determined to ensure 6hrs continuous sleep for her parents was not to happen for the first 3 years of her life. For the last 2 years in particular, I've generally felt like crap most days with poor sleep most nights, often worrying about workrelated things. I often woken up feeling like a train has run me over, and I already have a pre-existing spinal injury which doesn't help. Being bound to a desk and working long hours, I get little regular exercise most days, other than a short play each afternoon with the little kids and/or the dogs.

The funny thing though was that I began to note some strange things, like finding myself puffing when walking around the back yard, yet I'm at my normal weight. I've had head spins when I get up, suddenly feel hot at times, and most of all, I have this brain fog that never seems to go away. I often couldn't think of people's names or key words as I was typing, or lose my train of thought in just about every conversation. Some days I even quietly thought I was showing signs of Alzheimers. I just put it down to sleep deprivation and pushing myself so hard. A man's not a machine after all.

For a long time there over the last 3 years, I was also drinking a litre of energy drinks a day to get by (not a coffee drinker). Six months ago, realising this was not a long term plan, I got onto a low sugar diet and took some naturopathic supplements, broke the energy drink cycle, and sort of felt okay. I even grabbed some exercise when I could.

So did I think I was sick? Hell no.

The reason I got tested was simply impulse. I was getting my annual check of my moles, and my partner has been hassling me since her sister started talking about how Peter was diagnosing people from the local area with Lyme's over the last 2 years, and how I'd had some tick bites over the years... So I said to Peter, "*May as well do that LD test, right? Just to put her mind at ease.*" Followed by a wink.

I was deeply regretting that impulse when I heard the cost, and wistfully contemplating the boy toys I could have bought with that money as the pathologist drained my life essence from me.

Nearly 3 weeks later, I was literally stunned to get the phone call. I was *so sure* I wouldn't have it. I didn't think I was sick. Just tired and unfit. People have turned up to Peter unable to walk and being diagnosed with this disease. So far, I am *very* lucky in this regard.

So what is the treatment?

If you're *lucky*, you'll catch the bug in the early days. The good news is that all you'll probably have to do is take oral antibiotics (3 kinds) for at least a few months (probably longer depending on your blood monitoring), but the relapse rate is high, so ensure you're clean before you stop. Most of my reading suggests combining this with a specific range of naturopathic supplements is also a <u>very</u> good idea.

If you're *unlucky* like me, this is your likely treatment/ torture routine:

- Above antibiotics given as 2 needles in the butt (ie intra-muscular) or as an IV *every* week, until I presume your blood tests show no pathogens. This can go on for several years as the bug is not only hiding in deep tissue so that it takes a while to get to it, but the bacteria may be in a form where it is not vulnerable to the drug (its appears to be only vulnerable when subdividing). Hence you need a LONG exposure time to get all the bugs.
- The above coupled with naturopathic supplements (eg probiotics) to assist combatting the pathogen, but also helping you from getting sick (or dying) from other complications associated with long term antibiotics.

I don't know if severe symptoms eg paralysis, are curable in the short or long term, or ever.

There's one more catch: If you're like me, and have amalgam fillings and/or a root canal treatment, you'll be <u>strongly</u> recommended to get them removed/ replaced ASAP (ie prior to treatment). The reason is that the heavy metals contained in these fillings (which are apparently constantly leaching into your digestive tract) encourages genetic selection for antibiotic resistant bacteria (see readings below). So to minimise treatment time and maximise success (and make all that pain worthwhile and as short as possible, unless you're a masochist), you'll do it *pronto*. nasty chemicals and benefit the enemy, so you'll need to see an expensive specialist with all the right tools to get those removed without contaminating your body and giving the bugs a helping boost.

Now if that's not hurting enough, *then* there's the financial costs. Very little of this appears likely to be covered by Medicare, and I'm still on a learning curve on whether private health insurance will cover it. To date, it's cost me \$2000 for two rounds of blood tests and one LD consultation, and I haven't even started treatment, or got my fillings/root canal out. The recommended naturopathic supplements will cost you about \$1500 for 6 months supply.

Finally, this is one disease where the cure can be worse than the disease. This bug doesn't die without a fight, especially if you're in my category. A bit like a chemo patient, you will enjoy the experience colloquially known as "*Herxing*". Apparently what this means is that for a day a week or a week a month, your family will have to hide the guns and rope as you'll want to put yourself out of your misery as the symptoms temporarily exacerbate. This is due to the fact that the bug releases toxins when it dies, causing a Herxeimer reaction. So – the more bugs that die in one treatment period, the worse the Herxing. Oh – and the antiobiotics will also make you feel sick and make the injection site sore as hell for a day or so. You also herx more/worse if you have Babesia.

Bet you're glad you're not me, right?

Holy ****!!! How can I avoid this?

Easy: DON'T GET BIT!!

There is no vaccine for humans (but seems to be one for dogs in the US), to date. So there's no easy-out. The onus is on you to be careful to <u>avoid</u> getting infected or to get action immediately if it looks like you're infected.

The sites below list general common-sense measures to avoid ticks, primarily using a repellent that uses DEET, and wearing clothing that restricts entry and makes them easy to detect as they sneak up on you. You also need to be very careful when removing ticks to minimise the risk of pumping the germs into the bite. I would also incorporate a thorough check for ticks after each field day (good time to develop a buddy system), and not wear the same clothes twice (so tempting when away in the field).

If you do get bit and show some sort of reaction or experience symptoms – see a doctor ASAP. If in doubt, get advice from a *qualified* physician ie one who can recognise LD symptoms. If you get sick and no-one knows what it is, get checked for LD. I would certainly document any tick bite with photos and record details and dates of associated reactions/symptoms for later references, just in case.

I personally think we may eventually have to get our blood tested annually much like we do/should for Lyssavirus. It's just going to become a part of being an ecologist.

Issues for OH&S?

Given the disease can at least result in lost productivity and significant financial burden, but worse case, can have long term health implications and even be fatal, the OH&S ramifications for our industry and especially bush regenerators (those human bandicoots that I'm sure form a key part of the tick's lifecycle), demand that this disease needs to be taken <u>very</u> seriously. Prevention also has its limitations. Repellents containing DEET are recommended (Aeroguard, Rid, Bushman's), but this chemical itself has health issues. It's not something you'd want to have long term exposure to, especially kids.

At the least, we need to incorporate provisions in Safe Work Method Statements, OH&S policies and inductions; establish and maintain staff awareness; and ensure protection, avoidance and detection procedures are implemented.

If you're a blood donor, you may want to reconsider your altruism until you're confirmed to be clean. Given the reported under-detection of this disease in the US, UK, etc, the potential implications for Australia (and blood donation) once its existence is widely accepted could be interesting. LD pathogens have also been found in semen and milk, but there is dispute in the literature on whether it is transferrable despite cases of children and spouses locally and overseas with no tick bites acquiring LD. It can also damage and kill foetuses, and pregnancy reduces treatment options. If you're planning a family or have a sexual partner, please consider <u>seriously</u> the risk.

I <u>highly</u> recommend you to review key sites such as <u>http://karlmcmanus.org</u> for printable information sheets on the disease as well as tick prevention. You don't want a situation like this: <u>http://www.physicsforums.com/showthread.php?t=249764</u>, or mine.

Thank you for reading.

And don't forget the Aeroguard. Especially you, Mr "There's no LD in Australia".

Footnote: I've just been diagnosed with Babesiosis as well as Lymes. See this for more info: <u>http://lymedisease.org.au/about-lyme-disease/babesiosis/</u>.

Some References/Further Reading:

Lyme disease – tick bite pictures, diagnosis and general information. http://lymedisease.org.au/about-lyme-disease/diagnosis/ http://www.medicinenet.com/lyme_disease/article.htm# http://en.wikipedia.org/wiki/Lyme disease http://www.lymediseaseaction.org.uk/about-lyme/faq/ http://lymegreenaustralia.blogspot.com.au/2011/06/could-i-havelyme-disease-doctor.html The Arguments for Endemic LD in Australia http://karlmcmanus.org/lyme-disease-information/index.php?id=4 http://lymedisease.org.au/about-lyme-disease/diagnosis/ http://www.drmayne.com/Lyme.htm http://au.news.yahoo.com/today-tonight/video/watch/28278831/ recent story on Today Tonight. http://www.lowchensaustralia.com/pests/paralysis-tick/ticktransmitted-diseases-in-humans.htm http://healthmad.com/conditions-and-diseases/lyme-disease-inaustralia/ Dr Mayne's recent paper on Lyme's in Australia: http:// www.dovepress.com/articles.php?article_id=8891 Arguments against Endemic LD in Australia http://medent.usyd.edu.au/fact/lyme%20disease.htm#clinical

http://www.health.nsw.gov.au/factsheets/infectious/

lyme_disease.html

Why it's a good idea to remove amalgam fillings:

http://www.mercuryexposure.info/science/antibiotic-resistance/ item/745-a-comprehensive-overview-of-the-connection-betweendental-mercury-fillings-and-antibiotic-resistances

http://www.lichtenberg.dk/ symptoms_before_and_after_proper.htm

http://www.earthtym.net/ref-merc-bact-93.htm

Caution about long term use of DEET:

http://www.rch.org.au/kidsinfo/factsheets.cfm?doc_id=7755

www.bushman-repellent.com/pdf/army.pdf

http://www.fitsugar.com/DEET-Bug-Spray-Dangerous-My-Health -3283566

http://www.nlm.nih.gov/medlineplus/ency/article/002763.htm

http://www.quantumhealth.com/news/dangers_of_DEET.html (Continued from page 9)

With the news of a missing presenter, Anne Musser, a palaeontologist and guide at the caves, organised an extra cave tour for us. As part of these tours we saw some fossil bats.

We held a BBQ on Friday night , followed by a spotlight through the drizzle - the Brush-tailed Rock-wallabies living in the Grand Arch provided some entertainment.

On Saturday afternoon Glenn Hoye gave a presentation on the theory of bat surveys. Narawan gave a presentation on identification of bat species.

As it was raining a leisurely three course meal at Caves House occupied Saturday evening.

Sunday morning included some discussion on bat call analysis and threatened species habitat. However by this stage half of the delegates had left due to the lack of field work and detector information that Michael was to bring.

We would like to thank all the delegates for their understanding during the 'disaster of a workshop'. A part refund will be offered to all delegates.

A big thankyou to Anne Musser and other staff at Jenolan Caves, and Michaela Jones (Oberon NPWS) for

(Continued on page 23)

New Tools for the Ecologist: Part 2

Jason Berrigan Darkheart Eco-Consultancy

1. HID Spotlight

After breaking the lens cover of one my Lightforce spotlights (yes, it can be done) and not being able to find a replacement, I scoured Ebay for a replacement light. I came across Lightforce-like HID spotlights some of which were price competitive (\$139) compared to the standard Lightforce model (100W SL170) I was looking for. Lightforce also manufacture HID lights, but the price is significantly different to the Ebay clones.

Photo 1: The Ebay HID spotlight.



What does HID mean? *High Intensity Discharge*. These basically burn with a lower power rate but give a bright white (depending on burn temperature – mostly white to bluish white) light. If you've been dazzled by the local hoon's headlights, then he's probably upgraded to HID lights. A good 100W halogen light is supposed to generate about 1 000 000 candlepower (about 1700 Lumens): a 55W ballast HID is supposed to punch out up to 3 500 000 (manufacturer claims). They

do this because they are far more efficient in terms of energy conversion (17% compared to 83%).

Being so efficient, HID lamps don't produce as much heat (hence not likely to burn your lips when resting the spotlight on your chin as you scope that animal with your binoculars), but they do punch out a lot more UV. In fact the mounting around the lamp needs to be UV protected. Being so bright, you also don't want to look at the light directly up close. It's also a good idea to use a red lens for prolonged use when watching an animal.

I compared my standard 100w SL170 lightforce to the same sized HID spotlight I bought (with a 55W ballast) only recently when I took the kids for a walk in the local National Park. Apart from confirming a Koala population does occur on North Brother behind Laurieton, I noticed that the brightness generally appears similar (possibly more an indication of the quality of the HID ballast I'd guess), but the white light of the HID seems to be piercing through the canopy than the warm orange of the Lightforce. I'd also expect twice the battery life out of the HID. Unfortunately I haven't had time to really do some more exhaustive comparisons, so consider this first impression only.

You'll also notice one other thing: they buzz. Apparently all the HID ballasts do, and I think its something to do with how they draw power. It's not loud, but if absolutely perfect silence is needed for a situation, the buzz may be a problem eg spotlighting dingos and wild dogs.

These Lightforce-style HID spotlights come in the same sizes and mount styles as the Lightforce lights ie roof mounts and 240mm lens. You can even get walkabout kits (from both Lightforce and Ebay). Price and design varies per retailer. You can also buy DIY conversion kits to convert your Lightforce to HID.

If you shop on Ebay for a HID spotlight, you'll also notice a heck of a lot of hand-held torches which also feature this technology. Most of the Ebay ones (including many of the other HID car kits and no doubt the HID Lightforce clones) are of course Chinese, and a Google shows mixed reaction to these lights (quality varies with brand), but generally these torches have a big light output which makes them potentially very useful for surveying urban remnants, or where carrying a heavy battery on your hip or battery is an OH&S risk (eg a steep slope or someone has a spinal injury). These lights range from variable wattage (eg 20/28/35W and 35/55/75W) to fixed (eg 75W, 65W, 20W). These wattages equate to 2000-7500Lm. Some of those latter figures you can take with a grain of salt of course from an Ebay seller, but these and the genuine articles are indeed VERY bright (plenty of Youtube footage). You wouldn't want to be working near an airport or busy road with one of these.

However, these handheld torches have a few drawbacks:

- They may take a little time to warm up to maximum brightness so don't flick them on and off every few minutes. A similar constraint applies to the HID spotlights.
- The lens gets HOT ie will burn at the touch. I've also seen video of a match being started by holding within 30cm of the beam.
- They are expensive (genuine >\$200, Chinese nonames start around \$100 for 20W, to average around \$150 for a variable up to 75W). Price varies for the Chinese ones if you get batteries, chargers, carry box, lens, etc, included, as well as the seller. Shop around.
- They need special batteries (capable of high rate discharge), which can be pricey if genuine, and can be dangerous if not treated properly during recharging (be careful with some Ebay ones). Go for the highest capacity ones to get the best out of the light.
- I've been tempted to get one but not had time or cash flow to justify it, and I'm waiting just a little longer for some more consistent consensus from the torch enthusiasts before I add this to my toy/ tool list. I recommend checking the forum <u>www.candlepowerforums.com</u> for more info.

Update on the Biodegradable Flagging Tape:

Further to the non-biodegradable vs biodegradable flagging tape exposure test, the single sample test I had in my backyard saw the biodegradable tape fall off in less than 4 weeks (albeit that was over nearly 4 weeks of rain). The non-biodegradable is still well and truly hanging in there. Despite this result, we used it to mark >100 Koala food trees in November last year, and I noticed in a recent drive-by that those tapes are holding fast.

A tad disappointing fact with the brand I bought though is that it has a plastic core. Ironically, the nonbiodegradable tape has a cardboard core.

(Continued from page 21)

supporting and assisting with the organising of the "sob" failed workshop.

On behalf of all who attended we would like to thank Anne Williams for all the yummy bikkies. Also a big thanks to Michael for trying his best to make it to the workshop and accepting an invitation to present at the ECA conference in July.

We still reckon it was a great location for the workshop if the rain had stayed away.

And for Amy the weekend was a good exercise in stress management: how to run a workshop in the rain, minus two key presenters, whilst looking after a toddler, worrying about a husband (coming down with a cold) and two kids travelling in torrential rain. Then with trees down on the road, India and I stay at caves for the night and the others up at the Jenolan cottage I booked for our 'weekend away'. Oh Yes! we also need to add a trip to Oberon hospital emergency, so that River could have his head glued back together after a slip in the caves. And all this is to be done whilst smiling and laughing whenever possible.

If only I got to hold just one bat!

Thank goodness for the fabulous caves.

By Ray Williams and Amy Rowles

From the Botany



This section is dedicated to sharing of observations, descriptions and any information such as flowers of threatened plants for the purpose of benefiting the science of Botany, especially in its application to ecological consulting and management of threatened species.

This issue, Isaac Mamott shares his valuable insights into two threatened species he's been working with.

Notes on a Threatened (Vulnerable) flora species on the NSW North Coast. Part of a series of articles on NSW North Coast Threatened plants that aim to provide specific habitat, ecology and distribution data to aid the consultant ecologist (with a bias towards those lesser known taxa where no detailed species profiles exist).

Swamp Foxglove (Centranthera cochinchinensis)

Description – Swamp Foxglove is an erect, annual herb generally 10-50cm in height, main stem and branches with minute hairs. Leaves alternate, linear to lanceolate, 2-5cm long and 1-5mm wide. Calyx densely hairy. The 13-30mm long tubular flowers are pink or mauve with white lobes and a pink or purple throat. Flowers Feb/March. Fruit a capsule, ovoid to ellipsoid, about 6mm long, enclosed in an enlarged calyx, multiple capsules on each plant; fruiting/ seeding March/April, multiple seeds (c. 1mm) in each capsule.

– Centranthera cochinchinensis Distribution is essentially a tropical taxon occurring across the Top End of Australia with the Grafton population considered its southern most distributional limit. Three Grafton locations are reported to occur within conservation reserves: Yuraygir National Park, Fortis Creek National Park and Chambigne Nature Reserve. The Yuraygir record is an herbarium specimen collected at Wilsons Headland in 1979 (Greg Clancy pers. comm.). No data on the Fortis Creek record was available at the time of article submission. The author has recorded one population (unreserved) near the Forestry Ag site east of Koolkhan just south of Fortis Creek NP (Orogen 2009).

Habitat - One population just north of Grafton (near

Koolkhan) recorded by the author occurs on Grafton formation siltstones (weathering to clay soils) on the edges of a Tall Dry/Moist Sclerophyll Open (Grassy) Forest on hillslopes and hillcrests (Orogen 2009) adjoining a powerline easement which supports periodically slashed native pasture. The habitat comprised a floristically diverse upper (tree) stratum with Eucalyptus siderophloia, Corymbia henryi and Corymbia intermedia as canopy co-dominants, and E. propinqua, E. microcorys, E. acmenoides and E. eugenioides as subsidiary to minor canopy associates. The sparse mid stratum was dominated by small trees - Acacia Alphitonia excelsa, and aulacocarpa, Allocasuarina littoralis. The ground stratum comprised a diverse suite of grasses, herbs, low shrubs and graminoids including Themeda australis, Dianella caerulea, Pratia purpurascens, Lantana camara*, Entolasia stricta, Hardenbergia violaceae, Lepidosperma laterale, Leucopogon Desmodium brachypodum, Desmodium juniperinus, rhytidophyllum, Echinopogon caespitosus, Billardiera scandens, Rubus parvifolius, Hibbertia aspera, Lomandra multiflora ssp multiflora, Cymbopogon refractus, Imperata cylindrica var major, Gahnia aspera, Pimelea linifolia, Aristida vagans, Panicum effusum, Oplismenus aemulus, Goodenia bellidifolia ssp bellidifolia, Goodenia heterophylla ssp heterophylla, Patersonia sericea, Hybanthus stellarioides. The regionally rare subshrub Sauropus



Photo courtesy of Leonie Blain

hirtellus and regionally rare grass *Aristida acuta* were recorded in association with this species as part of this plant community.

One population has been recorded at Stockyard Creek (20 km north of Grafton) on shallow creekline alluvium overlying Kangaroo Creek Sandstone next to a track in a partially disturbed Moist Sclerophyll Open Forest/ Woodland. Canopy species comprised Angophora robur, Corymbia intermedia and Eucalyptus tereticornis. Mid stratum comprised small trees and shrubs such as Melaleuca quinquenervia, Alphitonia excelsa, Persoonia stradbrokensis, Acacia concurrens, Dodonea triquetra. The groundcover comprised a suite of grasses, graminoids, ferns including Themeda herbs and australis, Cymbopogon refractus, Digitaria ramularis, Oplismenus imbecillis, Echinopogon caespitosus, Thysanotus tuberosus tuberosus, Hibbertia acuminata, Cheilanthes subsp. austrotenuifolia (pers. comm. Greg Clancy, February 2012).

One population recorded at Coutts Crossing cemetery south of Grafton in regenerating native pasture (eg. *Themeda australis*) with scattered *Angophora subvelutina* and *Eucalyptus bancroftii* in a geologically transitional area (Grafton beds and Kangaroo Creek Sandstone) (pers. comm. Greg Clancy).

Other NSW Wildlife Atlas records of the species include:

A small population, less than 50, growing on a cleared transmission line through the Corymbia State Conservation Area, about 5km north of Kulcairn near Grafton. 2. A single flowering plant recorded on a property about 1km east of the Old Glen Innes Road, 123 Conroy Road, Chambigne, about 25km southwest of Grafton. 2. A population of less than 10 plants growing on a newly acquired addition to Chambigne Nature Reserve, about 20km southwest of Grafton off O'Neils Road

Ecology

Growth Form: Erect herb to 50cm height.

Flowers: Bisexual

Pollination: Insects. Suspect native wasps, bees.

Fruit/seed: Seed released to soil prior to annual plant dieback.

Seed dispersal: Not widely dispersed, dispersed by rainwash and wind.



Fire response: Fire sensitive (regenerates from soil seedbank).

Population Size: Forestry Ag (Koolkham) subpopulation in the low hundreds. No data available for Fortis Creek and Yuraygir NP populations. The population at the Coutts Crossing cemetery has declined from 120+ plants to only a few in Feb/March 2011 (pers. comm. Greg Clancy February 2012). The native pasture has not been slashed for some time and it is thought that the plant is being outcompeted by the regenerating native pasture. Judicial slashing outside the flowering and fruiting period is being considered to improve the recruitment of this population. This seems to be a common feature to a number of plants in the Scrophulariaceae family (I Mamott pers. obs.). *Miscellaneous*: *C. cochinchinensis* is suspected to be semiparasitic, given its affinities to the Broomrapes (*Orobanche* spp.) and Witchweeds (*Striga* spp.) in tropical Australia. Its green leaves and stems, which allow it to photosynthesize, allow the plant to make at least some of its own food. Not an obligate parasite (opportunistic). Parasitic host is unknown. This plant is also thought of as the tropical ecological equivalent to some of the Eyebrights (Euphrasia spp.) (also a member of the Orobanchaceae) in temperate Australia.

Conservation Status: Endangered in NSW (TSC Act).

References:

1. Orogen (2009) Flora and fauna Survey and Assessment, Koolkhan to Maclean 66kV Line. Report prepared for Country Energy, January 2009.

Advertising Opportunities with the ECA

Website:

\$200 for a banner

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Contributions to the Newsletter, Volume 29

Contributions to the next newsletter should be forwarded to the administration assistant Amy Rowles **admin@ecansw.org.au** by the

1st of July 2012.

• Articles may be emailed in WORD, with photos included or referenced in an attached file as a jpg.

• Please keep file size to a minimum, however there is no limit on article size (within reason)

• Ensure all photos are owned by you, or you have permission from the owner

• Ensure that any data presented is yours and you have permission from your client to refer to a specific site (if not please generalize the location).

• All articles will be reviewed by the editorial committee, and we reserve the right to request amendments to submitted articles or not to publish.

• Please avoid inflammatory comments about specific persons or entity

The following contributions are welcome and encouraged:

- ◊ Relevant articles
- ♦ Anecdotal ecological observations
- ♦ Hints and information
- ◊ Upcoming events
- ◊ Recent literature
- New publications (including reviews)
- Member profiles
- ◊ Photographs



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Photo Competition Entries









Top left: Glossy Blackcockatoo at Wollombi (courtesy of Ted Smith).

Top middle: Lewins Rail -Lake Mungo NSW;.Top right: *Litoria wilcoxi* -Stroud NSW. Mid-left: Jacky Winter with chicks. Mid-right: Rough-scaled Snake - Mungo Brush NSW. (photos courtesy of Narawan Williams)







Left: Emu chicks (courtesy of Narawan Williams).



Left: *Mixophyes iteratus* - Stroud NSW Below: Trapdoor spider - Balranald NSW (Photos courtesy of Narawan Williams)



Photo Competition Entries









Top left [runner up]: Red-eyed Tree Frog. -Stroud NSW. **Top right:** Zebra Finch bathing in Lake Mungo, NSW. **Mid** - **right:** A Weta Cricket (photos courtesy of Narawan Williams).



Mid left: Weasel Skink (courtesy of Katie Oxenham).

Bottom Left: Pygmy Possum at Belrose (courtesy of Brendan Smith).

Bottom Right: Speckled Warbler at Paterson (courtesy of Ted Smith)

