



## CONGRATULATIONS

### Australia's top Evolutionary Biologist



Congratulations to **Rob Lanfear** (E&E), who was designated Australia's Field Leader in Evolutionary Biology in the annual

Researcher Magazine put together by *The Australian*. The same report also lists ANU as the top institution in the field of birds.

### Grants

**Kara Youngentob** and **Karen Ford** (Foley group, E&E), were awarded a Minderoo Foundation philanthropic gift of \$257K. The survival chances of koalas reintroduced to bushfire-ravaged landscapes have been given a major boost thanks to a generous donation from Minderoo Foundation. The partnership with the Minderoo Foundation will assist researchers at ANU to examine how koalas recover after fire and how fire impacts the nutritional quality of eucalypt forests. This research is critical for the development of strategies to minimize bushfire impacts on wildlife and will help wildlife carers determine when animals can be safely returned to previously burnt landscapes.

**Justin Borevitz** (PS and E&E) was awarded an Upper Snowy Landcare Network grant of \$50K to study landscape genomics of mountain and tableland *Eucalyptus* species. The goal is to identify climate and soil adaptive genotypes from sampling along environmental gradients, followed by whole genome sequencing and association studies. From these studies, genome predictions about what plants will grow well in a given area can be made, and in the future to target plantings for ecosystem restoration or for agro-forestry.

## IN THE MEDIA

### Women have disrupted research on bird song, and their findings show how diversity can improve all fields of science

A new paper offers evidence that male and female biologists sometimes differ in what they chose to investigate. Birds are



A female Superb Fairy-wren singing. See under 'In the Media'. (image: John Young.)

incredibly well studied, but until recently the emphasis in research on their singing has been on males. But new research, disproportionately led by women, has shown that female birdsong is incredibly widespread. The resultant findings have major implications for studies of behaviour, ecology and conservation. Notable among the biologists that have led this work is **Naomi Langmore** (E&E) and her collaborators, featured in *The Conversation*.

### Current and past RSB behavioural ecologists feature prominently in the new book

*The Bird Way: A New Look at How Birds Talk, Work, Play, Parent, and Think* (2020), by American science journalist Jennifer Ackerman. The book highlights many Australian species, and has been covered widely in the press and [featured on the ABC's Science Show](#). Progressing through the chapters, Ackerman first considers bird "talk", including the evolution of female song (**Langmore**), alarm communication (**McLachlan, Magrath**), learning to recognize other "languages" (Igic, **McLachlan, Magrath**), and vocal mimicry (**Igic, Dalziel**). She then moves to social learning (Aplin), and finally reproduction, including tool use in the mating displays of palm cockatoos (Heinsohn & Zdenek, in Fenner), infidelity in fairy-wrens (**Cockburn**), infanticide and "reversed" plumage in eclectus parrots (Heinsohn), brood parasitism (**Feeney, Langmore**),

and kidnapping coughs (Heinsohn). Ackermann shows why "bird brain" is a compliment. A bird's brain is a marvel of miniaturization, allowing an astonishing diversity of behaviour and cognitive feats that match or outperform most of us primates.

## PHDS SUBMITTED

**Lily Chen** (Furbank group, PS) has submitted her PhD, entitled *The Source to Sink Journey in Setaria viridis: The Role of the Sugar Exporter SWEETS*.

## OUTREACH

### ANU Open Day

Open Day this year was replaced by an online Open Week. RSB ran webinars directed at undergraduate and postgraduate students and contributed to a panel discussion on first year science. While there were some technical difficulties and much lower attendance than we usually get, we all spoke to some enthusiastic prospective students. Thanks to all those who contributed: **Juliey Beckman, Rachael Remington, Tony Millar, Dan Noble, and Susan Howitt**.

**The CoE for Translational Photosynthesis** has produced a video, as part of a collaboration with other ARC Centres of Excellence, with the participation of **John Evans** and **Demi Gamble** from RSB. Here is the [teaser](#), and the full [5-minute video](#).

## Positive feedback for blog

**Hannah Carle** (Meir group, E&E) published a [blog post](#) about being a STEM Educator in universities. It received a lot of positive feedback as a good general resource (probably mostly for demonstrators).

## FAREWELL



### Wes Keys (E&E).

Wes has been at the ANU since 1982, when he commenced his undergrad degree, and is one of our longest serving members of staff. Wes started working at RSBS in 1986 before moving to the ANU Botany Department in 1989, working with Professor Warren Wilson. In this position, Wes exercised a range of skills, from culturing chicken embryos to dissecting lettuces! Over the decades he has filled a diverse range of roles including the management of teaching labs, student field courses in the Australian tropics, alpine regions and in Singapore, as well as providing lab and field support on a number of research projects. For many years Wes also ran the sequencing and genotyping facility at BoZo, EEG and E&E, and has been the go-to person for guidance and support in many areas of lab and field research. Wes's reliability, easy-going nature and excellent sense of humour have endeared him to generations of students and researchers and he will be sorely missed. We wish him all the best in his future activities.



**Chen Wang** (Solomon group, PS), has left the Solomon lab after six years to start a new postdoc position in China. We wish him well and look forward to catching up as soon as we can!

## PAPERS

### Accepted

Aich, U, Bonnet, T, Fox, RJ, Jennions, MD. An experimental test to separate the effects of male age and mating history on female mate choice. *Behavioral Ecology*.

Ansell, D, Magrath, RD, & Haff, TM. Song matching in a long-lived, sedentary bird with a low song rate: the importance of song type, song duration and intrusion. *Ethology*.

Bothwell, HM, Evans, LM, Hersch-Green, EI, et. al. Genetic data improves niche

model discrimination and alters the direction and magnitude of climate change forecasts. *Ecological Applications*.

Buyan, A, Cox, CD, Barnoud, J, Li, J, Corry, B, et. al. Piezo1 forms specific, functionally important interactions with phosphoinositides and cholesterol. *Biophysical Journal*.

Cooper, E, Osmond, H, Bonnet, T, Cockburn, A, & Kruuk, LEB. Ageing and senescence across reproductive traits and survival in superb fairy-wrens (*Malurus cyaneus*). *American Naturalist*.

Cooper, E, Osmond, H, Bonnet, T, Cockburn, A, & Kruuk, LEB. Do the ages of parents or helpers affect offspring fitness in a cooperatively breeding bird? *Journal of Evolutionary Biology*.

Evans, JR, Tansley review: Mesophyll conductance: walls, membranes and spatial complexity, *New Phytologist*.

Esquivel-Muelbert A, Phillips O, Brienen R, Meir, P, et. al. Mode of death and mortality risk factors in Amazon trees. *Nature Communications*.

Griffiths, AR, Silman, MR, Farfan Rios, W, Meir, P, Salinas, N, & Dexter, KG. Evolutionary tendencies shape tree distributions along an Amazon-to-Andes elevation gradient. *Biotropica*.

Gunn, L, Martin Avila, E, Brich, R, & Whitney, S. The dependency of red Rubisco on its cognate activase for enhancing plant photosynthesis and growth. *Proceedings of the National Academy of Scientists (PNAS)*.

Hsiao, Y, & Oberprieler, RG. A review of the trunk-boring cycad weevils in Australia, with description of a second species of *Demyrsus* Pascoe, 1872 (Coleoptera: Curculionidae: Molytinae). *Austral Entomology*.

Rowland, L, da Costa, ACL, Mencuccini, M, & Meir, P. The response of carbon assimilation and storage to long-term drought in tropical trees is dependent on light availability. *Functional Ecology*.

McCullough, EL, Chou, CC, Backwell, PRY. Cost of an elaborate trait: a trade-off between attracting females and maintaining a clean ornament. *Behavioral Ecology*.

### Published

Costa, SR, Chin, S, & Mathesius, U. Infection of *Medicago truncatula* by the root-knot nematode *Meloidogyne javanica* does not require early nodulation genes. *Frontiers in Plant Science*. <https://doi.org/10.3389/fpls.2020.01050>.

Cranston, PS. Life histories of *Paucispinigera* Freeman, *Paraborniola* Freeman and *Paratendipes* Kieffer (Diptera: Chironomidae) with phylogenetic considerations. *Zootaxa*. <https://doi.org/10.11646/zootaxa.4853.4.3>.

Deans, RM, Brodribb, TJ, Busch, FA, & Farquhar, G. Optimization can provide the fundamental link between leaf photosynthesis, gas exchange and water relations. *Nature Plants*. <https://doi.org/10.1038/s41477-020-00760-6>.

Dyson, ML, Perez, DM, Curran, T, McCullough, EL, & Backwell, PRY. The role of claw color in species recognition and mate choice in a fiddler crab. *Behavioral Ecology and Sociobiology*. <https://doi.org/10.1007/s00265-020-02899-w>.

Hill, EH, & Solomon, PS. Extracellular vesicles from the apoplastic fungal wheat pathogen *Zymoseptoria tritici*. *Fungal Biology and Biotechnology*. <https://doi.org/10.1186/s40694-020-00103-2>.

Horváth, G, Jiménez-Robles, O, Martín, J, et. al. Linking behavioral thermoregulation, boldness, and individual state in male Carpetan rock lizards. *Ecology and Evolution*. <https://doi.org/10.1002/ece3.6685>.

Hua, X, & Bromham, L. Modelling colonization rates over time: generating null models and testing model adequacy in phylogenetic analyses of species assemblages. *Evolution*. <https://doi.org/10.1111/evo.14086>.

Kessler, SC, Zhang, X, McDonald, Solomon, PS, & Chooi, Y-H, et. al. Victorin, the host-selective cyclic peptide toxin from the oat pathogen *Cochliobolus victoriae*, is ribosomally encoded. *Proceedings of the National Academy of Sciences USA*. <https://doi.org/10.1073/pnas.2010573117>.

Mason, B, Cooke, I, Moya, A, Hayward, DC, Forêt, S, Ying, H, Ball, EE, & Miller, DJ. AmAMP1 from *Acropora millepora* and damicornin define a family of coral-specific antimicrobial peptides related to the Shk toxins of sea anemones. *Developmental and Comparative Immunology*. <https://doi.org/10.1016/j.dci.2020.103866>.

Sharwood, R. Mix-and-match Rubisco subunits. *Nature Plants*. <https://doi.org/10.1038/s41477-020-00771-3>.

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