



About us

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

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.

Saving the Southern Right Whale

The Southern Right Whale is a migratory species which spends the winter months along the southern coastline of Australia where females come to give birth and nurse their young. During the breeding season, females and calves are particularly sensitive to vessels (impact, noise disturbance) and entanglement with commercial fishing gear. The protection of this **Endangered** species relies on **effective research and monitoring** to improve their management.

Support for the Southern Right Whale is being provided through the **Victorian Government's Biodiversity On-Ground Action Icon Species Grants program**. Informed by their recent **research**, ARI's Dr. Kasey Stamation and Barwon South West Region's Mandy Watson are developing a threat mitigation and research strategy to address priority actions for management of this iconic species in south-eastern Australian waters.

This project needs information such as **whale sightings and photos from citizens**. For those interested visit the **WhaleFace** website.



Mother and calf Southern Right Whale
(Image B McPherson)

News

Artificial intelligence develops an ear for nature calls

A great deal of information about biodiversity can be gained by listening. Increasingly, ecologists are using audio recorders to unobtrusively eavesdrop on the croaks, whistles and grunts that animals produce. The resulting audio recordings can create valuable snapshots of how animal communities respond to changes in their environment. However, to avoid spending many human lifetimes decoding the audio files, researchers are relying on artificial intelligence.

Recently, ARI's Dr. Peter Griffioen and Lachlan Francis used recordings from a network of automatic sound recording collected over three years by Katie Howard and Louise Durkin to train a deep learning artificial intelligence model. The model was able to automatically identify 14 frog species found in the Murray River and associated floodplains with very high single species accuracy. The project was recently presented as part of [ARI's Seminar Series](#). For an example of the the model in action see the [ARI website](#).

The work will be extended to birds to help [bring the Eastern Bristlebird back from the brink](#) following the bushfires in 2019-20, and to bats to monitor changes in response to interventions being implemented in north-western Victoria. Artificial intelligence will enable a computer to pick out bristlebird and bat calls from all other sounds. This information can be used to create a map of where bristlebirds currently live in the post-fire environment, or how bat communities change over time.

It is hoped that models like this can be further improved, and applied to more species, to better understand how policies and management interventions affect entire animal populations.



Spotted grass frog (*Limnodynastes tasmaniensis*; Image G Heard)



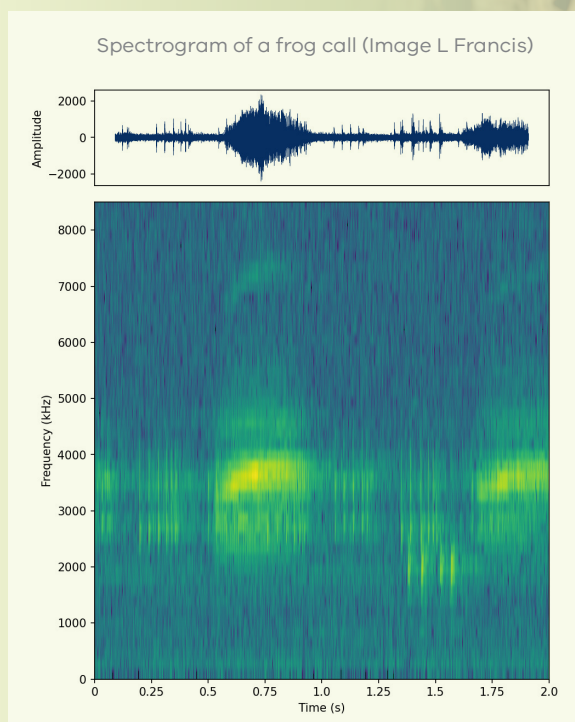
Peron's tree frog (*Litoria peronii*; Image G Heard)



Common eastern froglet (*Crinia signifera*; Image G Heard)



Large brown tree frog (*Litoria littlejohni*; Image L Durkin)



Growling grass frog (*Litoria raniformis*; Image G Heard)

News

Strategic Management Projects: Version 3.0

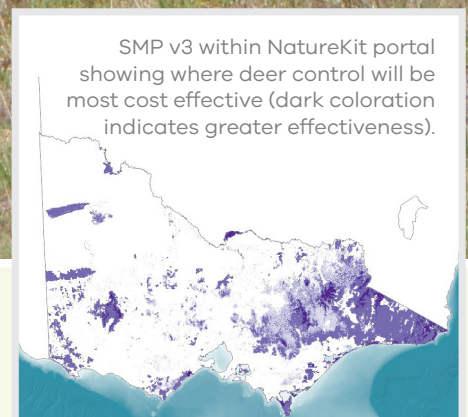
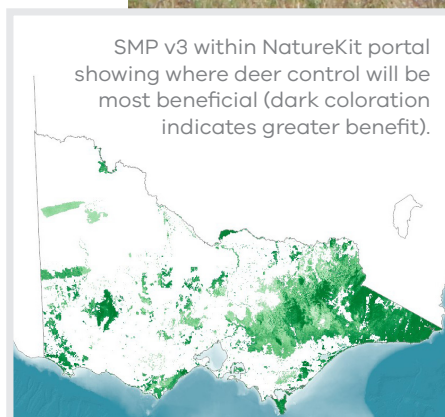
[Strategic Management Projects \(SMP\)](#) is a DELWP spatial tool which helps determine where the most cost-effective biodiversity management actions (e.g. deer control, revegetation) should be undertaken. The information helps land managers to plan how to provide the most benefit for Victoria's biodiversity in a coordinated way.

A new update for SMP (Version 3.0) is now available to view in [NatureKit](#). The update includes improved consideration of: past disturbances (fire and timber harvesting); important fire refuge areas; the benefits of revegetation; habitat distribution models; and updated threat information.

Protecting Victoria's biodiversity is a big job, so updating and refining tools like SMP is essential to ensure land managers have the best available information to guide decision making.



Hog Deer (Image J Mahoney)



Bolstering ARI's science capacity: five new staff

Dr. Lauren White, Dr. Rachel Leihy, Dr. Joslin Moore, Dr. Marlenne Rodriguez-Malagon and Thomas Schneider recently joined ARI's Terrestrial Ecology team. These fantastic new appointments add to the ever-growing [team of influential scientists and support staff](#) finding a home at ARI. The new appointees have experience applying ecological solutions to environmental problems across the globe, from sub-Antarctica to the UK, as well as in south-eastern Victoria.

We welcome Lauren, Rachel, Joslin, Marlenne and Thomas to the Terrestrial Ecology team and look forward to their fresh perspectives on the great work being undertaken at ARI.

Influencing Change

Managing the Long-footed Potoroo

In north-east Victoria, the Long-footed Potoroo is threatened with extinction by persistent fox predation. To protect this, and other species of native species, Parks Victoria have implemented a long-term fox baiting strategy which has reduced fox density, and has led to increases in the occurrence of Long-footed Potoroos within the baited area. However, the unprecedented bushfires in south-eastern Australia in 2019-20 impacted extensive areas of Long-footed Potoroo habitat, with concerns this could lead to declines in the occurrence of Long-footed Potoroos.

To better understand how Long-footed Potoroos are impacted by predation from foxes and severe bushfires, DELWP's ARI and Hume Region, Taungurung and Gunnaikurnai Traditional Owner groups and Parks Victoria undertook extensive camera trap surveys of fire-affected areas. Using data from these surveys, ARI used spatial and population models to predict changes in



Long-footed Potoroo
(Image Dave Watts)



Long-footed Potoroo
investigating camera trap
bait (Image L Woodford)

Long-footed Potoroo occurrence under different fox baiting strategies and fire regimes. Early indications are that Long-footed Potoroos benefit from predator control and that unburnt locations harbour many more individuals than areas severely burnt. ARI's Dr. Alan Robley has documented the findings in a [fact sheet](#) which provides guidance for land managers to inform management plans for Long-footed Potoroos, and other species at risk of extinction, in the Great Dividing Range.

Monitoring diverse semi-arid
woodland understorey
(Image D Leever)



The dominant trees in semi-arid
woodland are non-eucalypts
(e.g. Buloke, *Allocasuarina*
luhmannii; Image S Kenny)

The recovery of Semi-arid Woodlands

Semi-arid woodlands are full of life, have a rich cultural history, and are an important ecosystem in north-western Victoria for biodiversity conservation. However, they are also threatened by land clearing and grazing pressure (either introduced or native herbivores), leading to some communities being listed as '[Endangered](#)' (i.e. Buloke woodlands).

Efforts are continuing to reverse the degradation these ecosystems have endured; however, due to generally low rainfall and persistent grazing, woodland recovery is slow. To promote faster recovery of semi-arid woodlands a long-term restoration program is using herbivore population control to manage grazing pressure.

In collaboration with Parks Victoria, ARI's Dr. Sally Kenny and Claire Moxham are committed to the [long-term monitoring of semi-arid woodlands](#) across a network of parks. The knowledge gained from monitoring can then be used to demonstrate the success of the restoration program. To date, [ARI's research](#) has shown that some semi-arid woodland communities are recovering, with a key aspect of this recovery being tree regeneration which is often impeded by grazing. This research will continue to inform management recommendations which may lead to further recovery of Victorian semi-arid woodlands.

Influencing Change

Feature publications

Batpurev, K., Sinclair, S.J., Avirmed, O., **Scroggie, M.P.,** Olson, K., **White, M.D.** (2021) Stakeholders from diverse backgrounds make similar judgments about ecological condition and collapse in Mongolian rangelands. *Conservation Science and Practice*, p.e574.
<https://doi.org/10.1111/csp2.574>

Jellinek, S., Haslem, A., **O'Brien, T.,** Bennett, A.F. (2021) Evaluating restoration outcomes: trial of a community-based monitoring protocol. *Ecological Management & Restoration*, 22:284–287. <https://doi.org/10.1111/emr.12503>

Pritchard, A., Kelly, E., Biggs, J., Everaardt, A., Loyn, R., Magrath, M., **Menkhorst, P.,** Hogg, C., Geary, W. (2021) Identifying cost-effective recovery actions for a critically endangered species. *Conservation Science and Practice*, e546.
<https://doi.org/10.1111/csp2.546>

Coulson, G., Snape, M.A., **Cripps, J.K.** (2021) How many macropods? A manager's guide to small-scale population surveys of kangaroos and wallabies. *Ecological Management and Restoration*. 22:75–89.
<https://doi.org/10.1111/emr.12485>

Kingsford, R.T., Bino, G., Finlayson, C.M., Falster, D., Fitzsimons, J.A., Gawlik, D.E., Murray, N.J., Grillas, P., Gardner, R.C., **Regan, T.J.,** Roux, D.J. (2021) Ramsar wetlands of international importance—improving conservation outcomes. *Frontiers in Environmental Science*, 9:53.
<https://doi.org/10.3389/fenvs.2021.643367>

Clarke, M.F., Kelly, L.T., Avitabile, S.C., Benshemesh, J., Callister, K.E., Driscoll, D.A., Ewin, P., Giljohann, K., Haslem, A., **Kenny, S.A.,** Leonard, S., Ritchie, E.G., Nimmo, D.G., Schedvin, N., Schneider, K., Watson, S.J., Westbrooke, M., **White, M.,** Wouters, M.A., Bennett, A.F. (2021) Fire and its interactions with other drivers shape a distinctive, semi-arid 'Mallee' ecosystem. *Frontiers in Ecology and Evolution*. 9: 311.
<https://doi.org/10.3389/fevo.2021.647557>

Lumsden, L.F., Griffiths, S.R., Silins, J.E., Bennett, A.F. (2021) Roosting behaviour and the tree-hollow requirements of bats: insights from the lesser long-eared bat (*Nyctophilus geoffroyi*) and Gould's wattled bat (*Chalinolobus gouldii*) in south-eastern Australia. *Australian Journal of Zoology* (early online)
<https://doi.org/10.1071/ZO20072>

Senior, A.F., **Cleemann, N.,** Gardner, M.G., Harrisson, K.A., While, G.M., Chapple, D.G. (2021) Genetic structure, diversity and distribution of a threatened lizard affected by widespread habitat fragmentation. *Conservation Genetics* (early online)
<https://doi.org/10.1007/s10592-021-01408-4>

Huaman, J.L., **Pacioni, C.,** Sarker, S., Doyle, M., Forsyth, D.M., Pople, A., Carvalho, T.G., Helbig, K.J. (2021) Novel Picornavirus detected in Wild Deer: Identification, genomic characterisation, and prevalence in Australia. *Viruses*, 13:2412.
<https://doi.org/10.3390/v13122412>

Knowledge transfer: some recent presentations and workshops

ARI seminars (subscribe [here](#) on the ARI website):



["Biodiversity Bushfire Response: Reconnaissance of fauna, flora and habitat"](#) (Tim O'Brien, Arn Tolsma, Jemma Cripps, Peter Menkhorst)



["Genetic assessments of inbreeding in the wild"](#) (Dr Lauren White; Wildlife Management Program)

La Trobe University Seminar



["Decision science for complex environmental problems"](#) (Tracey Regan; Ecological Analysis and Synthesis Program)

Glenelg Hopkins Catchment Management Authority Field Day



["The 'how to' of grassland monitoring on farms"](#) (Brad Farmilo; Vegetation Ecology and Threatened Flora Program)

Compiled by Brad Farmilo

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