



About us

The Arthur Rylah Institute's terrestrial ecology teams produce high-quality science to support evidence based decision-making by government and community.

Our 50 scientists have extensive expertise in fauna and flora research, ecological modelling and data interpretation. We work collaboratively with national, state and local agencies, universities and the community.

ARI research guides translocation program for over-populated Koalas

In Victoria, translocation has been an important component of Koala management for more than 90 years. In recent decades, localised over-abundance of Koalas has led to over-browsing, defoliation and eventual death of preferred feed trees and Koalas. A recently published study found that relocation of Koalas can provide an effective short-term measure to reduce localised over-browsing. However, this applies only if suitable habitat, that does not already support a Koala population, is available.



ARI's Peter Menkhorst, Dave Ramsey and Tim O'Brien, along with collaborators from DELWP and other agencies, monitored the health and survival of 36 Koalas which were relocated from Cape Otway in Southern Victoria to an area in the Great Otway National Park near Anglesea. In **their research article** they found that while the relocated Koalas initially lost some body condition, they regained it within 4-5 months and ended up in better condition than the Koalas left in over-browsed habitat.

For more information visit [our website](#).

Releasing Koalas from the transport crate

News

International FAME for ARI scientists

ARI scientists Josephine MacHunter, Nevil Amos, Tracey Regan and University of Melbourne's Libby Rumpff won the **Decision Analysis Practice Award**.

A panel of international experts awarded the team for their work in applying structured decision making to the development of

FAME, the **Fire Analysis Module for Ecological values tool** (see [here](#) for FAME article in Terrestrial Quarterly Update – September 2019). The FAME tool is used to show flora and fauna responses to fire in a landscape over time and space.

Congratulations to the team and all of the practitioners who have contributed to FAME.



Tracey and Josephine receiving the award at the INFORMS Annual Conference in Seattle



Decision Tools for Biodiversity: A Breakthrough in Fire Management

Josephine MacHunter, Nevil Amos, Tracey Regan and Libby Rumpff



(left) Population monitoring, (right) Images of the Winged Peppergrass (*Lepidium monoplocoides*)

ARI scientists rediscover lost populations of a threatened plant

The Winged Peppergrass (*Lepidium monoplocoides*) has been in decline for decades across its natural range and as such has been listed as **endangered nationally**. Recently, ARI scientists were elated when they rediscovered several lost populations and measured a 10-fold population boom at sites around Hattah Lakes. This discovery brings hope for the species' future recovery.

Feral pig management in south-eastern Australia

A new project being led by Alan Robley is using genetic profiling to determine the population structure of **feral pigs in south-eastern Australia**. The project involves collaboration with existing feral pig control projects by public land managers across Victoria, New South Wales and South Australia.

The project will identify areas where feral pig populations are suitable for eradication and those that require containment, as well as investigation of the prevalence of infectious and production-limiting endemic diseases in Victoria. The genetic profiling will also allow researchers to determine the origin of individual pigs and identify whether illegal translocations or natural migration has occurred.

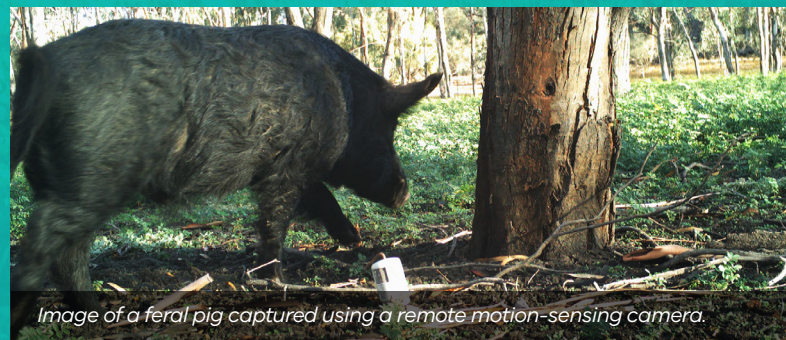


Image of a feral pig captured using a remote motion-sensing camera.

Outcomes from the project will provide guidance in developing a strategic management plan for feral pig control in Victoria.

Influencing Change

Victoria's rainforests – a case study of post-fire dynamics

Fire can cause dramatic declines in the extent and health of rainforest stands. ARI's Arn Tolsma led a project to determine the impact of the 2009 fires on an area of rainforest in the Yarra Ranges National Park.

Field surveys were conducted in areas deemed safe; this was mostly in those areas not subject to high severity fire. These surveys suggested that rainforest had not declined significantly. However, there were large parts of the catchment that could not be surveyed, so **recent modelling** of Victoria's rainforest extent by ARI's Matt White and colleagues, using remotely-sensed data, was used to supplement the field survey data. These results indicated that more than two thirds of the rainforest stands in the O'Shannassy catchment were subjected to high severity fire and that 96% of these areas are now dominated by non-rainforest species and could no longer be classified as rainforest.

The results of the **report** highlight the utility of remotely-sensed mapping as an important tool for management at the landscape-scale, and for verifying ecological trends when comprehensive field surveys are not possible.

For more information visit [our website](#).

Investigating the effectiveness of mortality monitoring for birds and bats at Victorian wind farms

Assessment of the potential effects of collisions with wind turbines by birds and bats are now a routine component of planning approvals for commercial-scale wind energy projects in Victoria. However the effectiveness of the current approach is unclear.

Lindy Lumsden and Paul Moloney have recently completed two reports addressing this issue. The **first report** developed a science-based approach, using a risk matrix simulator, to identify which species may be at risk due to collisions with turbines. This has enabled a list of 'species of concern' to be compiled for Victoria. The **second report** analysed the available post-construction monitoring data to derive annual mortality rates for all species of birds and bats. It also reviewed the effectiveness of the existing approaches, identified key knowledge gaps and suggested options for improving future monitoring.

This body of work improves the knowledge base from which to determine the impacts of wind turbines on birds and bats in Victoria.

Wind turbines

Influencing Change

Feature publications

Collins, L. (2019) Eucalypt forests dominated by epicormic resprouters are resilient to repeated canopy fires, *Journal of Ecology* (early online), <https://doi.org/10.1111/1365-2745.13227>

Scroggie, M.P., Peterson, G.N.L., Rohr, D.H., **Heard, G.W.** (2019) Disturbance has benefits as well as costs for fragmented populations of a cryptic grassland reptile, *Landscape Ecology* (early online), <https://doi.org/10.1007/s10980-019-00865-0>

Pacioni, C., Wayne, A. F. and Page, M., (2019) Guidelines for genetic management in mammal translocation programs, *Biological Conservation* 237, p 105-113, <https://doi.org/10.1016/j.biocon.2019.06.019>

Briscoe, N., Guillera-Aroita, G., Elith, J., Salguero-Gómez, R., Lahoz-Monfort, J., McMahon, S., Kearney, M., Yen, J., Camac, J., Giljohann, K., Vesk, P., Rhodes, P., Phillips, B., Wintle, B., Holden, M., **Regan, T.**, and Hradsky, B., Forecasting species range dynamics with process explicit models: matching methods to applications, *Ecology Letters* (early online), <https://doi.org/10.1111/ele.13348>

Atkins, Z. S., **Cleemann, N.**, Chapple, D. G., Edwards, A. M., Sinsch, U., Hantzschmann, A. M., Schroder, M., **Scroggie, M. P.** and Robert, K. A. (2019), Demographic and life history variation in two sky-island populations of an endangered alpine lizard. *Journal of Zoology* (early online), <https://doi.org/10.1111/jzo.12728>

Tingley, R., Macdonald, S.L., Mitchell, N.J., Woinarski, J.C., Meiri, S., Bowles, P., Cox, N.A., Shea, G.M., Böhm, M., Chanson, J., Tognelli, M.F.... **Cleemann, N.** et al. (2019). Geographic and taxonomic patterns of extinction risk in Australian squamates. *Biological Conservation* (early online), <https://doi.org/10.1016/j.biocon.2019.108203>

Cunningham, C.X., Johnson, C.N., **Hollings, T.**, Kreger, K. and Jones, M.E. (2019). Trophic rewilding establishes a landscape of fear: Tasmanian devil introduction increases risk-sensitive foraging in a key prey species. *Ecography* (early online), <https://doi.org/10.1111/ecog.04635>

Primack, R.B., **Regan, T.J.**, Devictor, V., Zipf, L., Godet, L., Loyola, R., Maas, B., Pakeman, R.J., Cumming, G.S., Bates, A.E. and Pejchar, L. (2019). Are scientific editors reliable gatekeepers of the publication process? *Biological Conservation* (early online), <https://doi.org/10.1016/j.biocon.2019.108232>

van Harten, E., Reardon, T., **Lumsden, L.F.**, Meyers, N., Prowse, T.A., Weyland, J. and Lawrence, R. (2019). High detectability with low impact: Optimizing large PIT tracking systems for cave-dwelling bats. *Ecology and Evolution* 9, p 10916-10928, <https://doi.org/10.1002/ece3.5482>

Forsyth, D.M., Pople, A., **Woodford, L.**, Brennan, M., Amos, M., **Moloney, P.D.**, **Fanson, B.** and Story, G. (2019) Landscape-scale effects of homesteads, water, and dingoes on invading chital deer in Australia's dry tropics. *Journal of Mammalogy* (early online), <https://doi.org/10.1093/jmammal/gyz139>

Menkhorst, P., **Ramsey, D.**, **O'Brien, T.**, Hynes, E. and Whisson, D., (2019) Survival and movements of koalas translocated from an over-abundant population. *Wildlife Research* 46, p. 557-565, <https://doi.org/10.1071/WR19090>

Knowledge transfer:

ARI seminars (subscribe here):

- 'Fragmentation and disturbance drive occurrence and persistence of grassland herpetofauna' (Michael Scroggie)
- 'FAME decision tools for biodiversity - a breakthrough in fire management' (Josephine MacHunter & Nevil Amos)

Australian Mammal Society Conference:

- 'Broad-scale surveys for Leadbeater's Possums reveal widespread occurrence' (Jemma Cripps)
- 'The decline of the spotted-tailed quoll in Victoria' (Jenny Nelson)
- 'Estimating relative abundance and density of the Greater Glider in Victoria' (Louise Durkin)

DELWP Science Symposium:

- 'Conservation of the rare daisy Button Wrinklewort near Melbourne' (Steve Sinclair)

- 'Optimizing habitat management for amphibians: from simple models to complex decisions' (Michael Scroggie)
- 'Disturbance has benefits as well as costs for fragmented populations of a cryptic grassland reptile' (Geoff Heard)
- 'Southern Right Whale: South-eastern population estimate and trends' (Kasey Stamation)
- 'Climbing into the canopy to discover Leadbeater's Possums' (Jemma Cripps)
- 'Monitoring Koala incident rates at Blue Gum plantations' (Paul Moloney)
- 'How many nest boxes are there in Victoria?' (Phoebe Macak)
- 'FAME - the Fire Analysis Module for Ecological values - making incorporation of ecological risks into fire management planning accessible' (Nevil Amos & Josephine MacHunter)

- 'Ecosystem risk assessment under a changing climate' (Tracey Regan)
- 'Representing biodiversity for RFA negotiations' (Cindy Hauser)

Celebrating Paddock Trees (GBCMA, Greater Shepparton, DELWP)

- 'Bats and paddock trees' (Lindy Lumsden)
- 'Linkages in the Landscape' (Andrew Bennett)

Biodiversity Across Borders Conference:

'The changing status of the Greater Glider in Victoria' (Jenny Nelson)

South West Biodiversity Forum (DELWP):

'Disturbance has benefits as well as costs for fragmented populations of a cryptic grassland reptile' (Geoff Heard)

Floodplain Ecology Course (GBCMA):

'Turtles in a floodplain landscape, Barmah-Millewa Forest' (Katie Howard)

Further info: research.ari@delwp.vic.gov.au