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CONSULTING ECOLOGY

ECA ECOLOGICAL CONSULTANTS ASSOCIATION of NSW Inc

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Newsletter of the Ecological Consultants Association of NSW

ECA
ECOLOGICAL
CONSULTANTS
ASSOCIATION
of NSW Inc

ECA Council Meeting August 2011 (see page 2)

VOLUME 27 AUGUST 2011

INSIDE THIS ISSUE!

Steve Sass giving a raking demonstration at the reptile workshop (see page 11)

The TruPulse 200 (see page 18 for new tools of the trade)

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Design and Layout: Amy Rowles

Front Cover Photo: A juvenile Rosenberg's Goanna (*Varanus rosenbergi*) that was trapped in a funnel trap with a drift fence, at Holsworthy, NSW. *Photo Courtesy and Copyright of Kathryn Chesnut.*

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Message from the President

Mark Couston *August 2011*

Dear members

I would like thank the members who attended the 2011 Annual General Meeting for supporting my 2nd year as president of the ECA and I look forward to working with the ECA Council during 2011/12.

For those who could not make it to the 2011 Conference and AGM, this years ECA Council Executive consist of myself; Vice President Martin Denny; 2nd Vice president Matt Richardson; Secretary Derky Engel; and Treasurer Paul Burcher. There were also 10 Ordinary Councillors elected. I would particularly like to welcome Matt Richardson as a new Councillor and Liz Ashby for her return to the ECA Council.

The 2011 Conference was once again well attended and the presentations were well received. This year, we asked the conference attendees to suggest topics for future conference presentations or 1 day workshops by filling out the back of their name tags and hand them in at the end of the day. The feedback received included topics such as:

- The big picture – what are we aiming for? Where will Australian ecology be in 100 years and what do we do to get there?
- Monitoring.
- Use of GIS in Ecological Consultancy.
- Biodiversity offsets.
- Climate change and threatened species/EEC's.
- Threatened species of the Eastern Dorrigo &/or Basaltic Plateaus of NSW
- Landscape approach to threatened species & specific threatened species.
- The 7-part test: are they uninformative, useless, repetitive; are there alternatives to the 7 part test?; can they be more effective and how can we make sure recommendations are implemented?
- Marine Ecology and Caulerpa taxifolia
- Something cheery.
- Novel fauna survey techniques
- Compensatory fauna habitat measures.
- Restoring / reconstructing native landscapes.
- Population growth.

The Conference Organising Committee will consider these topics for 2011-2012.

At the AGM, there was a considerable discussion on the issue of accreditation of ecological consultants. To clarify the situation, currently there are two separate schemes proposed which are running in parallel. These schemes are the;

- Industry Based Accreditation: Currently being finalised by the ECA with support from OEH, and;
- Government Based Scheme: The Threatened Species Conservation (Ecological Consultants) Bill proposed by the Greens.

I can advise members that the ECA's accreditation scheme is progressing and Dr Martin Denny and I have had further meetings with officers of NSW Office of Environment & Heritage in August 2011 to discuss some finer details.

In relation to the government based accreditation scheme, I have been advised that the scheme outlined in the TSC (Ecological Consultants) Bill will be heard in the NSW Legislative Council in mid October 2011.

Should the Bill emerge as legislation, then the responsibility for the accreditation scheme is vested in the Chief Executive Officer of OEH. If this is the case, I'm confident that OEH would involve the ECA to some degree.

If the Bill is rejected, the ECA will continue to progress and implement the industry based accreditation scheme with OEH involvement. At present, we will continue discussions with OEH and to fine tune the ECA's accreditation scheme until the fate of the Bill is determined.

The 2011/12 year is looking to be a busy one for the ECA Council and we look forward to continuing to provide members with technical workshops, newsletters, web site forum and information emails to keep you up to date.

ECA Council meeting August 2011. From top left: Matt Richardson, Rebecca Hayes, Deryk Engel, Alison Hunt, Stephen Ambrose, Paul Burcher, Belinda Pellow, Mark Couston, Ray Williams and Liz Norris.

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.

Threatened Bats roosting in culverts and drain pipes.

Willliam Steggall
Darkheart Eco-Consultancy

During recent surveys (June 2011) conducted in the Nambucca Heads area for the NSW RTA, I found a large colony of Eastern and Little Bentwing Bats (*Miniopterus orianae oceanensis* & *M. australis*), both listed as Vulnerable under the TSC Act. The bats were located in a box culvert under the Pacific Highway, roosting in the gaps between the culvert joins. It was estimated that 80-100 bats were present in two different groups. On a subsequent inspection two weeks later, the culvert roost was only found to contain 11 individuals still in two groups. This illustrated the use of multiple roosts in their seasonal range, and how they can change between them frequently. It was surprising to see so many bats in this particular culvert , given that there were water marks reaching almost to the top of the culvert from floods that had receded only a few days earlier.

I often find microbats roosting in drains and culverts ranging from large box culverts to small drainage pipes just large enough to crawl into. Usually only a few bats are found, and they have always been in the small gap in the pipe joins or in a small hole where the pipe or box culvert is lowered into place. The most commonly encountered species in my area are the Little and Eastern Bentwing Bats, and the Southern Myotis (*Myotis macropus*), however other threatened species are also known to use culverts and drains as well as bridges for roosting including the Eastern Cave Bat (*Vespadelus troughtoni*), East-Coast Freetail Bat (*Micronomus norfolkensis*) and Yellow-Bellied Sheathtail Bat (*Saccolaimus flaviventris*).

The fact that threatened bats are frequently found in drains, culverts and under bridges, and this most recent discovery of a large roosting colony of Bentwing bats, highlights the importance of artificial structures for cave roosting bats. Such structures should always be searched if they occur on or near a potential development site, and considered in statutory impact assessments. If this is not possible, an Anabat can be positioned over or fronting the structure for an hour before and after dusk to record calls of any emerging bats. I always carry a small torch, callipers, gloves and camera when doing surveys in case I come across any potential artificial roosting structures. Not to mention a well-worn copy of Churchill!

Upcoming Events in 2011

ECA Events

- **PROPOSED ECA WORKSHOPS 2011 / 2012**

  - **Terrestrial Orchids (2011)**
  - **Rainforest Plant ID**
  - **Bat Identification and Survey Techniques (Feb 2012)**
  - **7-part Test**
  - **Shorebirds (Dec 2012)**

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 Ornithological Conference**

Date: 28th September - 1st October 2011
Venue: James Cook University, Cairns
Cost: $450, students $250
Details: http://www.jcu.edu.au/events/eventscns/JCUPRD1_068377.html
Contact: aoc@jcu.edu.au

- **25th International Congress for Conservation Biology**

Date: 5th-9th December 2011
Venue: Auckland,, New Zealand
Theme: Engaging Society in Conservation
Cost: $US 90 - $US 615 depending on category
Details: www.conbio.org

- **Beyond Bird Watching**

Date: 10th September 2011
Venue: Sydney Olympic Park
Cost: $59 members; $69 non-members
Details: www.birdsaustralia.com.au
Contact: basna@birdsaustralia.com.au

- **Twitchathon 2011**

Date: 29th - 30th October 2011
Details: www.birdsaustralia.com.au
Contact: basna@birdsaustralia.com.au

- **Learning About Raptors**

Date: 3rd December 2011
Venue: Sydney Olympic Park
Cost: $59 members; $69 non-members
Details: www.birdsaustralia.com.au
Contact: basna@birdsaustralia.com.au

- **Raptor Field Day**

Date: 4th December 2011
Venue: Hawkesbury swamps / lowlands areas
Cost: $39 members; $49 non-members
Details: www.birdsaustralia.com.au
Contact: basna@birdsaustralia.com.au

- **The Island Arks Symposium**

Date: 7 - 9th February 2012
Venue: Australian National University, Canberra
Cost: $200-$650 (depending on category)
Details: www.islandarks.com.au/islandarks/Symposium.html

- **Ecological Society of Australia Conference 2011**

Date: 21st - 25th November 2011
Venue: Wrest Point, Hobart, Tasmania
Theme: Ecology in Changing Landscapes
Cost: $245 - $725
Details: www.esa2011.org.au/registration
Contact: conference@conlog.com.au

Recent Literature and New Publications

Recent Journal Articles / Literature

Prober S., Standish R. and Wiehl G. (2011) **After the fence: vegetation and topsoil condition in grazed, fenced and benchmark eucalypt woodlands of fragmented agricultural landscapes.** *Australian Journal of Botany* 59 (4):369-381

Hayward M., Bellchambers K., Herman K., Bentley J. Legge S. (2011). **Spatial behaviour of yellow-footed rock-wallabies, *Petrogale xanthopus*, changes in response to active conservation management.** *Australian Journal of Zoology* **59(1):**1-8

Snoyman S. and Brown Culum (2011) **Microclimate preferences of the grey-headed flying fox (*Pteropus poliocephalus*) in the Sydney region.** *Australian Journal of Zoology* **58(6)**: 376-383

Hughes N. and Banks P. (2011) **Heading for greener pastures? Defining the foraging preferences of urban long-nosed bandicoots.** *Australian Journal of Zoology* **58 (6)**: 341-349

Goldingay R., Taylor B. and Ball T. (2011) **Wooden poles can provide habitat connectivity for a gliding mammal.** *Australian Mammalogy* **33(1)**: 36-43

Dennis T., McIntosh R. and Shaughnessy P (2011) **Effects of human disturbance on productivity of White-bellied Sea-Eagles (*Haliaeetus leucogaster*).** *Emu* **111(2):** 179-185

Bennet A. and Watson D. (2011) **Declining woodland birds – is our science making a difference?** *Emu* **111(1)** i-vi

Gwinn D., Brown P. Tetzlaff J. and Allen M. (2011) **Evaluating mark–recapture sampling designs for fish in an open riverine system.** *Marine and Freshwater Research* **62(7):** 835-840

Suter S., Rees G., Watson G., Suter P. and Silvester E. (2011) **Decomposition of native leaf litter by aquatic hyphomycetes in an alpine stream.** *Marine and Freshwater Research* **62(7):** 841-849

Barnes P., Wilson., Trotter M., Lamb D., Reid N., Koen T. and Bayerlein L. (2011) **The patterns of grazed pasture associated with scattered trees across an Australian temperate landscape: an investigation of pasture quantity and quality.** *The Rangeland Journal* **33(2):** 121-130

Law B., Chidel M. and Penman T. (2011) **Do young eucalypt plantations benefit bats in an intensive agricultural landscape?** *Wildlife Research* **38(3):** 173-187

Paull D., Claridge A. and Barry S. (2011) **There's no accounting for taste: bait attractants and infrared digital cameras for detecting small to medium ground-dwelling mammals.** *Wildlife Research* **38(3):** 188-195

Phillott A., McDonald K. and Skerratt L. (2011) **Inflammation in digits of unmarked and toe-tipped wild hylids.** *Wildlife Research* **38(3):** 204-207

Towerton A., Penman T., Kavanagh R. and Dickman C. (2011) **Detecting pest and prey responses to fox control across the landscape using remote cameras** *Wildlife Research* **38(3)**: 208-220

Clulow, S., Peters, K. L., Blundell, A. T. and Kavanagh, R. P. (2011). **Resource predictability and foraging behaviour facilitate shifts between nomadism and residency in the eastern grass owl.** *Journal of Zoology*, **284:** no. doi: 10.1111/j.1469-7998.2011.00805.x

Abstract

Population-level distribution strategies, such as migration, nomadism or residency, form often as a result of spatio-temporal resource dynamics. While commonly a species will adopt a single strategy across its range, occasionally multiple strategies can be observed. In Australia, the eastern grass owl Tyto longimembris is considered nomadic over most of its range. However, resident populations have been reported along the eastern coastal zone. We collected and analysed regurgitated pellets of a coastal resident population across three seasons in a single year. We compared these data with the availability of prey in the field to investigate whether resource predictability and foraging behaviour facilitate shifts between nomadism and residency. Many of the prey species consumed by the resident population display little spatial or temporal variation compared with prey consumed by nomadic populations. Temporal differences were observed in the diet with the main prey species (house mouse) declining from 88.9% in summer to 66.7% in winter and 40.0% in spring ($P<0.01$). Conversely, bird and rat consumption increased across the three seasons (16.3, 28.6 and 34.0% for birds, $P=0.08$; and 15.0, 33.3 and 75.0% for rats, $P<0.01$; for summer, winter and spring, respectively). Trapping resulted in the capture of house mouse Mus domesticus only, which declined significantly from the first half to the second half of the year ($P<0.01$). These data indicate that the eastern grass owl in the coastal zone is a specialist predator of small rodents, but will broaden its diet to feed opportunistically on a range of other species when the preferred prey are less abundant. We conclude that the capacity to switch between specialized and opportunistic predation, combined with prey that are spatially and temporally more predictable, facilitates shifts between nomadism and residency in the eastern grass owl.

Clulow, S. and Blundell, A. T. (2011). **Deliberate Insectivory by the Fruit Bat *Pteropus poliocephalus* by Aerial Hunting.** *Acta Chiropterologica,* **13(1):**201-205. 2011/doi: 10.3161/150811011X578750

Abstract

The diet of the Old World fruit bats (Pteropodidae) has been well studied with a large inventory of nectar and fruit bearing plant species known to be consumed. It is far less certain, however, whether pteropodid bats intentionally supplement their diet with insects in a similar fashion to many other frugivorous and nectivorous species, including some New World fruit bats of the family Phyllostomidae. Several reports of pteropodid bats consuming insects in captivity exist, and insects have been found in the faeces and digestive tracts of some wild pteropodid bats, although their ingestion was initially thought to be accidental. However, more recent observations of large insects in faeces of wild bats, coupled with two reports (one anecdotal) of observed intentional insectivory in the wild, suggest that intentional insectivory by pteropodid bats may be more common than previously thought. In addition, reports of intentional insectivory to date have been of bats catching insects from a stationary position, and a large question still remains as to the ability of pteropodid bats to catch insects in flight without the use of laryngeal echolocation. Here, we report on an observation of intentional insectivory by a group of grey-headed flying foxes (Pteropus poliocephalus) actively preying on, and consuming, numerous (> 20) cicadas (Psaltoda sp.) by aerial hunting in southeastern Australia. We conclude that deliberate insectivory is likely an evolved and fixed component of the grey-headed flying fox's dietary ecology, and suggest that this may be an adaptation more common among pteropodid bats than previously thought.

Abstracts courtesy of Kristy Peters.

Paull D., Claridge A., and Barry S. (2011) **There's no accounting for taste: bait attractants and infrared digital cameras for detecting small to medium ground-dwelling mammals.** *Wildlife Research* **38(3):** 188-195 http://dx.doi.org/10.1071/WR10203

Abstract

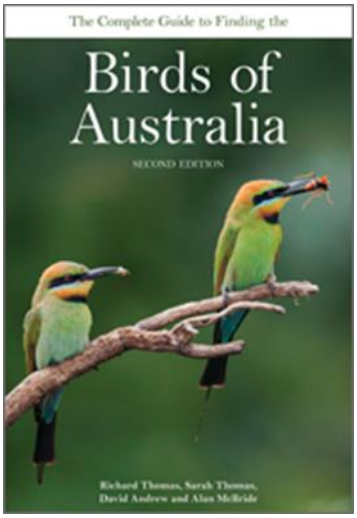
Context: *Reliable information about the occurrence and distribution of threatened forest-dwelling mammals is critical for developing effective conservation plans. To optimise limited resources, advances need to be made to the toolkit available for detecting rare and cryptic fauna.*
Aims: We trialled three bait attractants (peanut butter with oats, live mealworms and black truffle oil) in combination with infrared digital cameras to determine whether detection rates of forest-dwelling native mammals in south-eastern Australia were influenced by: (1) bait type; (2) previous visits by conspecifics; (3) previous visits by Rattus; and (4) duration of bait deployment.
Methods: *Bait attractants were set at 40 camera stations in combination with odourless controls. Over two fortnight-long deployments, 1327 images were captured of 22 mammal and bird species. From these data, detailed statistical analyses were conducted of six mammal genera.*
Key results: *Peanut butter with oats was found to be a significantly better attractant than empty bait holders for Antechinus, Isoodon, Perameles and Rattus, but not for Potorous or Pseudocheirus. Truffle oil and mealworms were also significantly better attractants than the control for Rattus but not the other five genera. When Antechinus, Isoodon, Potorous or Rattus were detected at a bait station there was a significant likelihood they had been detected there during the previous 24 h. This was not the case for Perameles or Pseudocheirus. A prior visit by Rattus to a station had no significant influence on the detection probabilities of Antechinus, Isoodon, Perameles, Potorous and Pseudocheirus during the subsequent 24 h. Detection probabilities for Isoodon and Rattus declined significantly during the fortnight-long deployments but trends for the other genera were not significant.*
Conclusions: *Peanut butter with oats is an excellent general purpose bait for detecting small to medium-sized mammals. However, scope exists for using other baits to target species. For example, truffle oil baits may reduce by-catch of non-target Rattus in labour intensive cage trapping of bandicoots. Regardless of bait type, longer deployments are necessary to detect Perameles, Potorous or Pseudocheirus than Antechinus, Isoodon or Rattus.*
Implications: *Targeted detection of predominantly ground-dwelling mammals may be improved by better understanding the attraction of species to baits and required bait deployment times.*
Additional keywords: bait attractants, bandicoots, infrared digital cameras, potoroos.

Abstract taken from *: CSIRO Publishing Website http://www.publish.csiro.au*

Recent Book Releases

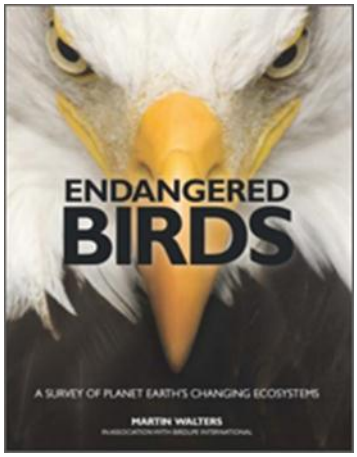
Information Source: CSIRO Publishing Website http://www.publish.csiro.au

Title: Declining Woodland Birds (*Emu - Austral Ornithology: special issue Volume 111 Number 1.*
Author: Ed. David Watson
RRP: $75.00
No. Pages:102
Publisher: CSIRO Publishing
Date: March 2011



Title: The Complete Guide to Finding the Birds of Australia.
Author: R. Thomas, S. Thomas, D. Andrew and A. Mc Bride
RRP: $49.95
No. Pages:480
Publisher: CSIRO Publishing
Date: February 2011

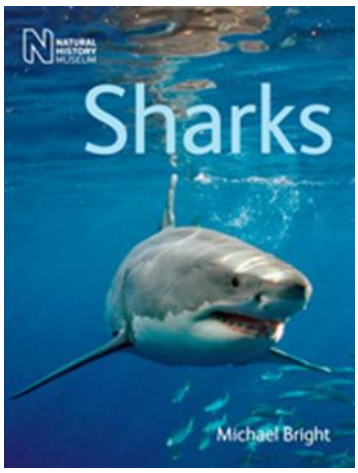
Title: Waterbirds of Australia
Author: D. Hadden
RRP: $24.95
No. Pages:96
Publisher: New Holland
Date: December 2010



Title: Endangered Birds: A Survey of Planet Earth's Changing Ecosystems
Author: M. Walters
RRP: $39.95
No. Pages:256
Publisher: New Holland
Date: June 2011

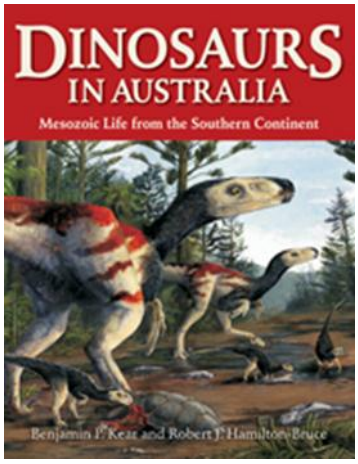
Title: Invasive and Introduced Plants and Animals: Human Perceptions, Attitudes and Approaches to Management
Author: Ed. I Rotherham and R. Lambert
RRP: $122.00
No. Pages:352
Publisher: Earthscan
Date: May 2011

Title: Shark Biology, Ecology and Management: Marine and Freshwater Research. Special Issue Volume 62 Number 6.
Author: Ed. C. Simpfendorfer, M. Heupel, W. White, M. Francis, N. Dulvy
RRP: $75.00
No. **Pages**:262
Publisher: CSIRO Publishing
Date: August 2011



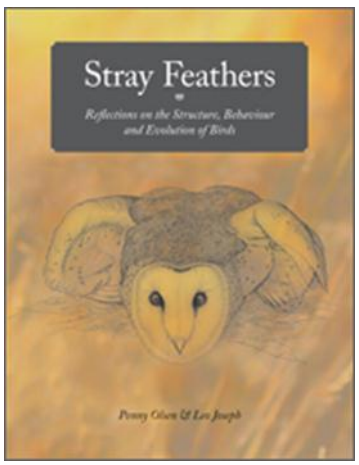
Title: Sharks
Author: M. Bright
RRP: $29.95
No. **Pages**:128
Publisher: The Natural History Museum, London
Date: October 2011

Title: Swainston's Fishes of Australia: The Complete Illustrated Guide
Author: R. Swainston
RRP: $125.00
No. **Pages**:836
Publisher: Viking
Date: November 2011



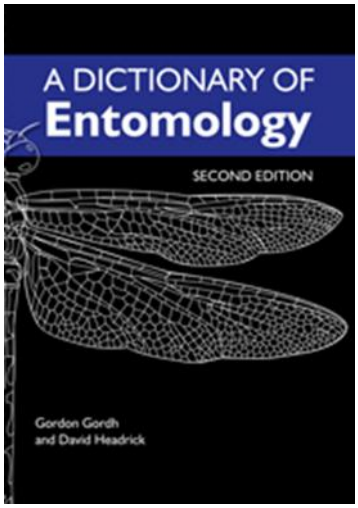
Title: Dinosaurs in Australia: Mesozoic Life from the Southern Continent
Author: B. Kear, R. Hamilton-Bruce
RRP: $79.95
No. **Pages**:200
Publisher: CSIRO Publishing
Date: April 2011

Title: Stray Feathers: Reflections on the Strucutre, Behaviour and Evolution of Birds
Author: P. Olsen and L. Joseph
RRP: $59.95
No. **Pages**:288
Publisher: CSIRO Publishing
Date: June 2011

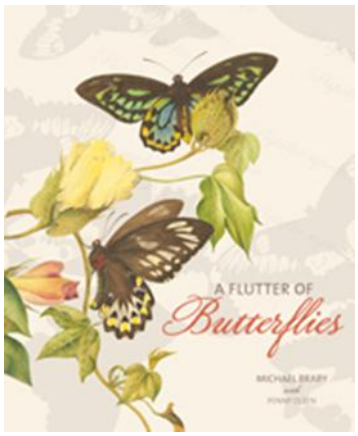


Title: Elachistine Moths of Australia: (Lepidoptera: Gelechioidea: Elachistidae)
Author: L Kaila
RRP: $150.00
No. **Pages**:456
Publisher: CSIRO Publishing
Date: June 2011

Title: A Dictionary of Entomology
Author: G Gordh and D. Headrick
RRP: $280
No. **Pages**:1500
Publisher: CSIRO Publishing
Date: August2011

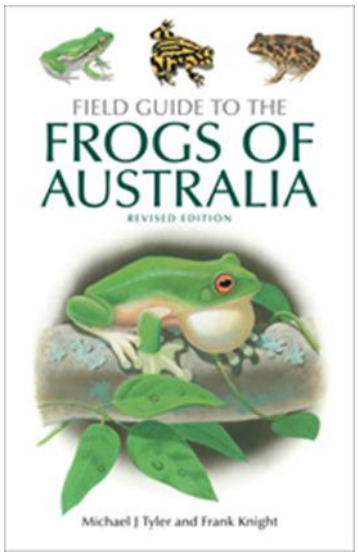


Title: A Flutter of Butterflies
Author: M Braby and P. Olsen
RRP: $34.95
No. **Pages**:112
Publisher: National Library of Australia
Date: September 2011

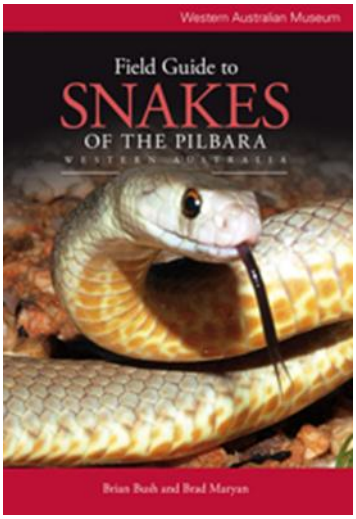


Title: Living with Snakes and Other Reptiles
Author: S. Watharow
RRP: $29.95
No. **Pages**:160
Publisher: CSIRO Publishing
Date: August 2011

Title: Field Guide to the Frogs of Australia
Author: M Tyler and F. Knight
RRP: $49.95
No. **Pages**:200
Publisher: CSIRO Publishing
Date: September 2011



Title: Field Guide to Snakes of the Pilbara, Western Australia
Author: B. Bush and B. Maryan
RRP: $30.00
No. **Pages**:106
Publisher: Western Australian Museum
Date: August 2011

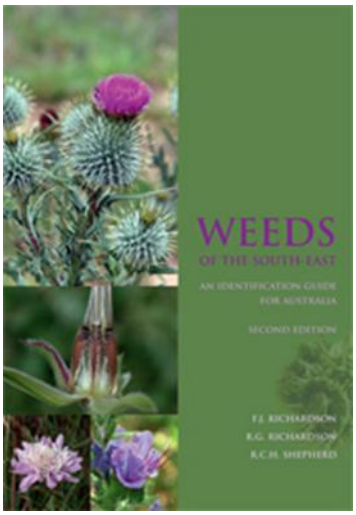


Title: Planting for Wildlife: A Practical Guide to Restoring Native Woodlands
Author: N. Munro and D. Lindenmayer
RRP: $39.90
No. **Pages**:96
Publisher: CSIRO Publishing
Date: August 2011

Title: Burning Issues: Sustainability and Management of Australia's Southern Forests
Author: M. Adama and P. Attiwill
RRP: $49.95
No. **Pages**:160
Publisher: CSIRO Publishing
Date: June 2011

Title: Wetland Weeds: Causes, Cures and Compromises
Author: N. Romanowski
RRP: $49.95
No. **Pages**:184
Publisher: CSIRO Publishing
Date: September 2011

Title: Weeds of South-East: An Identification Guide for Australia.
Author: F. Richardson, R. Richardson and R. Shepherd
RRP: $79.95
No. **Pages**:546
Publisher: RG and FJ Richardson
Date: August 2011



Title: Flora of Australia Volume 39: Alismatales to Arales
Author: Australian Biological Resources Study
RRP: $130.00
No. **Pages**:320
Publisher: ABRS / CSIRO Publishing
Date: July 2011

Title: Plants of Western NEW South Wales
Author: G. Cunningham, W. Mulham, P. Milthorpe, J. Leigh
RRP: $180.00
No. **Pages**:766
Publisher: CSIRO Publishing
Date: July 2011

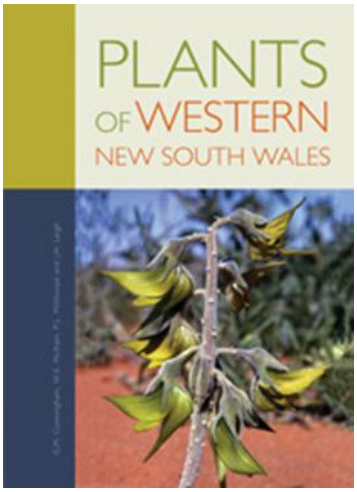


PHOTO COMPETITION

Congratulations! to ***Kathryn Chesnut*** of URS Australia for winning the last photo competition with her photograph featured on the front cover of a juvenile Rosenberg's Goanna *Varanus rosenbergi* trapped in a funnel trap with a drift fence, at Holsworthy, NSW.

Thank you to everyone who entered our photo competition. All entries have been included in the ECA Photo Gallery on the back cover.

Email your favourite flora or fauna photo to admin@ecansw.org.au to enter a competition and have your photo on the cover of the next ECA newsletter. Win your choice of one year free membership or free entry into the next ECA annual conference. The winner will be selected by the ECA council. Runners up will be printed in the photo gallery

PVC tubing, tiles and raking: Is this a reptile workshop or a lesson in DIY? by Steve Sass[1]

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PVC tubing, tiles and raking – it was probably these three items that made a lasting impression on the 26 participants of the ECA Reptile Workshop that I facilitated on the 17th and 18th February 2011. Held in the Royal National Park, south of Sydney, it was the ECA's first weekday workshop and a great campout in the five star accommodation of the Bonnie Vale Camping Ground! On a side note, I got off to a shaky start after being treated to the culinary delights of Bundeena the night before by our host and Bundeena local Derek Engel. Unfortunately, my digestive system did not agree with my dinner, resulting in a quick re-hash of the workshop programme to coincide with my need to remain close to the wonderful facilities of the Royal National Park Environmental Education Centre.

Once we did get started, the workshop covered areas that consultants often grapple with such as the myriad of taxonomic changes that have occurred since the 2004 NSW field guide (lots of changes to elapids, geckos and skinks), and the identification of LBLs (little brown lizards) courtesy of a selection of the Charles Sturt University collection of reptile specimens. A session was also devoted to threatened reptiles and species-specific survey methods including everyone's favourites - Grassland Earless Dragon (*Tympanocryptis pinguicolla*) (the use of PVC tubes and how to construct artificial arthropod burrows), Striped Legless Lizard (*Delma impar*) (roof tiles), and Rosenberg's Goanna (*Varanus rosenbergi*) (funnel traps). The threatened species session sparked a lot of conversation between participants and it was great to be a part of this open discussion and the challenges that consultants face with reptile (and other) fauna on their projects.

Methodology was an interesting session, and participants were treated to a sneak peak of data relating to the success of alternate methods for reptile fauna that will be included in an upcoming manuscript. One method that many consultants don't consider is the use of rubbish: roadside dumps, hand searches in local rubbish tips (the old-fashioned ones, not the transfer station types) and of course, old car bodies (good for snakes) and their relevance in ecological assessment work. And one for the birdos – its not just you guys that use binoculars in active search work!

The advantages and disadvantages of habitat assessment for reptiles was also covered with factors such as disturbance (including time lag), the role of the matrix, reptile dispersal ability, and fecundity coming up in discussion. Importantly, how these factors impact on reptile species diversity and abundance and our work as ecological consultants made for interesting conversation.

Getting into the field was where we all wanted to be, and everyone was treated to the delights of setting up funnel traps which were hooked into pre-existing trap lines of pitfall traps. As everyone soon realised, funnel traps are excellent for the time-poor (which we all grapple with).

Overall, a great two days and despite lacking in a few reptiles with a southerly change bringing in cooler conditions and not a lot of time in the field, six species were detected. I would firstly like to thank Gerry Swan for 'suggesting' that I would make a great choice to run a reptile workshop, the ECA Council for their support in putting it all together and in particular, Derek Engel for his mega-logistical work with OEH in gaining access to Royal NP and the conference facilities and Amy Rowles for everything! From an ECA councillor's perspective, I was unaware of the level of organisation that goes into putting the ECA workshops together, its huge! So thanks to everyone involved. I think the participants would agree, a big thanks to Derek's amazing wife Leslie for ensuring that the team was very well fed and watered over the two days.

So, PVC tubing, tiles and raking – I would say reptile surveys AND a lesson in DIY!

Checking Funnel Traps

An inner of an artificial arthropod burrow for Grassland Earless Dragon surveys and raking survey demonstration.

In the lab: Little brown lizard identification session.

Images courtesy of Adam Greenhalgh.

FOR SALE / WANTED

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.

Wanted:

- 2 boxes of **Elliot traps type A**
- 2 boxes of **Elliot traps type B**

Contact David Havilah at GeoLINK on 02 66877666 or dhavilah@geolink.net.au

ECA ANNUAL CONFERENCE and AGM July 2011: SUMMARY by Amy Rowles

This year's annual conference was held at Gosford in the Central Coast Leagues Club, with a grand total of 81 attendees. We found the Parkview room after following a maze of corridors, to find Stephen Ambrose hard at work setting up the visual aids, and Paul Burcher and Liz Norris setting up the book stall.

Mark Couston (ECA President), opened the conference, welcoming all delegates and speakers.

The first presenter, Arthur White, consultant and ECA member, began the conference on a positive note (well, as positive as one can be) about Cane Toads. After an overview of this infamous invasive species, including the distribution spread across the country, Arthur explained how a breeding population of Cane Toads in Taren Point (Sutherland Shire Council) has been controlled and will hopefully soon be fully eradicated. A combination of methods were used to control the Taren Point population, including toad traps, toad sniffer dogs and radio-tracking to locate breeding and shelter sites. Arthur also informed the attendees that not only do Cane Toads cause a direct impact by predation and the poisoning of predators, but they may also carry exotic diseases and parasites that are lethal to Australian frogs. Current research is investigating the possibility of using a lung parasite to control the Toads. One female Cane Toad is capable of laying 20,000 eggs per season, hence an effective control is duly needed. Arthur also explained that the toxin remains active in the skin of a Cane Toad for 7 days after its death and therefore it is important that the bodies of any euthanased toads are disposed of and not left in the field.

Dustin Welbourne from the University of NSW @ Australian Defence Force Academy (ADFA) , spoke about the potential for introduced reptile species to become a problem in Australia. Although not a highly significant problem in Australia to date, 185 reptile species world-wide have established outside their natural range (e.g. the Burmese Python in the US and the Brown Tree Snake in Guam). Impacts from invasive reptiles include competition and predation as well as parasite and disease transfer. Dustin highlighted five species as examples as threats in Australia including the Asian House Gecko, Red-eared Slider Turtle, a Blind Snake, the Warning Gecko and Wolf Snake. The Red-eared Slider was introduced to the country as a pet as well as a food source, however the other species were accidental introductions. Dustin pointed out that although the Asian House Gecko may pose a serious threat, it is not currently listed as a 'pest species' or a 'species of concern'. Dustin has been using predictive modelling to aid in determining whether a species is a potential threat in response to habitat availability and climatic conditions. Some examples of establishment suitability models included the Red-eared Slider, Corn Snake and Ornate Turtle. These models don't include other factors such as predation. When a new reptile species is being reviewed for the pet market, Dustin would like to see more consideration into how well it may establish and potentially become an invasive species in Australia if accidently released.

Martin Denny closed the morning session with a comment for thought – *Are invasive species going to replace the niche of displaced native species and should we just accept this change and not worry about it*? This caused some considerable discussion over tea and biscuits.

Chris Nadolny from the Office of Environment and Heritage, NSW, informed the audience about the threats to woodlands posed by Coolatai Grass (*Hyparrhenia hirta)*. This grass, originating from South Africa and the Mediterranean region, was introduced as pasture and for erosion control. It has since infested large areas in NSW and Qld, with a suitable distribution likely to increase with climate change. Coolatai Grass is a coloniser after disturbance and grows in a wide range of soils, dominating the ground layer and has prolific seed production. Chris highlighted that there is a general theory that if native grassy woodland is protected from disturbance and nutrient enrichment, it will be able to resist invasive grasses. However Coolatai Grass appears not to agree with this theory and is capable of such an invasion. Coolatai Grass does however have a weakness – its soil seed-bank is short lived. Mowing and herbicide treatment has been shown to reduce the seed bank by 90% over two years and small infestations have been eradicated. Other control mechanisms include chemicals (roundup and flupropanate), hand removal to prevent seeding, and good hygiene (cleaning vehicles, avoid slashing whilst seeding etc). Chris recommends that Coolatai Grass needs to be declared a Noxious Weed and listed as a Weed of National Significance (WoNS) before it becomes too widespread.

Ifeanna Tooth, from Macquarie University, presented the results of her research on the '*responses of native and invasive exotic grasses to elevated carbon dioxide and fire*'. Ifeanna began with an overview of how climate change and the invasion of exotic flora has and will continue to result in changes of fire regimes and CO_2 levels. Ifeanna conducted glasshouse experiments on a set of native and introduced grasses from two ecosystems (the Cumberland Plain Woodland and one from Northern Australia). Ifeanna concluded that exotics are more competitive than natives regardless of CO_2 concentration and that native species abundance may be reduced by frequent fires under elevated CO_2 conditions.

Paul Meek from NSW Industry and Investment shared his experiences with the use of remote cameras, with particular focus on pest management. Paul summarised the types of studies that cameras may be of use and the types of cameras available. Paul highlighted the fact that although cameras can be a very useful field survey technique, it is important that the users understand the limitations of the various technologies. Some of these limitations include: a high initial outlay expense; difficult ID, especially with smaller animals; the number of images are constrained by the size of the SD card; sensor detection zones; position to the sun (direct sun on the heat sensor may set off the camera); and potential animal responses to the camera. Paul concluded that: further research is required; limitations need to be understood; different cameras are required for different taxa; and the user needs to be careful of interpretation. Paul roused some considerable interest from the audience with an announcement of a national symposium on remote cameras he is currently in the process of organising. Paul also described a case study of pest control on Muttonbird Island and how cameras positioned at bait stations were used in the management program to control Black Rats.

Mark Couston (ECA President) addressing members at the AGM

The AGM was then held prior to lunch, with accreditation of Ecological Consultants being the main focus of the meeting. This issue is currently of great interest given the Bill currently being considered in the NSW parliament. The food was very good, however yet again over-catered. I am tempted to supply takeaway containers next year for delegates to take home a doggy bag.

Chris Anderson from Industry and Investment NSW, enlightened the audience about the impacts of the parasitic fungus - Myrtle Rust, which was a feature in the ECA information emails in the last 12 months. In general, most rusts are host specific, however Myrtle Rust is known to affect a wide variety of plants, especially Myrtaceace. In NSW the fungus occurs along the east coast, originally spread through the nursery industry and later via bush regeneration activities. Unfortunately the full host range is not yet known and may increase if mutation occurs. Myrtle Rust has the ability to change community structure in native vegetation by damaging new growth in key species, diminishing recruitment and opening structural gaps, allowing invasion by a weed species or shifts in floristics. These impacts also reduce the food source to fauna eg via loss of key fruit-producing species. Chris pointed out that there are 63 species of threatened Myrtaceae in the optimal climatic zone for the Myrtle Rust. Chris asked the audience to report new hosts and outbreaks to 1800 084 881 or biosecurity@industry.gov.au.

Geoff Sainty, a consultant, botanist and well known author, gave a summary of some of the major aquatic weeds affecting the waterways. He covered well known weeds such as Salvinia, which can blanket a water-body and, cause a major impact to other organisms; and detailed less familiar threats such as Hymenacne, Parra Grass and Torpedo grass as examples of relatively newer aquatic weeds that have become invasive. A question was asked as to whether there are bio control agents for the aquatic weeds – Geoff replied that there are some options, however none known for the invasive grasses. Geoff was also asked how the recent flooding in this *La Nina* season may impact aquatic weeds, and he responded with the simple advice that all flooding events are expected to cause an increase in aquatic weeds. Toby Lambert asked whether herbicides can be used to effectively control this group of invaders, and Geoff suggested that for small areas, hand removal and hand treatment of herbicide may be feasible, however it is not possible for large infestations.

Lorna Adlhem from Hunter-Central Rivers CMA, discussed the ecological impacts of the African Olive and the regional control works taking place in the Hunter. The African Olive originated in Africa and Asia, and has naturalised in several countries including Australia. The species was introduced for horticulture and infestations are common in many LGAs. The African Olive was listed as a Key Threatening Process in 2010 and is also listed as a Noxious and environmental weed. This species is known to produce up to 25 000 seeds per tree and can tolerate a wide range of temperatures (-5 to 40^0C) and elevation from sea level to 1500m. Seeds are dispersed by animals such as birds, foxes, possums and bats, as well as along waterways. Groups of seedlings sprout around parent trees, creating a monoculture, particularly where other disturbances are taking place. Lorna noted that browsing by cattle prevented African Olive from maturing and fruiting, and that young plants are killed by low intensity fire.

Mel Hall from the NSW OEH, began the last session with a presentation on the management of foxes and rabbits in Northern Sydney National Parks. Mel began with an overview of the two species, highlighting that due to their widespread distribution and successful establishment in the country, management is now Asset-based Protection, rather than eradication. As we all know the '*Predation by the Red Fox*' and '*Competition and grazing by the feral European Rabbit*' are both listed Key Threatening Processes. Of particular concern for management in the Northern Sydney National Parks are the Endangered Southern Brown Bandicoot in Garigal and Ku-ring-gai Chase National Parks, and the Long-nosed Bandicoot and Little Penguin Endangered Populations at North Head. The Vulnerable Bush Stone-curlew and Heath Monitor are also impacted by foxes, not to mention countless common species that are preyed upon. Mel also pointed out that foxes are classified as vermin with no requirement for control. Rabbits are however declared under the *Rural Lands Protection Act 1998*, but responsibility for control is still left up to

landowners. Furthermore companion animals (pet rabbits) have no requirement for microchip or sterilization. Mel emphasised that a wide range of techniques and monitoring are required for long-term pest control and management. Fox control methods used by Mel and her team include the use of 1080 and PAPP. The current 1080 regime is continuous with 6 weekly applications in National Parks and periodic with 2 or 4 applications p.a. on council reserves. PAPP is a new method, where an antidote is available for domestic pets and fatality is quicker making it more humane. Pindone in carrots is being used for rabbits, rather than the oat bait. An annual release of myxomatosis, trapping and sniffer dogs are other methods being employed to control rabbits. Reptiles are resistant to 1080, however Lace Monitors stealing baits can cause an issue in a management program. Burying the baits reduces the risk of quolls taking the baits. Only burying one bait per average bandicoot home range reduces the risk of poisoning this taxa, as bandicoots would need to eat more than 3 baits to cause a fatality. Another aspect of Mel's work is to monitor native animal response to feral control. Techniques include trapping, cameras and sand plots. The same results were acquired from the use of cages and cameras during intensive surveys for the Southern Brown Bandicoot, so they have decided to just continue with cages, as other data can be collected with this method. Shorebirds have significantly increased as a result of baiting programs. Brush-tail Possums and wallabies have also increased. There has been no significant increase in bandicoots, however sample sizes are very small.

John Hunter, consultant and ECA member, completed the day on a positive note, discussing his success in reducing the impact of Bell Miner Associated Dieback on the NSW north coast. Eucalypt dieback is characterised by an over-abundance of psyllid insects and Bell Miners. This die-back is occurring from SE Qld to Melbourne and affects a number of eucalypt species, including Sydney Blue Gum, Flooded Gum, Ironbark and Grey Gum. The die-back tends to occur where there: has been some disturbance, such as logging or grazing; is an open or absent mid-storey; and a dense monoculture understorey (e.g. lantana, Breynia), under which Bell Miners nest. The die-back tends to start in the moist gully and then move upslope into the drier habitats. John explained that Bell Miners mainly feed on lerps (can be made by a psyllid in 3 hrs) and only occasionally psyllids. They are very aggressive birds, which push out the other birds such as pardalotes, that mainly forage on the psyllids. John has been a member of the BMAD working group, consisting of a variety of people working towards raising profile, strategies of how to deal with the issue, a symposium, having the process listed as a KTP and sourcing funding. The group has been using a variety of techniques including burning and poisoning with a splatter gun to remove lantana. This has successfully moved the Bell Miners on and allowed other birds to move back in, and regrowth to occur. John pointed out that a patch of lantana 20m x 20m is large enough to keep a small population of Bell Birds going. In answer to the question 'What about areas where Bell Birds should be?', John responded that for some reason in the 1990's populations increased and before that this, was not a common bird species. Perhaps at this time an ecological tipping point was reached, where habitat modification resulted in ideal conditions for this species to become dominant. John also stated that use of the splatter gun was very effective in controlling lantana and not labour intensive, and he believed no-one had an excuse not control this weed.

A very informative conference, indicated by the lack of snoring and nodding heads, was summed up by Stephen Ambrose who then closed the conference.

A group of delegates then proceeded to the conference dinner held at Gosford Sailing Club. Yet again where an over-abundance of tasty food was served.

I would like to thank all those who assisted in the organisation of the conference, especially Paul Burcher, Stephen Ambrose, Ray Williams and Liz Norris. Most importantly, I would like to thank all of our speakers who donated their time to provide us with a wealth of knowledge.

February 2011 ECA Membership Report

Amy Rowles
ECA administrative assistant

In total we have 133 members. We have had fifteen new members over the last six months. The new members are introduced below:

Name: John Hunter
Membership Status: Associate
Qualifications: M. Lit (Plant Ecology)
Company: Botany and Ecology
Position: Principal
Location: Lowanna

Name: Katie Oxenham
Membership Status: Non-practising
Qualifications: B. Sc., Masters Wildlife Management
Employer: City of Sydney
Position: Manager Urban Ecology
Location: Sydney

Name: Mark Harris
Membership Status: Practising (regional)
Qualifications: B. App. Sci (Env. Res. Mgt)
Company: Southeast Engineering and Environmental
Position: Partner / Ecologist
Location: Moruya

Name: Carolyn Hall
Membership Status: Practising
Qualifications: B. Sc., M Sus Dev.
Employer: Molino Stewart Pty Ltd
Position: Senior Ecologist
Location: Parramatta

Name: Alexandra Cave
Membership Status: Associate
Qualifications: B. Sc. BioCon, Ms WildCon.
Employer: URS Australia Pty Ltd
Position: Graduate Fauna Ecologist
Location: Artarmon

Name: William Steggall
Membership Status: Practising (regional)
Qualifications: B. App. Sc (Environmental Science and Management)
Employer: Darkheart Eco-Consultancy
Position: Ecologist
Location: Laurieton

Name: Kristy Peters
Membership Status: Practising
Qualifications: B. of Park Management (Hons Ecology)
Employer: Ecobiological
Position: Senior Ecologist / Director
Location: Warners Bay

Name: David Havilah
Membership Status: Practising (regional)
Qualifications: B. Sc (Biology)
Employer: GeoLINK
Position: Ecologist
Location: Lennox Head

Name: Tony Coyle
Membership Status: Practising (regional)
Qualifications: B. App. Sc, Cert II Nat. Area Restoration
Employer: GeoLINK
Position: Ecologist
Location: Lennox Head

Name: Alexandra Callen
Membership Status: Associate
Qualifications: B. Env. Sc (Hons)
Employer: Sinclair Knight Merz
Position: Senior Ecologist
Location: Dangar

Name: Liz Brown
Membership Status: Practising (regional)
Qualifications: B. Sc (Biodiversity and Conservation); Cert II Bushland Regeneration, Cert II Landcare and Restoration.
Employer: EcoLogical Australia
Position: Flora Ecologist
Location: Coffs Harbour Jetty

Name: Andrew C Smith
Membership Status: Associate
Qualifications: Ph. D and B. Sc (Environmental Biology)
Employer: RPS - Newcastle
Position: Field Ecologist
Location: Broadmeadow

Name: Anna Felton
Membership Status: Student
Qualifications: B. Zoology (currently undertaking)and Cert. Animal Studies
Employer: Taronga Conservation Society and self-employed
Position: Zookeeper / Project Manager
Location: Clovelly

Name: Samantha Craigie
Membership Status: Student
Qualifications: B. Sc (currently undertaking), Dip CALM, Biobanking Assesor
Employer: Greening Australia
Position: NSW Seed Manager / Project Manager
Location: Oxley Park

Name: Jane Rodd
Membership Status: Practising
Qualifications: B. Sc. (Ecology)
Employer: Hyder Consulting
Position: Senior Ecologist
Location: North Sydney

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 www.ecansw.org.au for details.

Bing Maps - another alternative to Google Earth

Jason Berrigan provided forum readers with a link http://www.bing.com/maps/ , which he found to be like Googlemaps and Google Earth. He found that it has good coverage and resolution. Deryk Engel replied with a link to Nearmap http://www.nearmap.com/ , another map alternative.

Spot Assessment Technique finally published!

Jason Berrigan stated that 'After its initial release for comment in 1995 and open to much interpretation/ application/abuse/criticism since, the Spot Assessment Technique has finally been published. You can find it in Australian Zoologist (2011) 35(3): 774-777.'

Carbon Tax Package

Stephen Ambrose has made a comment about the substantial amount of money that is being dedicated to the Biodiversity Fund as part of the Carbon Tax Package. Stephen wanders if this may lead to government funding for green corridors and the like. (see the forum on the ECA website www.ecansw.org.au for more details)

Alternative to the Wildlife Atlas

Kristan Dowdle provided readers with a link that may be of use http://biocache.ala.org.au/explore/your-area

DECCW -v- Forestry Commission of NSW

After reviewing the details of the penalty imposed on the Forestry Commission for burning the habitat of the Smokey Mouse - $5,600 + DECCW's legal costs, Stephen Ambrose posed the following questions:

1. Is $5,600 enough to adequately complete the survey work and reporting required by the judgment?
2. In the light of Paul Meek's presentation at this years ECA conference, is the use of 2 or 3 cameras enough survey effort?

Deryk Engel commented that since the Smoky Mouse is listed as Endangered under the EPBC Act, he wanders what the federal governments view would be.

Using Infrared cameras to stag watch

Jason Berrigan was reviewing some IR cameras from the US, for use in monitoring nest boxes and hollows and asks if anyone has any experience with these cameras and if so what limitations were experienced. He is considering the use of black flash cameras http://www.chasingame.com/index.php?id=132#newsensor. Michael Murray replied that in his opinion cameras are more suitable for the larger terrestrial fauna. Placing the cameras more than 2m above the ground (i.e. on a tree trunk), subjects the camera to too much movement, causing a lot of false shots.

Deryk Engel agrees that you get a lot of false shots from cameras, however has also successfully identified a number of species, including some smaller species. He feels that many species have identifiable features that would help with ID's and the main problem would occur when you have taxonomically alike species that overlap in distribution (e.g. Antechinus). Deryk has trialled Scout Guard and Recognyx cameras, preferring the latter. Deryk suggests setting up a platform that extends from the nest box and adjusting the sensitivity to reduce number of false shots due to leaves moving.

An issue with the Seven Part Test

Deryk Engel states that he was requested by a client to complete a seven-part test for microbats on a site where he felt that this was not necessary as there would be no significant impact (more information on the forum). He asked for others thoughts. Stephen Ambrose replied, that in the same situation he would write a seven-part test as: there was habitat in the form of hollow-bearing trees to be cleared; the client requested one; and the council officer reviewing the report would probably ask for one (easier to do it before submitting report). Stephen added that he does however feel that most seven-part tests are pointless. Deryk still felt that he did not need to write a full test to satisfy requirement and that a paragraph within the report should be enough.

New LGA CKPoM Approved - Kempsey Shire

Jason Berrigan informed readers that Kempsey Shire Council adopted their Comprehensive Koala Plan of Management in April this year, which is based on the SAT method. Jason highly recommends reading the background document http://www.kempsey.nsw.gov.au/environment/biodiversity/koalapom.html.

New Tools for the Ecologist's Tool Box

Jason Berrigan
Darkheart Eco-consultancy

Around the end of June, I like to have a bit of a spending spree to grab some last minute tax write-offs. This year, I purchased the following new additions for my tool box:

1. **Biodegradable Flagging Tape**.

Like surveyors, we seem to use kilometres of flagging tape each year to mark sites, trap lines, threatened plants, hollow-bearing trees, Koala food trees, Spot Assessment Technique sample plots – the list goes on.

The problem with traditional flagging tape is that it's plastic and while it gradually loses its durability after prolonged exposure to solar radiation (and tree sap), it doesn't break into something harmless. I've seen tape last >5yrs on trees flagged as part of long term surveys, and longer laying on the road verge and the corners of my shed.

Flagging tape left over from a survey can be an eye-sore in the least, but is also potentially hazardous to fauna (eg as a choking hazard or entanglement threat). This may be of low concern when the site is to be concreted over, but for work in a conservation area or vegetation that will remain post-development, it can be a cause of complaint. Collected and appropriately deposited in the red bin, it also adds to the tonnes of plastic that goes to landfill every day.

Photo 1: Biodegradable flagging tape compared with plastic tape (plastic tape on top)

Most ecological consultants will have various systematic procedures for removing flagging tape post-survey (eg removing flags when a trap is retrieved), but of course this relies on diligence and even well-intentioned souls may accidently leave some tape out eg via being snagged and pulled out of pockets.

Fortunately, there's a convenient solution, and that's biodegradable flagging tape. I recently stumbled across this tape googling for a better price on regular tape. This tape is made from cellulose by various manufacturers (eg ProEarth), and even comes in fluoro and printed versions to cover all potential uses.

I bought a batch of the regular version of this tape which was all that was available at the time (shown in the following photo) to trial before a bulk order. The tape is very lightweight, and when unrolled, seems a little thin and is even a little transparent. Its tissue-like texture is deceiving in regards to its tensile strength, with a strong tug readily demonstrating it is not easily broken, but it is easily ripped into the required length for the task at hand. It's reported to last 3 months in the field, and to date I've tested it by soaking it in water for a week, with no evident loss in tensile strength or colour.

The only downsides are that it's currently a little more expensive than plastic flagging tape (depending on where you buy either), the rolls are a bit wider (not pocket friendly), and they come in plastic packaging!

I will be using this tape predominantly for short term work, with a spare roll for marking of long term sites. You can find it at Prospectors and Forestry Tools, and Ebay.

2. High Quality Snake Tools: Raptor Snake Handling Equipment.

As discussed on the ECA forum, and at various sites on the web, there is considerable debate on the use of tongs/grippers to catch snakes. The main concern being that injury (especially internal) can be inflicted on a snake crushed by the usually metal (sometimes rubber lined) mouth of the tool. Reports of snakes being accidentally skinned or badly crushed by poor handling have been very damning on the use of these tools.

I personally prefer using a hook and bag, but recently discovered both a new pinning tool and a very snake-welfare friendly style of grippers, as well as a high quality hook and catch bag. I've since bought at least one of everything.

The supplier is Raptor Snake Handling Equipment (http://www.snakehandlingequipment.com/), which is owned by herpetologist Ian Norton in Tasmania. Ian has designed and manufactured all his snake handling equipment with animal welfare as a priority. Ian claims his tools are used by the RSPCA and Tasmania Parks and Wildlife.

I bought the hooks and bag due to their design. The hook is fixed on a modified ski-pole (nice and long with an excellent grip), and one design (for $140) allows you to switch between the pin tool and the hook on the same pole. The pin tool (see photo below) is simply a piece of nylon belt stretched between the spring-loaded Y frame. You press it down on the snake's head or upper body firmly to constrict it, and either pick it up via the method you're comfortable with (eg tail or hook) and bag it; or use the gripper to secure the snake before an assistant holds the bag open to allow its safe deposit. What I really like about the pin tool is not only does the belt have sufficient stretch to reduce any risk of damaging pressure on the snake, but the ski-pole has a shock-absorbing spring built in its length to further reduce the stress on the snake. I've found this very useful on small snakes <2m long.

Photo 2: Snake gripper, pin tool and hook

I used to have my snake bags made by a relative who could sew and use an aluminium scoop net for the frame, but after watching the various demo videos on the Raptor site, I decided to buy two of Ian's design. The main reason was simply OH&S – these bags are very well designed to minimise the risk of user-error, and being of commercial manufacture in origin, would surely benefit any Workcover review.

The handle is about 56cm long with a non-slip grip, and a diamond-shaped bag opening about 40cm in diameter. At first I thought was a strange shape, but the diamond has the advantage of allowing the bag to be placed flush with the ground to allow a snake to be led to the bag or simply seek refuge in the bag. The bag is about 120cm deep and constructed of a relatively thin but very dense dark green material. It has the standard mid-bag ties facing the handle and attached to the seam, making it easy to tie off after you've swung the bag to close the hole. A plastic cable clamp stored on the handle can also be used to further seal the bag for transport of your catch, and help avoid the challenging car game of "why is this bag empty?"

The feature which sold me on this bag design was the two long tags sewn into the external bottom corners of the bag. As shown in the demo video, these make release simple and safe (but still make sure you don't release the snake on a batter upslope of you). For $70, this bag is well worth its value.

I've bought two versions of Ian's grippers: the 700mm handle length ($175) version (you can get a 500mm version if you're really confident about your reflexes) and the 2000mm ($250) version (for the big chickens). The latter is recommended to be used to extract snakes from trees (and presumably orchard nets) and most usefully deep holes and trenches (such as gas pipelines running for hundreds of kilometres, and pitfalls). I recommend watching the demo videos on the website to learn the technique, but basically you should slide the open jaws along the ground and under the snake as close to the head as you can (obviously not the tail), and then gently but firmly close them. You then minimise the time between gripping the snake and depositing it into the bag. Ian's assistant makes it look very easy on the demo video.

I bought the 2000mm version first, considering it may have some rare but specific usage retrieving snakes from dangerous situations (eg holes kindly left by the geotech) and also from an OH&S perspective (ie use by staff with less experience in snake handling), or retrieving an aggressive/injured snake. This tool won't win any beauty awards for its rugged looks, but it's very functional and robust. I also find the 2m version useful when hunting for the snake that's "in that long grass… somewhere…I think…"

The unique part of Ian's design is that upper jaw uses a leather strap to secure the snake. While there is a metal upper jaw, this does not come into direct contact with the snake (see photo 3). The lower jaw has a thin rubber coating but is not intended to absorb too much pressure, just provide enough friction to prevent slipping. Considering the aforementioned welfare concerns of inexperienced users crushing snakes, I tested this unit by placing my finger in the jaws and jamming it as tight as I could. While it was firm and uncomfortable to some degree, it was not painful and certainly not crushing (I recommend doing this exercise to provide a mental reference point when handling a snake). The leather strap has been strained perfectly to ensure a snug fit, but gives enough to avoid a crushing pressure. I have used both tools on snakes from 40cm to 2m, and found it to induce no significant stress. The grippers are also hardy – I've left them in the rain for a week and noted no rusting, but it probably wouldn't do the leather too much good so I don't recommend that.

Photo 3: Demonstration of the animal welfare credentials of the gripper

Overall, while these aren't the cheapest herp tools out there, I think they are some of the best and well worth the price. I'm now a bit torn between which tool to carry now when herping!

3. Portable Amplifier

For call playback, I prefer to use a portable amplifier (PA) rather than a modified megaphone. This is for three reasons.

Firstly, PAs have a much more natural sound. To my ears, call playback through a megaphone sounds tinny and for some calls (eg Masked Owl), unnatural. Secondly, portable PAs can range in power from 5W (the type you use for small public demonstrations with the unit strapped to your belt) to >50W (for serious buskers and public events), but 15-40W PAs can produce a clear, loud sound that can send your call >1km away. This leads to the third reason: coverage. I can barely hear a modified megaphone more than 200m away from its source, but with a PA, I have had Powerful Owls and Koalas respond to call playback well over 1km away due to the fact I could play a strong, clear sound with very little deterioration.

However, portable PAs have one major disadvantage: weight. Generally anything with a power rating >15-20W is heavy and bulky. This is due to the battery required – usually a small to medium sized sealed motorbike battery. This has previously made them useless for sites where 4WD access is limited or non-existent, or for trampling around a big wetland.

Over the last 15 years, I've owned and used about 4 PAs, each costing around $300-$500 each. These have gradually evolved from back-testing briefcase-sized bricks, to my latest acquisition: the Behringer Europort EPA40.

The EPA40 is about the size of a megaphone, and reminds me a bit of those big megaphones with the strap over your shoulder with a microphone. This PA can be carried and used in a similar way, making it ideal for field days. It is also very light (about 3kg).

The build quality of the PA's case gives the first impression of low quality manufacture despite its German origins. Its plastic body threatens to shatter into a million pieces if carelessly dropped, and the knobs and buttons feel a bit loose in their positioning. However, this is all literally blown away by the clear and loud sound which emits out of the 5" front mounted speaker. I used to have a 15W Pignose PA for use in wetlands or urban remnants, and this unit is similar in weight and functionality, but blitzes it and the 50W Chiayo PA I also have in terms of sound quality and volume. I couldn't believe this unit had 40W when I reviewed its specifications, but that's what it is. I've turned this unit up to maximum to test for distortion, and apart from the ringing in my ears, it sounded great.

The built in battery is reported to last for 8 hours (assumedly continuous use). I've not used it for more than intermittent play over 2hrs per night, with daily charge ups. It comes with a special power cord you plug in next to the power and volume, and is fully charged from flat in 4hrs. Of course it has microphone (even comes with a good microphone) and auxiliary source inputs, a low battery indicator, and works just fine with an iphone or ipod. It can even be mounted on a microphone stand for use at public meetings, workshops and field days.

This really is a very versatile unit, and the final nice surprise is the price. You can find this unit on Ebay for under $140 including freight. I am buying a 2nd one to put away for the time when the Chiayo suffers a premature death.

Photo 4 and 5: Manufacturer's photos of the Behringer EPA40 portable amplifier. (http://www.behringer.com/EN/Products/EPA40.aspx)

4. Tree Height Measuring Tool: Laser Technology TruPulse 200.

Some years ago, Michael Murray introduced me to laser rangefinders. For those still ignorant of these wonderful devices, they are generally shaped like a pair of binoculars or a monocular, and use a laser a bit like a fisherman uses ultrasound to find fish and reefs. What does a rangefinder do? It measures the distance between two objects: instantly. No tapes, no pacing out, no guestimates.

Depending on your finances and hence the model you buy, these units can measure from 1m-2km, but most users (eg golfers) have units that cost a few hundred dollars, and measure about 500-1000m, with accuracy around 1 metre+/- or less (depending on the model).

Rangefinders are ideal for measuring out a large belt transect, property/Lot boundaries, SAT grids, distance between that hollow-bearing tree you want to retain and the nearest house (ie target), how far it will be to walk back to the car to get the plan you forgot, etc. With a bit of Pythagoras, you can use the basic units to work out the approximate height of a tree (don't forget to add your height), or you can buy one with an inclinometer and do it with a press of a button (well, a few presses).

Rangefinders with an inclinometer are primarily a forestry tool used to calculate harvest volumes or slopes. They are usually cost prohibitive (thousands of dollars) for the units with all the whistles and bells (things ecologist's would never use anyway). In my research, I found two makes within my price range: a Nikon Forestry 550 (around $600) and the Laser Technology TruPulse 200 (around $1200 for this bottom of the range model). Reviews of the cheaper Nikon by foresters complained of limitations with shooting through foliage and only using two points to calculate height, hence I poured more time into looking in the TruPulse which uses the more accurate 3 point shot system to measure height. I got very lucky and scored mine new off Ebay for $500. You can get it from the US Ebay for around $700.

In physical terms, this unit is small – it easily fits into one hand like a compact set of binoculars. My current rangefinder is like a pair of binoculars and cumbersome to carry: the TruPulse slips into my jean's pocket. It only weights 220g, with a measuring range of 0.3m to 2km (depends on target quality ie ability to reflect the laser), and runs very efficiently on 2 AA or 3 CRV batteries. It's also impact, water and dust resistant. This model can also be hooked up to a PC for downloading of measurements, but more expensive models use Bluetooth or wireless.

I have to confess that I've not had time to work out the menu to determine how to use all the features of this unit, but it seems straightforward. The heads up display is simple and uncluttered, and I'm sure once I bother to read the manual and practice in the backyard, I'll understand what all those numbers mean. Saying that, tree height (or hollow height which is what I mostly use it for) measurement consists of shooting the tree horizontally, the top of the tree (ie the thinnest limb you can get a shot on), and a shot at the base: the height is then automatically calculated for you (and corrected for your body height).

I also find the 7x viewer very useful as a pseudo pair of binoculars to identify that incidental raptor flyover, and who that person is running across the paddock toward me and yelling "What are you doing?!" It's definitely a boon when you're trying to shoot through a hole in foliage and get a clear shot on a skinny branch in the upper crown. This leads to the main limitations of laser rangefinders: you need both a steady hand and a suitable reflective surface to get a measurement. I always take a few consecutive shots (you get a measurement each time you press the button, but resist the urge to say "bang" each time – apparently its only funny the first time) to ensure I'm getting a consistent reading.

This basic unit that I have has the following features:

- Horizontal distance, vertical distance, slope distance and inclination measurements.
- 3-point flexible height routine with auto sequencing.
- Advanced target modes: Closest, Farthest, Continuous and Filter.

TruTargeting: Automatically provides the best possible accuracy and acquisition distance to a given target.

The more expensive units in this make also measure azimuth and missing line (whatever that means, but apparently it's worth another $1000).

Overall, this (or at least a basic laser rangefinder) is definitely another 'must-have' for an ecologist's tool box.

Photo 6: The TruPulse 200

Biobanking Update

Elizabeth Ashby
Director of Keystone Ecological
ECA Council member

Information sessions are held annually by the Office of Environment and Heritage (aka DECCW aka DECC aka DEC aka NSW NPWS) to keep interested accredited Biobanking Assessors abreast of developments and provide a forum for exchange of information. It has also proven to be particularly useful as a way to network with other assessors and develop professional and/or commercial relationships.

Despite its value, only 22 (one third of the currently accredited assessors) attended the latest forum on 16th June 2011. The last few sessions have been held at Mt Annan Botanic Garden and the visit to these beautiful gardens alone makes attendance worthwhile.

This report is based on my notes on the day and the notes issued later by the OEH BioBanking team, but any and all misinterpretations and opinions are mine.

Lessons learnt from the scheme so far

The OEH BioBanking team is very helpful. All questions are considered and answered in a timely and professional manner. Don't be fearful of contacting them about any aspect of the program – no question is too stupid (take it from me because I have asked some pretty silly ones) and they do not judge.

In general, the reports supplied by Assessors are of a high standard, but we need to ensure we provide better justification where professional judgement has been used.

OEH has developed two checklists for the reports that accompany an Assessment or Agreement. These should be consulted before lodging your application (available on request or probably on the BioBanking website).

The following matters of concern and interest were raised by the Assessors and the subject of discussion:

- The range of management actions is narrow, and there is a need to better link them to key threatening processes.
- EPBC Act assessments are still required in addition to a BioBanking solution. A bilateral agreement may be in the offing, but no news yet, although a full day BioBanking workshop for Commonwealth officers was to occur in July.
- There was much discussion about quantifiable versus less quantifiable indirect impacts (e.g. area to edge ratio impacts compared to noise or light impacts).
- The concept of viability was discussed, including vegetation patch size, economic versus ecological viability, and viability only from funded actions in perpetuity. A question

was asked as to when a vegetation patch becomes a funded garden rather than a self sustaining ecosystem.

Comment was made on the need to increase the rigour of expert reports (e.g. so they do not appear to be a 'leap of faith').

The BioBanking assessment methodology is frequently used informally, including as a means to inform decision making on Part 4 proposals in determining offsets. This may be problematic however, as there is no review or quality control process to ensure consistency or appropriateness.

The Assessors believe that some of the factors influencing why these informal assessments do not translate into formal applications include: familiarity with the old way (i.e. SIS/s.5A); the differences in offset ratios between BioBanking and the OEH offsets policy; perceptions that other processes are 'cheaper'; and the (un)availability of credits and scheme legitimacy/ transparency. It is important to note that a 'credit wanted list' is available for developers to publicise the credits they want and has been successful so far. There is a form on the website to request a listing on the credits wanted page at http:// www.environment.nsw.gov.au/biobanking/ listwantedcredits.htm.

New version of the tool

Version 2 of the calculator is to be released soon. A refresher course is required and will be available soon. Hopefully it will be affordable. As part of the transition period for using the new tool, version 1.2 will remain available for a period of time before use of version 2.0 becomes obligatory. At this stage OEH is planning to release version 2 in late September.

BioBanking Assessors Accreditation

Every accredited assessor is required to demonstrate compliance with the accreditation requirements **annually** even if you have not done any assessments. This was news to me. A template for reporting compliance will be distributed soon.

What **was** known to me is the fact that assessors need to renew their accreditation every 3 years. Assessors will be contacted by OEH three months before their renewal is due with information on how to comply. I believe that attendance at forums to keep abreast of developments in the scheme will be among the criteria.

Review of the BioBanking Scheme

There is a statutory requirement for review of the BioBanking scheme: the first of these is currently underway with a public exhibition phase expected to begin in the second half of this year. All aspects of BioBanking will be reviewed.

A new web-based public consultation tool will enable people to leave quick feedback through a questionnaire and/or more detailed comment through open text fields.

Initial comments from the Assessors in attendance included:

- A need to stimulate greater participation by the landowners - possibly through small grants to cover the cost of initial mapping for an accurate EOI or full assessment;
- Mapping quality needs to be improved: OEH has a mapping strategy that sets out standard requirements for all government agencies and private consultants to promote improved mapping and collaboration – see
- http://www.environment.nsw.gov.au/research/ VegetationInformationSystem.htm
- Quality of data is paramount – concerns with the Vegetation Types Database and Threatened Species Profile Database were raised. OEH noted that work is being done on these and undertook to provide an update as soon as possible.

Biodiversity Certification

BioBanking Assessors are also accredited to do biodiversity certification assessments (training will be provided in the future apparently), but until then, the Biodiversity Certification Assessment Methodology is

available on the OEH website: www.environment.nsw.gov.au/biocertification.

I was not happy to learn that in this process, the trading rules have been blown out to be biologically non-sensical (my notes indicate that trading is only restricted by the Kingdom but that may be too restrictive), and that there is no centralised control over the applications – they are to be dealt with in regional offices. This is not a criticism of the expertise in regional OEH offices, but there does need to be a State-wide overview of this process.

Note was made that Department of Planning and Infrastructure is promoting biodiversity certification as many biodiversity plans are under review.

Update on revised Vegetation Types database

We requested information on the progress in updating the Vegetation Types Database. The OEH team provided the following acronym-laden response and I provide it unedited as it hurts my head to work with it:

OEH has been working to establish a master NSW Plant Community Type Classification (PCT) by amalgamating the existing classifications in the Vegetation Classification and Assessment (VCA) database and BioMetric Vegetation Types database (as maintained in the BCC). The PCT will reside in the VIS Classification module (tentatively named VCA2.0) which is currently under development and due to go live in August 2011. The PCT will provide a more robust data model that will underpin the Biometric Vegetation types including the addition of any new vegetation types and the revision of existing types.

Once implemented, the VIS Classification module will hold, and be maintained as, the master repository for the BioMetric vegetation types and BioMetric condition Benchmarks. All future updates of these BioMetric databases will be achieved through periodic export from the VIS Classification module (VCA2.0). The next BioMetric data update will incorporate changes emanating from the establishment of the PCT.

The data for the draft NSW Plant Community Type classification is now complete and ready for final expert review. The initial data review has been undertaken in consultation with representatives from the Botanic Gardens Trust (BGT) and has focused on identifying and resolving the following key issues:

- *Differences between names of the same plant community type between VCA and the BCC*
- *Differences between names of the same plant community type between CMAs in the BCC*
- *Inconsistent use of Bioregion terms*
- *Simple typos and inconsistent formatting*

The following plant community groups have been identified as needing review at some later stage:

- *Grey Box communities.*
- *Mugga Ironbark communities*
- *Narrow-leaved Ironbark communities*
- *Rough-barked Apple communities*
- *Tumbledown Gum communities*
- *White Box communities*
- *White Cypress Pine communities*
- *Kangaroo Grass communities*
- *Snow Gum communities*
- *All Derived communities*

Mapping of the Hunter CMA has been completed and work is continuing to finalise community names. It is also understood that a further 312 new vegetation types will be included for the CMA's in south western NSW. It is anticipated that these vegetation types will be included as part of the release of BCC version 2.

Where to from here?

These sessions are as important for feedback to OEH as they are for us in keeping up with developments. Because so few BioBanking Agreements and Statements have been put into place, the OEH team wanted to know if there were any in the pipeline or if the tool was being used in projects other than for the completion of a BioBanking Agreement or Statement. So that client confidentiality was not breached, we filled out a secret ballot and the results from 18 Assessors were:

- 21 assessments had been undertaken that did not result in an application for an agreement or a statement.
- 24 assessments were currently being undertaken, of which:
  - ♦ 5 would definitely result in an application
  - ♦ 9 would definitely not result in an application
  - ♦ 10 were undecided/not sure

To a significant degree, the future of the BioBanking program is in our hands. As Assessors, it is our role to introduce the idea to our clients and sell the concept. No matter how cynical you might be about the modelling, the data upon which it is built, access to the program, the cost of training or the unusual application of the program in part of western Sydney: you must admit that it provides a mechanism to get important privately-owned pieces of country into a perpetual reserve network. If it is not achieving that, then it is partly our fault and we need to work at it.

The part over which we have less control however is very worrying – the political response. I know little of what the new Coalition State Government thinks of this program. The OEH team could not shed light on the Government's position at the Forum. Given that one of the Government's first responses to cost-saving is to slash the scientific staff at Forestry, I do not hold out much hope that they understand the value or have a long-term view of the contribution of long-term conservation planning.

So it is imperative that, as practitioners, we make sure our elected representatives do understand its potential value. Write to your local member, email them and ring them up. When a BioBanking Agreement or Statement is in place – brag about it. Use it in your marketing and get your clients to do the same.

Unless a public profile is given to BioBanking (or any of the other innovative ways of getting better conservation on private lands), I fear it will go the way of many of the esoteric things that the public service does: into the redundancy bucket.

Recent taxonomic changes and additions to the snake fauna of New South Wales

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Since the 'Complete Guide to the Reptiles of Australia" was first published in 2003, more than 80 reptile species have been added to the list of described reptile species in Australia, bringing the total number to 923 in the third and most recent addition (Wilson and Swan 2010). These additions being the result of newly discovered species, naming of previously undescribed species, and taxonomic reviews of various species and genera. This has resulted in significant changes to the reptile fauna in NSW previously detailed within the most recent NSW field guide 'A field guide to reptiles of New South Wales' (Swan et al. 2004). A recent paper provided an overview of these changes for lizards (Sass 2011) yet to date, there has been no such synthesis provided from snakes.

The objective of this short paper is to provide an outline of these changes to snakes in NSW with the exception of sea snakes, to provide clarity to ecologists with identification and nomenclature for future biodiversity surveys and assessments.

The Families:

Typhlopidae

The Southern Blind Snake (*Ramphotyphlops australis*) no longer occurs in NSW: these individuals are now known as Dark-spined Blind Snake (*Ramphotyphlops bicolor*) (Rabosky et al. 2004).

Pythonidae

There have been no changes to Pythons in NSW.

Colubridae

There have been no changes to Colubrids in NSW.

Elapidae

A number of changes have occurred within this family since Swan et al. (2004).

Eastern Small-eyed Snake is no longer part of the *Rhinoplocephalus* genus. It is now known as *Cryptophis nigrescens*. *Rhinoplocephalus* are known from only WA.

A review of the *Demansia torquata* complex in 2007 resulted in a revision of its status in NSW. The species formerly known as *Demansia torquata* is now regarded as *D. rimicola*, with *D. torquata* only occurring in coastal QLD (Shea and Scanlon 2007). This species is listed as Vulnerable on the TSC Act and is still listed on the DECCW website as the former.

There has been a great amount of instability of the nomenclature of the smaller Elapidae, particularly with members of the now *Parasuta* genus. Many of these species originated in the genus *Denisonia* (1964), then moved to *Unechis* and *Suta*, until 2006 when they shifted into *Parasuta* (Greer 2006). Swan et al. (2004) documented five species of the *Suta* genus. Only one of these, the Curl Snake (*Suta suta*), remains with the other four regarded as *Parasuta*. This includes the threatened Little Whip Snake - now known as *Parasuta flagellum*, although it remains listed as *Suta flagellum* on the DECCW website.

The finally change to the Elapidae comes from the Western Brown Snakes. One species of Western Brown Snake (*Pseuodonaja nuchalis*) was formerly known to occur in NSW. *P. nuchalis* is no longer considered to occur in NSW with its current distribution confined to northern NT and north-western QLD. The individuals from NSW are now considered two separate species: Strap-snouted Brown Snake (Pseuodonaja aspidorhyncha) and Western Brown Snake (Pseuodonaja mengdeni) (Skinner 2009).

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Port Stephens Comprehensive Koala Plan of Management

Ray Williams

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As reported previously in Consulting Ecology, I am a member of the Port Stephens CKPoM Steering Committee representing the Ecological Consultants Association (as well as being a resident of Port Stephens and a wildlife rescuer/carer for the Native Animal Trust Fund [NATF]).

The steering committee is currently chaired by Councillor Geoff Dingle and is made up of representatives from Port Stephens Council, OEH, Hunter Water Corp, Hunter Koala Protection Society,

NATF, the Australian Koala Foundation, local residents and of course myself representing the ECA. Additional persons, such as local vets working with sick and injured Koalas, are also invited to attend the meetings.

The Steering Committee meets every two months at the Council Chambers and items relevant to the CKPoM are discussed. The usual items arising are planning issues, habitat restoration/mapping projects, NPWS and Hunter Water management works, disease issues and reports from the Koala rescue groups on the number of Koalas rescued/deaths and released. Guest speakers are often invited or requested to attend the meetings - for instance at the most recent meeting a representative from the Hunter Botanic Gardens wanted to know how the Gardens (which contains potential Koala habitat and a previous Koala population) can assist with Koala conservation in Port Stephens.

The following is of most interest to consultants preparing impact assessment reports for land within the Port Stephens LGA, particularly where Koala habitat is involved.

A brochure outlining what is required in impact assessment reports is available. It details requirements for addressing the CKPoM Performance Criteria and details Koala Habitat mapping and identification. It is available on request from the Natural Resources Section of Port Stephens Council (contact: Amy Spadaro via email amy.spadaro@portstephens.nsw.gov.au). This will assist with the preparation of impact assessment reports.

In some instances, habitat mapping has been identified as being poorly presented in reports submitted to Council. The Koala habitat mapping available with the CKPoM should be the first port of call during the literature review stage of any impact assessment study in the Port Stephens LGA. It is accepted that parts of the current mapping available have not been ground-truthed, particularly on private land and as such may not be fully accurate. Therefore further assessment of the habitat types must be carried out in the field. If it is found that the habitat on site does not match the CKPoM mapping, then the actual habitat should be mapped as described in Chapter 2 and Chapter 5 of the CKPoM Resource Document. Vegetation mapping and then application of the Koala Habitat Type Definitions is required in order to delineate Preferred and Supplementary Habitat as well as Habitat Buffers and Linking Areas.

Updated Koala habitat mapping conducted by Orogen Pty Ltd and the AKF is currently underway for parts of the LGA and as each section is completed, the current mapping will be replaced.

Developers should be made aware that there is an opportunity to present their proposal to the Steering Committee where there may be an impact on the Koala or its habitat. Recently AGL gave a presentation at the Committee meeting for the proposed Newcastle Gas Storage Facility at Tomago and also organised a field inspection of the site. This enabled the Steering Committee to fully understand the complexities of the proposal and observe first hand the potential impacts on a known Koala population of unknown size.

Consultants are reminded that if they require guidance on the CKPoM process or want to provide any feedback on the CKPoM to the Steering Committee, comments should be sent to either Amy Spadaro amy.spadaro@portstephens.nsw.gov.au or myself at ray@ecotoneconsultants.com.au

From the Botany Desk

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 as Orogen's senior botanist:

Notes on 2 Threatened (Vulnerable) flora species on the NSW North Coast. Part of a series of NSW North Coast Threatened plants that aims to provide specific habitat, ecology and distribution data to aid the consultant ecologist (with a bias towards those taxa where no detailed species profiles exist).

Trailing Woodruff (*Asperula asthenes*)

Description – Decumbent perennial herb. Often appears as a mass of delicate, trailing stems up to 1.0 metre in height (often seen trailing on sedges). Stems scabrous, 4 angled (seen with a hand lens), 1 mm wide, with internodes 2.5–8.5 cm long. Leaves in whorls of 4 (with one pair of leaves usually larger than the other), elliptic, 10–20 mm long, 2–3 mm wide, leaf apex acute, leaf base cuneate, midrib narrow and scabrous (on leaf underside) visible with a hand lens, leaf margins often recurved and scabrous (visible with hand lens), leaf petiole scabrous, 1-2 mm long. Flowers unisexual, in terminal cymes on slender peduncles, 1–7 mm long x 1 mm wide, up to 6 flowers per cyme/head, individual flowers have 4 white petals, fragrant, flower 2-3 mm long. Flowering Oct-Nov although sometimes seen throughout the year. Fruit <1 mm long. Plants dioecious. Needs to be inspected carefully when not in flower as it can be confused with a couple of *Galium* taxa.

Distribution – Populations recorded by the author at South Forster, North Tuncurry (Frogalla Swamp) and near Pipe Clay Creek at North Nabiac. Additional populations reported for Tinonee, Lansdowne (Hunter-Central Rivers CMA).

Habitat – Swamp Forest (often with waterlogged soils) on estuarine and fluvial sediments (sand, loam), wet sclerophyll forest (generally along gully edges) as described below:

Swamp Oak (*Casuarina glauca*) – Broad leaved Paperbark (*Melaleuca quinquenervia*) Swamp Sclerophyll Open Forest on the Wallamba River floodplain (alluvium) associated with Frogalla Swamp at North Tuncurry/Darawakh and at Nabiac. Canopy associates comprised Cabbage Gum (*Livistona australis)* and Swamp Mahogany (*Eucalyptus robusta)*. A sparse mid stratum comprised canopy juveniles with a sedge and fern-dominated groundcover including *Gahnia clarkei, Carex appressa, Carex fascicularis, Baumea rubiginosa, Baumea articulata, Hypolepis muelleri, Cyclosorus interruptus, Blechnum indicum and Isachne globosa.*

Swamp Mahogany (*Eucalyptus robusta*) – Broad leaved Paperbark (*Melaleuca quinquenervia*) Swamp Sclerophyll Forest on estuarine (marine) sands associated with Wallis Lake (south Forster). Canopy co-dominants comprised Cabbage Gum (*Livistona australis*) with canopy associates comprising Swamp Oak (*Casuarina glauca*) and Coastal Blackbutt (*Eucalyptus pilularis*). The vegetation community supported a moderately dense mid stratum dominated by rainforest taxa such as Cheese Tree (*Glochidion ferdinandi*), Brush Cherry (*Syzygium australe*), Scentless Rosewood (*Synoum glandulosum*), Bolwarra (*Euphomatia laurina*), Guioa (*Guioa semiglauca*) and *Pittosporum revolutum*. A sedge and fern-dominaed groundcover included *Hypolepis muelleri, Blechnum indicum, Gahnia clarkei, Rubus moluccanus* var *trilobus, Oplismenus imbecillis, Alocasia brisbanensis*, with climbers *Smilax glauciphyla, Smilax australis* and *Eustrephus latifolius*.

Additional habitats reported by the Hunter Central Rivers CMA (Andrew Paget pers comm.) for the species in the Taree LGA include:

Tinonee in State Forest along minor drainage line in Grey Gum - Tallowwood forest, 1-2%

slope with NNE aspect on grey-brown clay-loam;

Lansdowne in edges of rainforest gullies in Grey Gum - Tallowwood Forests on 5% slopes on grey-brown clay-loam;

Lansdowne on track edges in Blue Gum - Tallowwood forest on S aspects in 5-10% slopes on mountain loams;

MT Goonook Nature reserve under subtropical rainforest gully vegetation on minor drainage line, 2-3% slope with SE aspect grey-brown clay-loam;

Anthoney's Brush on way to Harrington under Lowland Floodplain Rainforest etonone with Swamp Oak Forest on 1% slope with NNE aspects on silt.

Life History/Ecology:

Growth Form – decumbent perennial herb (mass of trailing stems to 1 m in height).

Vegetative spread – suspected suckering plant.

Lifespan – no data but reported to be greater than 15 years for other *Asperula* taxa (NPWS 2002).

Primary juvenile period (plant age at first flowering) – no data but thought to be 1-2 years as per reports for other *Asperula* taxa (NPWS 2002).

Flowers - White, unisexual, flowering period October-November, although the author has seen some populations flower to some extent throughout the year. Plants dioecious.

Pollination – no data. Suspect native bees, flies. *Seed storage, dispersal and germination cue* – no data but thought to have a persistent soil seedbank as per other *Asperula spp*. (NPWS 2002). Wind is suspected to be seed dispersal vector.

Fire response – No data for *A. asthenes* but reported to be a resprouter for other *Asperula* taxa (NPWS 2002).

Population Size – Reported sizes vary from <10 to well over 200 (counted as mass clumps), although there are inherent problems in counting individuals of a species that likely suckers and often appears as a mass of trailing stems.

Conservation Status – Vulnerable (TSC Act); ROTAP 3RC-. Population is reported for Wallis Island Nature Reserve at Forster, NSW (population size unconfirmed) and likely to be within Frogalla Swamp NR (a population was recorded by the author near the reserve in habitats known to occur within the reserve). Listed as Vulnerable under TSC and EPBC Acts.

References:

NSW National Parks and Wildlife Service (2002) NSW Flora Fire Response Database version 1.3a December 2002.

***Asperula asthenes* growth habit**

***Asperula asthenes* leaves and flower heads**

Grove's Paperbark (*Melaleuca groveana*)

Description - Shrub generally 2.5 to 6 m with papery bark. Leaves alternate, elliptic, stiff, 20–55 mm long, 3–8 mm wide, leaf apex pungent (ending in a stiff, sharp point), leaf base cuneate, glabrous, petiole 1–3 mm long, oil dots numerous with hand lens, conspicuous intramarginal and midvein, weakly or sparsely penniveined. Inflorescences appearing as 'bushy' white spikes 2–3 cm long in spring. Fruit barrel-shaped, 5 mm diam., orifice 2–3 mm diam.

Distribution – NSW North Coast Botanical Subdivision (also extends into SE Qld).

Habitat – exposed, rocky ridges and hilltops typically at 150 metre + altitudes.

1. On the Nerong Volcanic peaks of Port Stephens (eg. Fame Mountain), *Melaleuca groveana* has been recorded in White Mahogany (*Eucalyptus umbra*) – Brown Stringybark (*Eucalyptus capitellata*) – Grey Ironbark (*Eucalyptus paniculata subsp. matutina*) (ROTAP) – Spotted Gum (*Corymbia maculata*) Dry Sclerophyll Low Open Forest/Low Woodland (I Mamott pers. obs; Bell and Driscoll 2006). *Melaleuca groveana* is often stunted to 2.5 metres on these volcanic peaks which are characterised by boulder outcropping and skeletal (clay) soils. Mid stratum associates include *Melaleuca nodosa, Hakea sericea, Isopogon anemonifolius, Dodonea triquetra, Notelaea venosa, Persoonia linearis, Correa reflexa, Bossiaea rhombifolia subsp. rhombifolia, Acacia suaveolens, Pultenaea retusa, Lasiopetalum ferrugineum, Hovea linearis, Xylomelum pyriforme*. Groundcover dominants include *Doryanthes excelsa, Themeda australis, Lomandra obliqua, Hibbertia aspera, Entolasia stricta, Lomandra multiflora subsp multiflora, Patersonia glabrata, Dianella caerulea var assera, Phyllanthus hirtellus, Lomandra filiformis subsp. coriacea* and *Cheilanthes austrotenuifolia*. Dominant climbers include *Hibbertia dentata, Smilax glyciphylla, Geitonoplesium cymosum, Eustrephus latifolius* and *Pandorea pandorana*;

2. On the granite slopes of Scotts Mountain within Yarriabini National Park south-west of Scotts Head (just south of Macksville), *Melaleuca groveana* has been recorded in Grey Ironbark (*Eucalyptus siderophloia*) – Broad leaved White Mahogany (*E. carnea*) Dry Sclerophyll Low Open Forest (EcoLogical 2007). Mid stratum dominants comprised Curracabah (*Acacia concurrens*) and *Westringia amabilis*. Groundcover dominants comprised *Xanthorrhoea latifolia subsp. latifolia* and Kangaroo Grass (*Themeda australis*);

3. On the Narrabeen Sandstones of the Hunter Escarpment in north-east Wollemi National Park, *Melaleuca groveana* grows amongst an open forest of *Eucalyptus fibrosa, E. sparsifolia, E. punctata* and *Angophora costata* with a shrubby understorey of *Lasiopetalum ferrugineum, Pultenaea flexilis, Pultenaea scabra, Acacia linifolia* and a groundcover dominated by *Entolasia stricta, Phyllanthus hirtellus, Lomandra filiformis subsp. coriacea* (Bell 2008). DECC (2008) in its most recent and comprehensive survey of Yengo National Park, provides no specific habitat details for *Melaleuca groveana* although an earlier survey report for this reserve describes its habitat as being similar to its occurrence in Wollemi NP, that being Narrabeen sandstone ridgetop open forest with *Eucalyptus crebra, E. sparsifolia* and *E. punctata* (Maryott-Brown & Wilkes 1993). South of Cessnock in Werakata State Conservation Area (formerly Aberdare State Forest), a population of *Melaleuca groveana* has been recorded in 'Sandstone Hills Bloodwood Woodland', a vegetation community dominated by *Corymbia eximia, Corymbia gummifera, Angophora costata, Eucalyptus prominula, Eucalyptus capitellata* and *Angophora bakeri* with a sparse understorey of heathy shrubs and grasses such as *Dillwynia retorta, Isopogon anemonifolius, Persoonia linearis, Podolobium ilicifolium, Isopogon anemonifolius, Xanthorrhoea glauca, Entolasia stricta, Lomandra glauca* and *Cleistochloa rigida*. (Stephen Bell pers comm., DECC 2008). Large expanses of sandstone outcropping are associated with this vegetation type in the SCA.

Life history/Ecology:

Growth Form – shrub to small tree (2-7 metres in height).

Vegetative spread – no reports of vegetative spread.

Lifespan – reported to be greater than 20 years (NPWS 2002). This is generally consistent with plants that have basal stem buds (ie. lignotuber).

Primary juvenile period (plant age at first flowering) – 3 or 4 years (NPWS 2002).

Flowers - White, bisexual, flowering period September-November. Have seen one population flower in successive (3) years.

Pollination – no data. Suspect native bees, flies.

Fruit/seed – canopy stored seedbank (NPWS 2002) in woody capsules and thought to be serotinous (that is, most seed stored in woody capsules on plant for a few years and released following fire, death and drying over time).

Seed dispersal and germination cue – no data.

Fire response – Reported to be a resprouter (survives 100% scorch and resprouts from a lignotuber) (NPWS 2002).

Population Size - The majority of plant populations have individual plant counts at or less than 50 with the exception of the Scotts Mountain population which have plant numbers reported to be in the 'thousands'.

Conservation Status – Vulnerable (TSC Act); ROTAP 3RC-.

References:

1. Bell, S. (2008) Rare or threatened vascular plant species of Wollemi National Park, central eastern New South Wales, *Cunninghamia* 10(3):2008;

2. Bell, S. And Driscoll, C. (2006) Vegetation of the Tomago and Tomaree Sandbeds, Port Stephens, New South Wales: Management of Groundwater Dependent Ecosystems, Part 1 - Vegetation Classification. Report prepared for the Hunter Water Corporation;

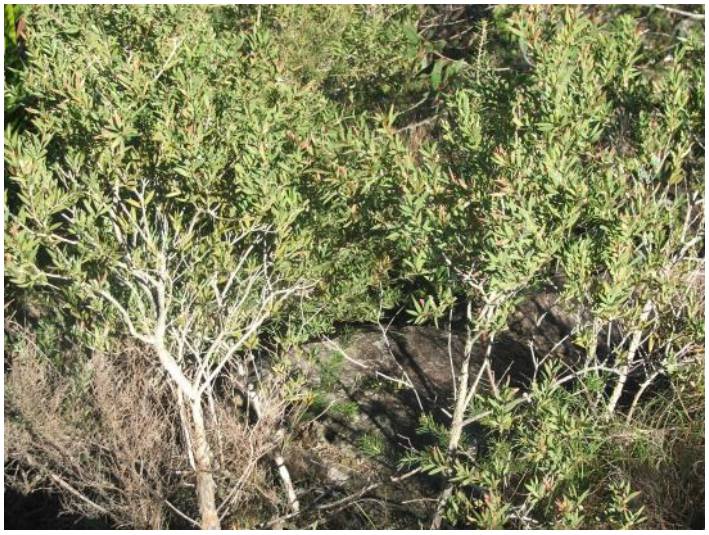
3. Department of Environment and Climate Change (2008) Vegetation of the Cessnock-Kurri Region: Survey, classification and mapping. Cessnock *LGA, New South Wales*. Department of Environment & Climate Change (NSW). Sydney. February 2008;

4. Department of Environment and Climate Change (2008) The Native Vegetation of Yengo and Parr reserves and Surrounds. Department of Environment & Climate Change (NSW). Sydney.

5. EcoLogical Australia (2007) The Vegetation and Fire Ecology of Yarriabini National Park (extract of Section 3.3.12). Report prepared for NSW NPWS October 2007;

6. NSW National Parks and Wildlife Service (2002) NSW Flora Fire Response Database version 1.3a December 2002.

By Isaac Mamott



Contributions to the Newsletter, Volume 28

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

15th of December 2011.

- 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

ECA Photo Gallery

Photo Competition Entries

Above Left: insect gall found in sandstone woodland at Leets Vale near Wisemans Ferry (photo courtesy of Rebecca Hayes).

Above: *Diuris sp aff dendrobioides* (photo courtesy of Isaac Mamott).

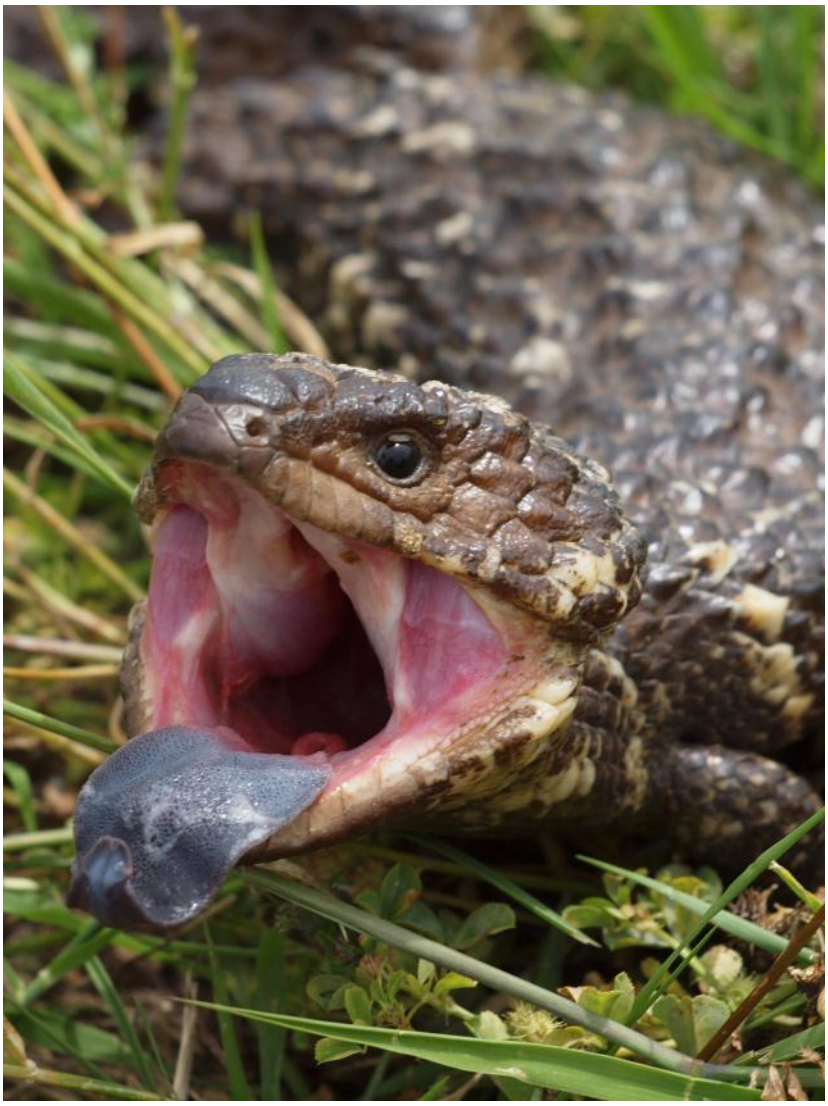
Left: Red-crowned Toadlet (*Pseudophryne australis*), that was trapped in a pitfall bucket attached to a drift fence at Holsworthy, NSW (photo courtesy of Kathryn Chesnut).

Below Left: *Tetratheca juncea* (photo courtesy of Isaac Mamott).

Below Right: a juvenile Rosenberg's Goanna (*Varanus rosenbergi*) that was trapped in a funnel trap with a drift fence, at Holsworthy, NSW (photo courtesy of Kathryn Chesnut).

ECA Photo Gallery

Photo Competition Entries



Above: ***Cryptostylis hunteriana*** **(photo courtesy of Isaac Mamott).**

Below: ***Epacris purpurascens var purpurascens*** **from Dural (photo courtesy of Rebecca Hayes).**

Above: Runner up ! shingleback lizard, taken at Gulargambone in central-west NSW (photo courtesy of Will Taylor).

Below: Smooth Knob-tailed Gecko ***Nephrurus levis levis*** **taken near Mildura (photo courtesy of Ariane Weiss).**