# Labs in the Limelight

*In this Issue's "Labs in the Limelight" section I showcase work by **Dr Rob Davis' wildlife ecology group**, based at **Edith Cowan University** in Western Australia. In this contribution, **Tim Doherty**, a current PhD candidate within the group, discusses the team's current work on mitigating the ongoing loss of Australia's unique vertebrate biodiversity. It has been a busy time for the group, with Tim's very important research, for example, shining a light on the serious threat that feral cats pose to native Australian wildlife!*

*I also present two pieces that contemplate the way in which our science is effectively communicated to make a difference. In the first contribution, ESA's new Treasurer **Dr Jason Cummings** (although he's old hat at this!) muses on how to turn a science degree into a "license to make a difference". In the second contribution I interview knowledge broker Dr Suzanne Long on the ways in which ecologists can more effectively demonstrate that applied research projects have "impact" in terms of real-world outcomes, not just publications.*

## Fire, ferals and feathers – news from the wildlife ecology group at Edith Cowan University

*Report by Tim Doherty*

**Urban ecology – where it all began**

Our group leader, **Dr Rob Davis**, has a background in amphibian ecology but holds strong interests in birds and reptiles (and less so in larger mammals that bite him!). Much of Rob's recent research has been in urban ecosystems, where he has examined bird dispersal capacity in suburban Perth and the impacts of habitat loss and fragmentation on bird assemblages across the Swan Coastal Plain. Rob has also been looking at the impact of *Phytophthora* dieback and fire history on birds in banksia woodland. Furthermore, Rob has a long-running relationship with the Botanic Gardens and Parks Authority at Kings Park, where he has been monitoring the recovery of the reptile community for five years following a wildfire in 2009. Indeed, honours student, **Joe Krawiec**, used population genetics to look at the impact of habitat fragmentation on the skink *Ctenotus fallens* at three large reserves in central Perth and found evidence of contemporary genetic structuring.

**Fire ecology and management**

Our lab group has a long-running relationship with Bush Heritage Australia at their Charles Darwin Reserve. The reserve sits at the interface of the mesic south-west and the arid interior of WA and contains large areas of intact semi-arid shrublands and eucalypt woodlands. **Dr Eddie van Etten**, a senior lecturer at ECU and member of our group, has been investigating shrubland fire dynamics in this area. We have extended Eddie's work to look at the impact of shrubland fire history on faunal communities. Between 2010 and 2013, Rob and Tim examined the impact of shrubland fire history on small mammal and reptile communities, and more recently we've started a similar project looking at the bird community, which is funded by the Gunduwa Regional Conservation Association. Shrubland birds have been poorly studied compared to their woodland cousins and after bashing through the dense acacia thickets, we think we know why! We're also starting a new project in this region on modelling the impacts of fire on malleefowl habitat suitability—a species threatened by inappropriate fire regimes and introduced predators.


*Wildlife ecology lab members, from L to R: Dr Sora Estrella, Floyd Holmes, Dr Shaun Molloy, Dr Eddie van Etten, Dr Rob Davis, Mike Lohr, Paul Radley, Tim Doherty.*

**Bird ecology**

There are several exciting bird ecology projects currently underway in the lab, covering a diverse range of groups, from migratory shorebirds to nocturnal predators. **Paul Radley** has recently moved to Perth from the Northern Marianas Islands to start his PhD with our group. He spent nearly eight years as an ornithologist working in the Marianas Islands and has extensive experience with bird ecology and conservation. His current research will focus on the conservation of the endangered Micronesian Megapode on Palau. Paul will primarily investigate the effects of projected sea level rise (as a consequence of climate change) upon the species' nesting and foraging areas in the archipelago.

**Dr Sora Estrella** (image to right) has a strong background in studying migratory shorebirds and their foraging ecology. Sora hails from Spain and has worked on shorebirds in southern Spain, Roebuck Bay in Broome, and Port Hedland and Dampier in the Pilbara. She joined the lab in 2013 as a post-doc to assist with our project on the importance of saltworks in north-west WA for migratory shorebirds. For this project we work closely with Rio Tinto's Dampier Salt Limited to assess how human-made salt ponds can provide foraging habitat for the shorebirds. Sora can often be found up to her knees in mudflats with no shade, trying to distinguish between different species of shorebird in non-breeding plumage. **Professor Pierre Horwitz** is a co-investigator on this project and is slowly trying to convince us that invertebrates are as exciting as shorebirds.

**Mike Lohr** is the lab's newest recruit and plans to study the ecology of Southern Boobooks, with a particular focus on population demographics and spatial ecology. Mike previously worked as an avian ecologist in Hawai'i on a variety of projects related to conservation of seabirds and the O'ahu 'Elepaio—a species of endangered flycatcher. He is currently finishing a project documenting the alien plants of all islands in Western Australia for the Department of Parks and Wildlife (DPaW). **Dr Allan Burbidge** (DPaW) is an adjunct Associate Professor at ECU and advisor on this project. In a similar study, **Candice Le Roux** is commencing a Masters on the characteristics of Carnaby's Cockatoo nocturnal roost sites in the Perth Region. Supervised by Professor **Will Stock, Dr Dave Blake**, Rob and **Dr Geoff Barrett** (DPAW), this project will use citizen science data to define the characteristics of Carnaby's roost sites.

**Can animal behaviour inform restoration efforts?**

**Floyd Holmes** is working at Rottnest Island for his PhD, where he is investigating whether passerine bird behaviour and breeding success can be used to assess the quality of restored habitats. Floyd studied Scarlet Robins in the Jarrah forest of south-western Australia for his honours and is now focussing on Red-capped Robins and Golden Whistlers as likely indicators of restoration quality.

**Red in tooth and claw – mammal research**

For his PhD research, **Tim Doherty** is investigating the impact of feral cats on native fauna at the local, continental and global scales. Tim works closely with Bush Heritage and Earthwatch Institute at Charles Darwin Reserve in WA's northern wheatbelt. He has been examining cat habitat use, diet and their response to poison baiting, as well as the habitat use and foraging behaviour of cat prey species (small mammals and reptiles). We recently reviewed the evidence used to explain patterns in feral cat habitat use, and found that most studies provide little or no evidence to support their contentions. A great way to start a conversation with Tim is to ask him what happened to his GPS collared cats! Tim has a strong interest in fire ecology, predators and arid systems, and you can find out more about his research at www.tim-doherty.com.

**Dr Shaun Molloy** is employed as a post-doc working on a collaborative project with the Department of Parks and Wildlife, using species distribution models to inform management actions for the Pilbara population of the northern quoll *Dasyurus hallucatus*—a population subject to the impacts of industrial development, climate change and exotic species. Shaun has a diverse background in conservation management and landscape ecology. Shaun completed his PhD with our group, investigating the use of spatial modelling for biodiversity conservation in fragmented landscapes of south-western Australia.

You can find out more about our research group by visiting our website ecuwildlifelab.wordpress.com, Twitter @ECUWildlifeLab, Facebook, or dropping Rob an email robert.davis@ecu.edu.au.

## How to turn your science degree into a license to make a difference

*Muse by Jason Cummings, ESA Treasurer*

"There are three things with which you can arm yourself to stand-out from the pack, smooth your entry to the workforce, get a job you actually want to do and make a real impact in what you choose to do…"

When discussing my career choice recently I was reflecting with friends on how a whole generation of young Australians wanted to be marine biologists. I think it had something to do with Alby Mangles, Harry Butler and the Leyland Bros snorkelling together on the Great Barrier Reef, or Totally Wild. I got as far as choosing between terrestrial ecology and marine ecology for my honours thesis, and I chose terrestrial ecology because I liked scuba diving too much to make it my job…

Clearly that whole generation didn't become biologists, as only 0.4% of Australia's population has a graduate degree in environmental studies. If you are graduating this year, that means you are entering a pool of about 104,000 people qualified to practice with scientific credentials. A small proportion of the cohort goes on to undertake honours and post-graduate training, but the majority seek to enter the workforce directly.

There are three things with which you can arm yourself to stand-out from the pack, smooth your entry to the workforce, get a job you actually want to do and make a real impact in what you choose to do…