

# ARI Terrestrial Quarterly Update

OCTOBER 2023



Feral pigs captured at a camera trap

## 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.

## Monitoring feral pig and fallow deer with Gunditj Mirring Traditional Owners

ARI, in partnership with Gunditj Mirring Traditional Owners Aboriginal Corporation RNTBC (GMTOAC) and DEECA Barwon South West Region is working to estimate population densities of feral pigs and fallow deer in Indigenous Protected Areas (IPAs) adjacent to the culturally significant Budj Bim Cultural Landscape.

Feral pigs and deer are introduced pest species. Their wallowing and browsing behaviour greatly reduce seedling growth. Also of concern is the damage they do to the aquaculture system in an area known as the [Muldoon trap complex](#), thought to have existed for over 6000 years.

An integrated invasive species control program has been implemented to reduce the density of feral pigs and deer across the IPAs and adjoining private and public land. However, a monitoring program is required to estimate the population densities of pigs and deer in this landscape to determine whether the control program is effective.

ARI's Luke Woodford, Alan Robley and Dave Ramsey provided support and training to GMTOAC Rangers to monitor pig and deer populations by installing 80 remote motion sensing cameras over 91 km<sup>2</sup> across three IPAs and adjoining private and public land in May 2022. [Analysis of this data by ARI](#) revealed a density



Fallow Deer stag captured at a camera trap

of 5.4 (4.5–6.3) feral pigs/km<sup>2</sup> and 17.6 (15.4–20.0) fallow deer/km<sup>2</sup>.

This information will be used as a baseline, allowing land managers to assess the effectiveness of feral pig and fallow deer control in coming years and inform the design of an on-going monitoring program being developed by ARI, GMTOAC and DECCA.

### Estimating Stubble Quail abundance in Victoria

Stubble Quail is the most common quail species in Australia. It is mainly granivorous, but also insectivorous so is often found in native tussock grasslands, cultivated cereal fields, and grazing land. Despite being an important game species, little is known about the ecology and population dynamics of Stubble Quail.

No prior large-scale surveys have been done for this species to allow an estimate of Stubble Quail abundance in Victoria. A robust and accurate estimate of the state-wide abundance is required to support a transparent assessment of the sustainability of recreational hunting of Stubble Quail.

ARI's Michael Scroggie and Dave Ramsey, in collaboration with the Game Management Authority and Wildlife Unlimited, conducted a [pilot study](#) to test the suitability of a survey method to support a large-scale monitoring program.

Preliminary results suggested that the densities of Stubble Quail were highest in non-native pasture and seasonal wetland habitat, compared with dryland crops and tussock grasslands. Importantly, the pilot study revealed that intensifying survey effort will strengthen future monitoring programs and provide a more comprehensive estimate of Stubble Quail numbers across the state.



Stubble Quail - Image provided by GMA

### Invertebrate research at ARI

Invertebrates make up approximately 97% of all animal species on earth yet are routinely overlooked in conservation efforts. Terrestrial invertebrates are a particularly neglected group despite their important role as key pollinators of native and agricultural plants, decomposers, and predators of pests. It is estimated that only about 30% of Australia's invertebrates have been described compared to 87-99% of vertebrates.



Jumping spider



Grasshopper



Native cockroach

To increase our understanding of this poorly known group, ARI researchers have undertaken several projects focusing on invertebrates including:

- estimating the [response of native bees to the recent 2019/20 bushfires in East Gippsland](#),
- understanding the [vulnerability of invertebrates to disturbances](#),
- developing cost effective management options for threatened invertebrates,
- collating and uploading over 300,000 new invertebrate records to the Victorian Biodiversity Atlas,
- investigating the relationship between spider diversity and vegetation condition in endangered grasslands, and
- monitoring of the critically endangered [Golden Sun Moth](#) in conservation reserves west of Melbourne.

In addition to the above work, ARI's Matt Bruce and David Bryant are collaborating with leading invertebrate researcher, Dr. Kate Umbers from the University of Western Sydney, to explore approaches to overcome the barriers that prevent regular inclusion of invertebrates in conservation planning.

For more information about invertebrate conservation research at ARI and to see how the community can contribute to invertebrate conservation, refer to this new [fact sheet](#).



### Protecting Southern Right Whales

Australia's eastern population of Southern Right Whales is listed as endangered, with numbers estimated at less than 300 individuals. They visit Victoria's coastal waters each year between May and October to give birth and raise their calves. Unfortunately, they are vulnerable to boat strikes and disturbance during this time.

ARI and the Conservation Regulator (OCR) are leading a community awareness and engagement initiative to help reduce the risk of boat strikes and disturbance to whales from recreational vessels.

Local councils and other boat ramp managers along the Victorian coastline have been installing seasonal signage to warn the community of the risk of boats to Southern Right Whales. They ask boaters to: 1) watch out for whales, which can be particularly difficult to see when resting and nursing calves in local waters, 2) maintain a speed of 5 knots within 300 m of a whale (and below 10 knots within 1 km), and 3) keep a safe distance from whales (i.e. 200 m in a boat and 300 m on a jet ski). The signs will stay out for the duration of the whale season and are designed to raise awareness amongst the boating community.

ARI's Kasey Stamation and Tess McLaren, in collaboration with OCR staff, have developed an [engagement pack](#), including stickers, postcards, posters, FAQs and other information about Southern Right Whales as part of this project. These are available through the [ARI website](#).

DEECA have been recording Southern Right Whale sightings in Victoria for decades and currently use aerial photography, as well as land-based images from the community, to identify individuals and monitor the population. These images have helped to identify hundreds of individuals and will be used to understand population trends and how whales are using the south-eastern Australian coast.



*Southern Right Whale and calf near Killarney beach*



*Southern Right Whale and calf at Logans Beach*

## Influencing Change

### Feature publications

**Farmilo, B., Duncan, D., Moxham, C.,** Buchan, A., **Turner, V.,** Ballentine, M., **White, M.** & Schultz, N. (2023). Transient shifts in composition of degraded temperate native grassland following grazing exclusion. *Applied Vegetation Science* 26(2), e12731, <https://doi.org/10.1111/avsc.12731>

**Regan, T.J., MacHunter, J., Sinclair, S.J., Bruce, M.J.,** Neil, J., Parker, E. & Nam, B. (2023). Structured decision making to navigate trade-offs between multiple conservation values in threatened grasslands. *Conservation Science and Practice* <https://doi.org/10.1111/csp2.12953>

Rowland, J.A., **Moore, J.L.** & Walsh, J.C. (2023). How expert insight into alpine peatland conservation complements global scientific evidence. *Conservation Biology* 37(3), e14081, <https://doi.org/10.1111/cobi.14081>

**Scroggie, M. & Ramsey, D.** (2023). Stubble Quail abundance in Victoria: Improved survey methods and updated population estimates. [ARI Technical Report Number 360](#).

**Stamation, K.A.** & Watson, M. (2023). Supporting the recovery of the Southern Right Whale in south-eastern Australia: recommendations for threat mitigation, stakeholder engagement and research. [ARI Technical Report Number 362](#).

### Knowledge transfer

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

Conference Presentation. **Hauser, C.E. (Amos, N., MacHunter, J.,** Berry, L., Watson, S.) Integrating multiple data sources to inform fire management planning in Victoria. Ecological Society of Australia

Conference poster. **White, L. (Woodford L, Robley A, Bengsen A,** Marshall D, Wilson T, Templeton J, Phillips D, Durr PA and **Pacioni C**) Estimating feral pig population structure for strategic control program design. 23rd International Congress of Genetics

Presentation at Deer Control Forum. **Pacioni, C.** (Hills, E., Murphy, N., **Ramsey, D.,** et al) Sambar deer population genetics and disease modelling. DEECA. 5th July 2023

Presentation at Deer Control Forum. **White, L.C.** (E. Hill, E. Murphy, E. **Schneider, T. Woodford, L.** Bennett, A. **Ramsey, D.** Dahal, K. McMaster, D. and **Pacioni, C.**) "Deer Genetics Projects at ARI". DEECA. 5th July 2023

ABC radio interview. **Lumsden L.** '[They're amazing little animals': Demystifying Australia's 'most misunderstood' native mammal](#)'. The Conversation Hour. Presenter Richelle Hunt. 10 August 2023.

We acknowledge Victorian Traditional Owners and their Elders past and present as the original custodians of Victoria's land and waters and commit to genuinely partnering with them and Victoria's Aboriginal community to progress their aspirations.



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