News of Friends of Grasslands

Supporting native grassy ecosystems

ISSN1832-6315

September & October 2023

Activities

Work Parties
Sat 9 Sep 9-12:30pm Gurubung Dhaura
Sat 7 Oct 9-12:30pm Gurubung Dhaura and Yarramundi Reach
Sat 11 Nov 9-12:30pm Gurubung Dhaura
Register: Jamie Pittock

Budjan Galindji (Franklin Reserve)
Wed 6 & 27 Sept 9-11:30am
Wed 4 & 25 Oct - 9-11:30am
Register: Margaret Ning

Hall Cemetery
Sat 21 Oct 9-11am
Sat 18 Nov 9-11am
Register: John Fitz Gerald

Scottsdale Monitoring
Register: Margaret Ning
Thurs 9 Nov 2023 (to be confirmed)

For more activities see Page 3

New members
Welcome to:
Peter Beutel, ACT
Ann Milligan, ACT
Veronica Walker, ACT Friends of Watson Greenspace
Robin Garnett & Phil Collier, TAS
Paul Jennings, NSW

From the President…

August 2023

First Nations and care for grassy country

In this newsletter is an invitation for you to advise me and the Committee on our proposed FOG acknowledgment of First Nations Peoples (below). Yes, Australia needs reconciliation after our history of dispossession of the Traditional Owners. As a national referendum nears on a proposed Voice to Parliament for Indigenous Australians, for FOG it is also worth reflecting on how much healthier grassy ecosystems and our society would be if we only listened more to the Traditional Owners of the lands that we strive to conserve.

In FOG, we appreciate that grassy ecosystems are cultural landscapes. It was the patch burning of the grasslands and woodlands over millennia that regulated woody vegetation and maintained a modest level of grass biomass sufficient for forbs and wildlife to thrive. It was the sustainable harvesting of grass seed and digging of tubers that fostered populations of these species. It was the management for wildlife, like bettongs, bandicoots and potoroos, that enabled these ecosystem engineers to thrive. Over recent decades FOG members have had opportunities to learn from elders and seek to apply their advice on caring better for our country.

There is an enormous need to support First Nations Peoples to get back onto country. Remnant grasslands are in dire need of more boots on the ground to do practical work, including burning and controlling weeds. Nearly every FOG excursion visits travelling stock reserves, little known nature reserves, paddocks, railway easements and roadsides in need of more care. Indigenous ranger programs could be a key part of the solution.

For these reasons and more, in the draft statement Friends of Grasslands (FOG) acknowledges and celebrates First Nations Peoples, the Traditional Owners of the grassy ecosystems that we strive to conserve. We seek to commit to collaborating with Traditional Owners to manage grassy ecosystems to support traditional and ongoing social, economic, cultural and spiritual values. I look forward to your advice on how we can strengthen this collaboration in practical ways that benefit people and nature.

Proposed FOG statement

Members are encouraged to comment on the following draft FOG statement on First Nations Peoples being considered by the Committee at its September meeting. Please email comments to the FOG President at jamie.pittock@fog.org.au. The Committee welcomes member input on this important statement.

Proposed statement:

Friends of Grasslands (FOG) acknowledges and celebrates First Nations Peoples, the Traditional Owners of the lands and waters on which we live and work. We respect their elders past and present.

FOG is dedicated to supporting, managing and restoring grassy ecosystems. We recognise the important role of First Nations Peoples as stewards of country for over 60,000 years, and their continuing connection to land, waters and culture. We appreciate that grassy ecosystems are cultural landscapes. We recognise the need to manage healthy landscapes to support traditional and ongoing social, economic, cultural and spiritual values. We appreciate and thank the First Nations Peoples for their preparedness to share their knowledge of traditional land management and culture.

FOG respects traditional knowledge for the management of natural resources and the achievement of sustainable development. We are committed to mutual learning between scientific and traditional knowledge holders, to enhance outcomes for our nation as a whole.

FOG undertakes to:

- Connect with and learn from First Nations Peoples on the issues on which we work
- Encourage involvement of First Nations Peoples in grassy ecosystem management Support outcomes for First Nations Peoples through the management of grassy ecosystems.

We look forward to continuing to work alongside First Nations Peoples and to learn from them to improve the health of our nation's grassy ecosystems for the benefits of all Peoples.

Proposed summary statement:

Friends of Grasslands (FOG) acknowledges and celebrates First Nations Peoples, the Traditional Owners of the grassy ecosystems that we strive to conserve. We respect their elders past and present. We appreciate that grassy ecosystems are cultural landscapes. We commit to collaborating with Traditional Owners to manage grassy ecosystems to support traditional and ongoing social, economic, cultural and spiritual values

Advocacy report

Sarah Sharp

Submissions

Biodiversity Certification Assessment Report for the NSW portion of the Ginninderry development

The assessment of the biodiversity values is detailed and comprehensive. Areas of highest biodiversity have been designated for conservation. There are no impacts to Natural Temperate Grasslands.

Ginninderry Riverside Pavilion – DA202341697

The development application was supported. Our submission raised four points. Firstly, the scale of off-setting for the impacted area is welcomed. However, our submission encouraged the scientific study of the proposed road crossing for Pink-Tailed Worm-Lizard to examine its effectiveness. Secondly, some of the species suggested for the landscaping works were weed species and our submission encouraged these to be removed. Thirdly, some aspects of the landscape design may need to be reconsidered to align with bushfire risk abatement requirements. Lastly, the submission called for better explanation of the individual documents within development applications, especially when there is a large number of documents. Note: the deadline was missed; a copy has been sent directly to Ginninderry for consideration.

New RSPCA facility

FOG has made a submission on this matter previously. Our submission on this occasion reaffirmed our position that the site can and should be managed to protect the pre-existing Natural Temperate Grassland.

Urban Open Spaces Land Management Plan

This plan is inadequate in its current form and is unlikely to be capable of guiding management decisions in the Urban Open Space estate. Our submission focussed on developing the environmental management components of this plan, including mowing, weed management, fire management, and the ways that areas are identified for protection and restoration. The submission included 22 recommendations which would improve the management of the environment under this plan.

Issues

Invasive species

FOG successfully advocated for the removal of three sleeper weed species (*Agapanthus praecox, Arbutus unedo, Nandina domestica*) from the Municipal Infrastructure Standard 25 (MIS25). FOG, in collaboration with Canberra Nature Map, will continue to work to increase the body of evidence for the removal of other sleeper weed species from the MIS25.

Kalkite planning proposal

An area adjacent to Lake Jindabyne, south of Jindabyne, is proposed to be divided into three precincts, one of which is mostly disturbed, and will be the site for a village; the other two are proposed for small environmental living blocks and other parts managed for stewardship for environmental conservation. These two precincts contain threatened ecological communities as well as koala habitat. FOG objects to small blocks being built in Precincts 2 and 3 and recommends these areas be retained and managed for environmental conservation.

More activities (from Page 1)

Nerriga heathland sites, Sat 23 Sept
Let's get away from Canberra for a day to warmer climes to explore some coastal heath just beyond Nerriga. Roger Farrow has been monitoring these sites since the 2020 fires went through the area and has shared the locations with us for our FOG activity. It is around an hour and a half to Nerriga, so an 8am departure from Canberra is envisaged, time will be confirmed on registration.

Young area, day trip, Sat 7 Oct. 7.30am start, first checking out a sustainably grazed property, then travelling home via roadside TSRs, looking for a mystery plant (possibly exotic).

Grassy sites in the Armidale area, Thurs 26 - Mon 30 Oct (Includes two travel days). Ask for a copy of the itinerary if you are tempted.

Sutton area, Sat 4 Nov. Members' visit to a private property in Sutton adjoining the southern portion of Goorooyarroo Nature Reserve (NSW) and a nearby TSR.

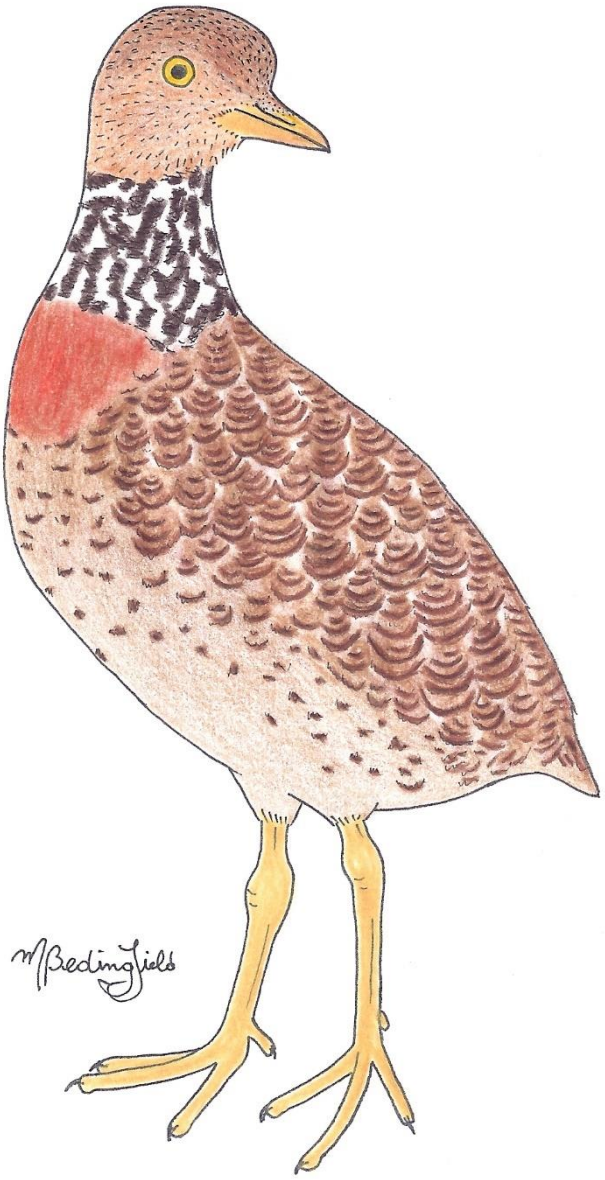
Tinderry, return to the property we visited in May, Sat 18 Nov. There'll be flowers this time!

Wyanbene, Shoalhaven River properties, Fri 2-Sun 4 Dec.

Tasmanian Grasslands activity, Late January 2024
Broadly, we plan to travel either the week beginning Mon 22 or Mon 29 Jan (approx. one week away from home). A 2-3 day program of property visits and discussions with ecologists and landowners. This planning is being done in cooperation with Pierre Defourny of Tasmanian Land Conservancy (TLC). If you wish to fly, transportation from Hobart to the Midlands and back, and for the duration of the visit program, can be organised through TLC (FOG members). If you are interested in joining us, email us with your preferred dates and we shall do our best to plan around them to accommodate everyone. Contact for all the above activities: Margaret Ning

Plains-wanderer – a critically endangered grassland specialist

Michael Bedingfield



The Plains-wanderer is a native grassland bird that only occurs on the Australian continent. It is quite unique in that it is the only member of the family Pedionomide, and has no close relatives worldwide. Although it has some resemblance to the button quails (Turnix spp.), it is more closely related to plovers and dotterels. But it is classified as endangered in NSW and critically endangered nationally. Since native grasslands are endangered as well, the species is in deep trouble.

The scientific name is *Pedionomus torquatus* which when translated is quite descriptive. Pedionomos is from Greek and means plains-dweller. Torquatus comes from Latin and means wearing a necklace or collar, referring to the colouring of the neck on the female. The plumage of the male is mainly fawn or brownish with fine darker-coloured rosettes on the upper side of the body and pale brown and spotted below. The legs and bill are straw yellow. The female is the same except for the striking black and white speckled colouring of the neck and a rich rufous breast patch. These birds are small, standing about 12 to 15 cm tall with the female being slightly larger. My drawing is of a female standing alert and very upright in a typical posture.

Habitat loss is the major cause of the decline of the Plains-wanderers. They were once widespread throughout inland plains of eastern Australia. Now they are restricted to a few isolated remnants which are mostly in New South Wales and Victoria, but a few have also been found in South Australia and Queensland. The great majority of the NSW population are found in an area of the western Riverina of southern NSW.

The colouring of the Plains-wanderer helps to protect it from predators in the open environment where it lives. It is a suitable target for raptors such as the Black Falcon (*Falco subniger*) or Spotted Harrier (*Circus assimilis*).

It behaves differently by day and at night. During the day it is quite secretive. If it sees you approach, it will most likely crouch low and remain still. If disturbed it is reluctant to fly and its first instinct is to run, with head down keeping low. If it needs to fly its motion is dipping and uneven to avoid aerial predators. But if disturbed at night it is less secretive. Then the flight pattern is slow and direct with shallow, fast wingbeats and the legs trailing out behind. Its colouring and secretive habits make it difficult to observe during the day and it can only be properly surveyed at night using a spotlight. Nonetheless, while hard to see, the Plains-wanderer is active during the day and feeds on a great variety of seeds and ground-dwelling insects.

The preferred habitat of these birds is the semi-arid, lowland native grasslands which normally occur on hard red-brown soils. These grasslands have quite low-density vegetation, but support a diversity of plant species such as native grasses and forbs, including a number of other threatened species. The decline in the numbers and distribution of the Plains-wanderer is mainly because of the conversion of these native grasslands into pasture with introduced grasses or into cultivated croplands. They survive in some nature reserves and some areas of native grassland where grazing by farm animals is moderate. The major threat to their future is further loss of, or change to, their preferred sparse grasslands. They are quite fussy. If the grass cover becomes too sparse or too thick they leave the location. Other threats to their future include prolonged droughts, predation by foxes and intense fire, which can destroy their habitat.

Plains-wanderers are generally solitary except at breeding time. The average home range of a single bird is about 12

hectares with breeding pairs occupying an overlapping range of about 18 hectares. They are usually sedentary but may be more mobile during drought. Females are dominant and defend their territories. They generally produce a clutch of eggs in spring. The nest is made on the ground at the base of a grass tussock or low shrub in a shallow scrape lined with grass. The incubation of the eggs and the raising of the chicks are done mostly by the male with the female's contribution being variable but minimal. After mating the female stays in the close vicinity and may mate again with other males if rains create good conditions.

The good news is that considerable efforts are being made to preserve this iconic native species. The main thing being done is the maintenance and improvement of suitable habitat. Private landholders are being rewarded for helping with this. Other activities are broad-scale and include sustained fox control, avoidance of pesticides near Plains-wanderer habitat, more research into their ecology, development of public awareness, control of feral cats, and constant monitoring of the existing population. There is also a breeding program implemented through Zoos Victoria. Let's hope there is success with the various programs, not only for the Plains-wanderers but also for the grasslands that support them.

Main references:
https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10588
https://trustfornature.org.au/wp-content/uploads/2020/11/TFN-Plains-Wanderer-Flyer-Final.pdf
https://www.philipmaher.com/plains.htm

ACT Government: response to the recommendations from the Inquiry into Environmental Volunteerism

Julia Raine

Last year the ACT Legislative Assembly's Standing Committee on Environment, Climate Change and Biodiversity initiated an inquiry to examine the type and nature of environmental volunteering in the ACT; opportunities to improve environmental volunteering; relationships between volunteer groups, their organisations and the Government; and current policy and regulatory settings. The Standing Committee received 30 submissions and held two public hearings. Friends of Grasslands 'submission highlighted its longstanding commitment to the conservation of grassy ecosystems in our region and urged the ACT Government to do more on biodiversity as well as reduce inconsistencies in volunteer management and policies. FOG was represented by Geoff Robertson at the public hearings.

The ACT Government recently released its response to the Report's 22 recommendations with relevant responses summarised below:

- Grants programs – while the Government agreed to the two relevant recommendations on the need to streamline processes and standardising requirements, the response also noted that different Directorates and programs may still demand different processes and requirements. The ACT Government noted that the Standing Committee on Public Accounts is currently conducting an inquiry into grants management.
- Operational policies – the Government agreed that further efforts will be made to ensure a consistent approach to operational policies and noted the ongoing cooperation between PCS and TCCS on the issues of power tools and chemical usage.
- Biodiversity Conservation Forum — FOG is pleased that TCCS is now represented at the Biodiversity Conservation Forum which was a recommendation of the Committee.
- Mowing – the Government agreed to improve coordination between mowing and environmental outcomes through the TCCS Volunteer Coordinator.
- Engagement with environmental groups — FOG looks forward to the Government's participation in the upcoming environment volunteer conference being organised by Landcare ACT and the Conservation Council, as there is much to be gained from open discussion and collaboration between Government ecologists, researchers, rangers and land managers and environmental volunteers, citizen scientists and their supporting organisations.

The full report and the Government's response are available here.

Red Hill Integrated Plan

Ross Kingsland

Introduction: Geoff Robertson
Ross is the President of the Red Hill Bush Regenerators. For many years now FOG and the Conservation Council have supported the Regenerators and the Federal Golf Club in their joint attempts to solve the problem of how to sustain the golf course, especially with regard to its costly water infrastructure. The Club's early proposals to redevelop part of the golf course were apparently acceptable to the Regenerators, to Council and to FOG, although Red Hill includes important grassy woodlands.

Enter Mbark Pty Ltd, a company sympathetic to biodiversity conservation, which patiently and carefully considered the Regenerators' concerns with earlier proposals. After several years of exploration of options, which involved the ACT Government, the Golf Club, residents and conservation groups, and the preparation by the ACT Government of the Red Hill Integrated Plan, the matter has been resolved as outlined below by Ross.

Advocating for good outcomes for our grassy ecosystems takes time, courage, good research, an ability to listen, and patience. It also requires keeping stakeholders and our members informed, and assessing achievements or lack thereof against objectives. I would like to add that it was very satisfying to work with people such as Michael Mulvaney (past Regenerators President) and Ross, who exemplify great advocacy qualities, and those in FOG who have played their part such as Bernadette O'Leary and Naarilla Hirsch. Hopefully the Regenerators will keep FOG up to date on how the decisions made under the Integrated Plan are implemented – Geoff Robertson.

Ross Kingsland
As you will recall, The Conservation Council and FOG have helped in the past with the development and introduction of the Red Hill Integrated Plan. I am now writing to let you know of subsequent developments. The planned Over 55s village development successfully negotiated a number of required approval processes including:

- The Commonwealth Government's decision that no approval was required under the EPBC Act, as it was determined that the proposed development is not likely to have a significant impact on any matters of National Environmental Significance i.e. listed threatened species including the Superb Parrot, the Gang-gang Cockatoo and the Grassy Woodland itself;
- The ACT Government's Environmental Significance opinion that the proposed development is not likely to have a significant adverse environmental impact; and
- The ACT Territory Plan Variation approval, which includes a raft of rules aimed at minimising the impact of the proposed development on trees, threatened species, wildlife corridors and the ecological values of the site, and its commencement.

Mbark is now undertaking the required lead-in Development Application consultation process. If this proceeds without issues, a formal Development Application should be submitted in the next couple of months.

One of the approved Territory Plan variations includes the transfer of about 10ha of golf club lease to the Red Hill Nature Reserve. Some of this area needs rehabilitation and we met with Mbark and the Federal Golf Club to discuss this and to learn about the current plans for the proposed village development. While the development will involve the removal of a number of mature trees, there are a number of compensations planned and we are happy with progress on plans for both the village and the rehabilitation and transfer of lease to the Reserve. There has been research undertaken into the wildlife in the proposed development area, and this has indicated limited impact on species including the threatened Gang-gang cockatoo.

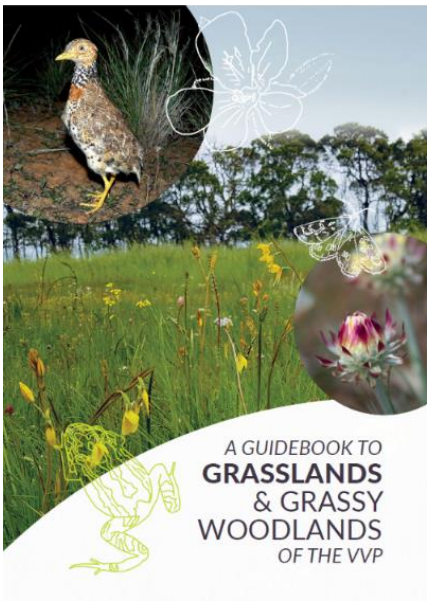
There is some community opposition to the development, and this may play out in the media, but the Red Hill Regenerators have not changed their belief that the plans for the Golf Club are the best option available. I would be happy to provide more details if wanted. The Territory Plan Variation for the other end of the Reserve near Kent Street was also approved but we don't have any further information about it at the moment. This includes the transfer of some leased land to the Reserve.

Guide to Grasslands & Grassy Woodlands of the VVP

The Corangamite CMA and project partners have released the '*Guidebook to Grasslands & Grassy Woodlands of the Victorian Volcanic Plains*'.

This photographic guide is designed to help landholders, managers and the wider community maintain and improve the unique flora and fauna of the VVP grasslands and grassy woodlands. Raising awareness and understanding of these unique ecosystems will help ensure that they are protected and restored for future generations.

Free electronic copies are available here (17 pages with colour photos). If you are interested in a hard copy, please email info@ccma.vic.gov.au.



Three 'Moderate' Weeds close up

John Fitz Gerald

The three species here thrive in many disturbed areas and are rated as 'moderate priority' in Downey's 2022 'Advisory List of Naturalised Alien Plants in the ACT'.

I'll start with *Echium plantagineum*, Paterson's Curse. This plant, originating in Europe, has 47,000 records on ALA, all across southern temperate areas of Australia. Being toxic to livestock, particularly horses and pigs, it is an important weed for pastoralists, but it's also a significant environmental weed. It is proposed that its trait of germinating early in the growing months, its fast-growing root system and its drought tolerance all contribute to the competitive success of this species in our country. Added to that, plants produce large numbers of seeds; production rates of up to 12,000 seeds per square metre per year have been measured (that's over one seed per square centimetre!). Interestingly this plant has shown susceptibility to biological control; in Australia six insects (a moth and weevils and beetles) have been released and have become established.

My image shows dark, chunky seeds with very rough, warty surfaces. There are up to four seeds (botanically termed mericarps) per flower. Seeds have a complex shape, very like a segment of an orange but cut in half, because there are two approximately 'flat' faces and one curved face that diverge from a blunt tip with another small 'flat' face at the opposite end.

Paterson's Curse, scale 1mm

On to *Echium vulgare*, Viper's Bugloss, again from Europe but also Asia. This plant is very like Paterson's Curse, including in its toxicity to stock so again it is a priority weed.

Viper's Bugloss, scale 1mm

This species has just over 1,850 records on ALA, mainly in the Central and Southern Tablelands of NSW but also in NE Vic. It is expected to respond to biological control in a similar way to its Paterson's relative. My image shows that seeds are also shaped as described above, though here the seeds are a little smaller and smoother.

Finally to *Rumex acetosella*, Sheep Sorrel, also coming from Europe and NW Africa. It is stated to be more abundant in acidic, sandy or loamy soils. ALA holds over 18,500 records across southern Australia but particularly in NSW, Vic and Tas. This species is rarely a biosecurity risk for agriculture but it is an environmental invader of a wide variety of natural habitats, and a troublesome target for landcarers. Weeds Australia advises that 'Manual removal is rarely successful and extremely difficult due to the extensive rhizomatous root system. Attempts often lead to greater infestations.' The latter effect is possibly due to a seed-bank response to soil disturbance. It is a characteristic of Rumex that the inflorescences occur in whorls on the flowering stem. Since there can be many whorls per stem, large numbers of seeds can fall from each plant.

My image shows variations in the seed structures, termed achenes, that are on average about half the size of Echium seeds. All have a trigonous character but the surface textures range from rough, patterned and dark to smooth, shiny and brown. This variation appears to depend upon how much rough outer skin remains; possibly that skin was part of the valves of the inflorescence which are reported to be variably fused to the achene.

Sheep Sorrel, scale 0.5mm

Both Echium species are listed on all weed websites for our region but the NSW DPI site does not include the Sorrel. A similar pattern also occurs in the new WeedScan App, a smartphone resource for all Australia due to launch this August. It uses artificial intelligence/machine learning to identify in real time weed images (leaves and flowers) submitted by phone. Its list of weeds covers several hundred species that have priority in one or more of Australia's States and Territories. Search it out if you are intrigued.

Micrographs were taken at the National Seed Bank of the Australian National Botanic Gardens. They can be reproduced freely if attributed and linked to the Creative Commons licence CC BY.

Information above was gathered from websites, principally ALA - www.ala.gov.au, Plantnet - plantnet.rbgsyd.nsw.gov.au/search/simple.htm, Weeds Australia - weeds.org.au, weeds.dpi.nsw.gov.au and Herbiguide - herbiguide.com.au

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Botanical Complexity - Vegetative Proliferation

John Fitz Gerald

At Hall Cemetery Woodland in June I was intrigued by flower spikes on several Phalaris tussocks where many green shoots appeared to come from most spikelets in each spike (image 1). I understand that premature sprouting of grain is loathed by grain farmers as it can render a crop useless for anything but stock food, but had that happened in these tussocks at Hall? At the same time I was also able to find many inflorescences on most other Phalaris tussocks which still held florets and some mature grains (image 2). A bit of web searching took me into new territory and, though it did not lead to any plain answer, I thought I'd share a bit of it. Alert - plenty of terminology coming!

Clearly the shoots I saw were new leaves, and possibly each shoot was on its way to becoming a new Phalaris plantlet. These are labelled in some writings as **proliferated spikelets** and recorded for at least 30 genera of family Poaceae worldwide. This is especially true for some genera of grain crops. Further reading revealed that the cases are technically subdivided further. In **vivipary**, seeds form by normal sexual reproduction and later germinate in situ, indicating that dormancy is not effective. In **pseudovivipary**, flower-hormone levels dictate that reproduction goes not by flowering and fertilisation but via direct growth of new plant tissue which then separates from the mother plant and potentially starts a new plant asexually - a clone. This is the preferred reproductive route for a few plants such as some Agave species. I hope I have

all this correct but, if not, knowledgeable readers will correct me I'm sure.

Apparently proliferation can associate with late flowering, cool and wet weather and, at times, diseases - that could have been the case earlier in 2023 at Hall.

*Image 1 - **proliferated spikelets**: green shoots emerging from a Phalaris spike*

Image 2 - three shiny florets with hairy lemmas and paleas, plus one separated mature brown seed. Scale 1mm

Details come from the following paper and its references: Vega, AS and Rugolo de Agrazar, ZE (2006), South African J Botany, 72, 559-564.

Management of Herbage Mass (Biomass Control) in Grasslands

Rainer Rehwinkel

Control of herbage mass (biomass control) refers to a requirement of some grasslands to have excess plant matter removed when it has built up after several wet seasons. This can be seen in lowland grasslands dominated by Kangaroo Grass, *Themeda triandra*, which can build up not only excessive live plant material, but also layers of dead material (thatch). Much of this dead material fails to come into contact with the soil's surface, and so doesn't contact the soil invertebrates and microbes that would otherwise break organic material down. The thatch fails to decompose and remains above the soil surface, creating a barrier that's impervious to sunlight and rainwater, resulting in three main effects:

1. Excess biomass reduces space available for the smaller grass and forb species that usually live in the intertussock spaces between the dominant grasses in the community. Those smaller plants suffer by weakening and finally dying if biomass isn't removed in a timely manner.
2. Excessive dead biomass accumulating around the dominant grasses may have similar effects on them, and they too lose vigour and die. When this happens the native plants over large areas of the grassland die.
3. With the release of nutrients from the resulting dead plant matter, especially dead roots, the grassland is invaded by exotic species, especially annual and biennial exotic weeds (the 'nitrophiles' or nitrogen-lovers like thistles, fleabanes and the European and Mediterranean grasses).

Herbage mass control can take various forms, as follows:

- Application of cool burns that replicate the traditional management practices of Indigenous people who cared for, and it is believed, actually created some of our grasslands over many generations of such careful management.
- Application of grazing by animals, including kangaroos in 'natural' systems, or in the 21st century, by sustainable rotational grazing by cattle, sheep, horses or alpacas.
- In our nature reserves, management of herbage mass can be achieved by traditional means such as cultural burning, or by sustainable grazing relying on kangaroos or domestic stock.
- In parklands and other public spaces, slashing is effective if undertaken during the right seasons, to the right height, and with clean, weed-free machines.

Timing of management of herbage mass is critical. Grazing for biomass control is generally applied in summer or autumn, when grass biomass is high after spring or early

summer rains, especially because Kangaroo Grass (a C4 species) will have put on growth in response to late spring and summer storms.

Another reason to apply grazing management in summer or autumn is that most of the forbs are dormant at this time. Winter grazing is best not applied, because wet grassland soils may be vulnerable to pugging by the hooves of stock and because many of the forbs are either emerging from their dormancy or germinating if they are amongst the few annual species present.

Late autumn and winter, or even early spring are good seasons for the application of cool burns, for safety reasons, but also because during these seasons, the dominant C4 grasses are inactive and thus more flammable compared to the emerging forbs and cool-season grasses, which may be relatively less flammable and less vulnerable to the effects of cool burns.

So, to finish off, the main reasons not to burn, graze or mow in the spring are:

- Aesthetics and community engagement, as people can appreciate the grasslands' wildflower shows and thus get to know and love them; and
- Spring is the main season for grasses and forbs to have a chance to build up energy reserves, because the confluence of increased rainfall and soil warmth increases productivity.

I have not covered fauna in the above discussion, but it is clearly very important to consider the part played in biomass control by the threatened grassland fauna species that often occur in our sites. Regardless of seemingly difficult issues such as when to apply management, what to apply, how extensive an area to apply it to, what sensitive flora and fauna species will be affected, it's worth remembering that a healthy vigorous grassland with some form of management of herbage mass - whether that's by careful grazing, slashing or burning - is far more resilient than one that does not receive the required management. This is a shorter version of an article, with images, posted on the FOG Facebook site available here.

Budjan Galindji Update (Margaret Ning)

On Friday 28 April most of our 1.5ha Budjan Galindji pocket site was mowed by our rangers. This made things easier for our winter weeding and my winter spraying program. It also necessitated a raking morning at a subsequent work party as there was a lot of thatch where more Phalaris was cut than normal. On Wednesday 7 June the team at Budjan Galindji (Franklin Grasslands), raked and removed the excess Phalaris thatch that was created by a recent government mow in the north-east corner of our 1.5ha portion of the site (photo below by Geoff Robertson)

Update 15 June (Margaret Ning)

Segueing from Rainer's article, I would like to report that there has been a 12 day sheep grazing event in the southern paddock of Top Hut TSR from 17 to 29 April 2023. This has resulted in very satisfactory biomass reduction over the whole site, as evidenced by the photos below (David Eddy).

Before grazing:

After grazing:

Turallo Nature Reserve Update (Margaret Ning)
Outcome of an ecological burn of Kangaroo Grass at Turallo Nature Reserve (below), photographed August 2022 (Andrew Zelnik):

Pink tailed Worm Lizard excitement at Ginninderry

Margaret Ning

FOG has been to Ginninderry Conservation Corridor quite a few times over the last few years. We have helped to monitor the Ginninderry Conservation Trust's (GCT) 'scrape and sow site' three times (November 2020, October 2021 and December 2022) since it was sown in May 2020. We have also been welcomed there for two very interesting information sessions, most recently on 6 April 2023.

On those occasions, we have only seen a Pink Tailed Worm Lizard (PTWL) once, when we were lucky enough to see two on a rocky knoll where we were admiring some spring flowering. And that was around 800m away from where the scrape was established. Of course there were many other patches identified by Will Osborne and David Wong many moons ago as suitable habitat for the PTWL, but the challenges for such a small legless lizard to negotiate the distances required seemed insurmountable to me.

On FOG's recent April visit we were shown a selection of conservation highlights at Ginninderry, including the 'scrape and sow' site. Its background was explained, including how it was part of a few areas identified as potential PTWL habitat, and how rocks and bricks had been spread on the site (0.27ha) with a view to attracting ant populations, in the hope that PTWLs would eventually move in!! We were allowed to carefully look under the rocks, indeed reporting a lot of ants, but then Jess, Ginninderry's Sustainability Manager, actually discovered the shed skin of a lizard/small snake. A photo was taken and within a few days the ID was confirmed on Canberra Nature Map as a PTWL!

But to me that was not the end of the story. I immediately thought back to only a few months earlier, in early December 2022, when FOG and Ginninderry rangers were doing their third lot of joint monitoring at the scrape site and found that the height of the vegetation surrounding the scrape was still almost a metre high, for the second year running. And the vegetation was also that height for an extremely large part of the surrounding area. True, by 6 April 2023 the height of the surrounding paddocks was reduced to no more than 10cms, but how does a tiny 15cm to 25cm- long reptile, essentially with no limbs, negotiate its way through to the scrape from wherever its home base/range was previously? I don't have any answers, but in this article I just would like to share my amazement at the tenacity and achievement of this obviously very determined little animal, via a series of monitoring images below!

If you would like to read Ginninderry's own monitoring story, please use this link to their document *Natural Temperate Grassland and Pink-Tailed Worm Lizard Restoration Works, Scrape and Sow Monitoring, Cumulative report as at December 2022* (Note: document size is around 15Mb).

FOG's three visits to the Ginninderry Conservation Corridor to help monitor the 'scrape and sow' site with Ginninderry rangers were written up in the Jan-Feb 2021 and Nov-Dec

2021 issues of *News of Friends of Grasslands* and in the 2022 FOG annual report (presented at the 2023 FOG AGM, under the heading 'Ginninderry Conservation Trust 'scrape' monitoring').

Nov 2020 - first joint monitoring session by FOG and GCT, following the sowing in May 2020 (Image: Rachel Eland, GCT)

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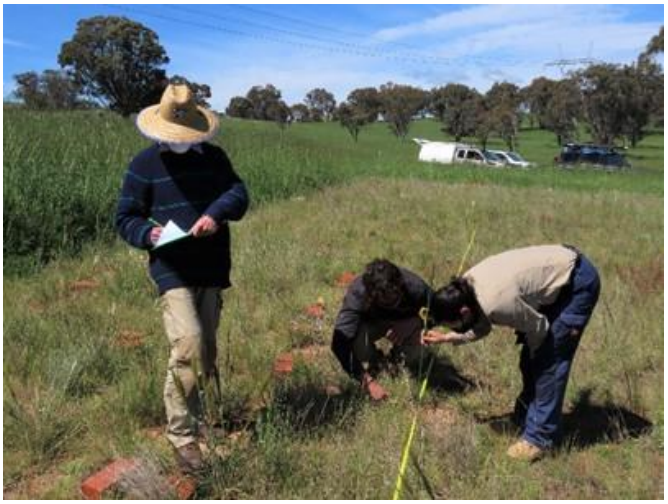
Oct 2021 - GCT's monitoring image showing the rocks and wood placed on the scrape to attract the ants, and in time the PTWL. Note the height of the grass in the surrounding paddocks.



Nov 2021 - Second joint monitoring session, which also shows the height of surrounding paddock grass. (Image Andrew Zelnik (AZ))

Nov/Dec 2022 - GCG's monitoring image at the exact same spot it monitored in Oct 2021, with the rocks and wood now obscured, and the 2nd year of metre-high paddock grass outside the scrape (Image AZ).

Dec 2022 - FOG & Gininderry's) third joint monitoring session, taken just outside the scrape, of metre high paddock grass (Image AZ)

April 2023 - FOG visit to the scrape & sow site on its Gininderry Conservation Corridor tour. Scrape dominated by tall stipa Austrostipa bigeniculata after the 3rd La Niña year (Image AZ)

April 2023 - the exciting discovery on that visit was a PTWL shed (Image AZ)

6/4/23 - and look at the height of the veg in the surrounding paddocks after the cattle had been in for six weeks. (Image AZ)

Another of the ant-loving fauna recorded at the scrape, which turned over several of the rocks.(Image Rachel Eland 11 Nov 22)

Canberra Festival of Nature

Landcare ACT has announced the The Canberra Festival of Nature to run from September to November. During the festival a range of environmental groups will offer events that are centrally coordinated and promoted by Landcare ACT. FOG will be adding some of its spring program to the festival calendar. Further details are available here.

Sullivan's Creek – help needed

As part of planning for the re-naturalisation of Sullivan's Creek, a project under the Connecting Nature - Connecting People program is documenting what wildlife is already there and how this could be enhanced. You can help by photographing any plants, animals, fungi or other wildlife that you come across within the vicinity of the Creek and its tributaries. Information here

GPN presentation

On 3 July 2023, Geoff Robertson gave a presentation to the Grassy Plains Network in Victoria on FOG's experience. The presentation covered why FOG focuses on grass ecosystems, its approach to organising events, on-ground work, advocacy, communications, governance and networking. It also describes its members, their strengths and contribution as volunteers and outlined FOG's finances. Geoff completed the presentation by describing issues confronting FOG, the importance of understanding Aboriginal traditional land management values and Geoff's current interest in developing biodiversity indicators. A copy of the presentation may be found here.

Tuggeranong Homestead: history, regeneration and afternoon tea

Margaret Ning

Saturday 15 July, at Tuggeranong Homestead (TH) in the suburb of Richardson, historian Jenny Horsfield welcomed a group of 27 FOG and Canberra Field Naturalists members on a relatively balmy winter afternoon. Jenny told us that her initial interest in TH was historical, and she gave us a 20 minute background into the homestead's history.

Tuggeranong Homestead dates from an 1827 land grant. One of the earliest written records of local Aboriginal life was recorded there in 1831 when William Edward Riley visited Tuggeranong and recorded, in great detail, a corroboree. Structures at TH include an 1830s convict-built barn, which is one of the oldest ACT structures. In its next life it became a sheep property, and with its productive native grasslands, and no clearing required, it was very profitable. Its owners, the Cunninghams, vacated the property in 1915-16. Being wartime, the Government thought the capital needed an arsenal, complete with a township, on the TH site, but Walter Burley Griffin opposed that, calling it inappropriate. Fortuitously, the war ended and that scheme was quietly shelved. That left TH vacant. In 1919 Charles Bean wanted to write his war history in Australia's capital, and brought his staff to TH for around five years, which they all enjoyed. After that the land west of the homestead became part of a soldier settler scheme. The historic homestead is now run as a conference centre, the management of which is very supportive of Jenny's Minders of Tuggeranong Homestead (MOTH) group.

Jenny gave us the background to MOTH, as a group that grew out of a move to stop a medium development housing estate being built on the homestead site in 1992. The group won a court action, the Government recognised the 30ha site's natural and cultural heritage, the buildings and gardens were renovated, and a commercial presence was created. In 2001 a sum of $675, 000 was awarded by the Centenary of Federation Grants Program to restore the buildings to a suitable standard and allow for their use by the public.

We then moved outside the homestead to an area not far from the house which was the old bed of Tuggeranong Creek. Jenny told us that Tuggeranong Creek had been very important to Indigenous people. She suggested it had probably been a chain of ponds originally. She then explained that the creek bed in front of us had been filled with rubbish only 12 years ago. The MOTH group has been planting myriad native plants (forbs and shrubs) along the creek line, including *Lomandra longifolia*, *Bursaria spinosa*, *Bulbine glauca* and *B. semibarbata*, *Hardenbergia violacea*, Acacias, *Dianella revoluta*, *Veronica perfoliata*, Callistemon, and a large clump of Bull Rushes. Some of the group are enthusiastically growing some of the plants by seed themselves. There has been some tree-planting as well, which is impressive considering they were planted in 2015 and have grown incredibly well. These include a curious Snowgum with really strange capsules (there was a suggestion that it may have been a hybrid), and a huge Black Sallee. Jenny told us how the NCDC had planted tree shelter belts in three parts of the homestead area.

We became curious about the way some of the plants growing up the side of the creek line were rather huge and outsized specimens, including *Poa labillardierei* and *Carex tereticaulis*, which would normally prefer to have 'wet feet'. Jenny said she had been told that the area in which they were growing is described as a clay lens (see note below), which is a geological term for an area that holds on to moisture (see note below). It certainly was having an effect on the way the plants were growing. During the recent La Niña years there had been thigh-high water in the creek bed for six months, with an increase in associated fauna (dragon flies, families of ducks, frogs, snakes). The group is also very excited to find that native grasses are reappearing around the site, so the seed bed is still there! We found half a dozen species of native grasses that the group had not planted.

Jenny also told us about plans for the imminent re-naturalisation of Tuggeranong Creek which has been experiencing water-quality problems further downstream, including blue-green algae. The creek was drained in the 1970s at TH, when the new suburbs of Calwell, Theodore and Richardson were planned. The water will be returned and a new ephemeral wetland will be finished by the end of the year, hopefully. The group is enjoying their new association with the revegetated creek. We then adjourned to the homestead for our *pièce de résistance*, a delicious Devonshire tea.

Native plants spotted while wandering around:
Geranium sp., *Rumex brownii*, Rytidosperma sp. *Sporobolus creber*, *Chloris truncata*, *Panicum effusum Bothriochloa macra*, *Microlaena stipoides*, *Carex tereticaulis*, *Carex appressa*, *Carex* sp.

Geoff musing at Tuggeranong Creek (Photo: Rosemary Blemings)

The old Tuggeranong Creekline is in the background, and a large group of visitors wonder what they will see next. (Photo: Geoff Robertson)

If you google 'MOTH' or 'Tuggeranong Homestead' you will be able to fill in the many gaps in my write-up of this activity.

Note: A clay lens is a layer of clay with limited aerial extent underlain, overlain and surrounded by other material. Compacted clay generally has low permeability and if the clay lens has reasonable thickness and occurs over significant area, it can be a barrier to water movement. This can lead to a perched water table with the underlying material being denied moisture, thus impacting its agricultural value.

A world first - Threatened Species Index

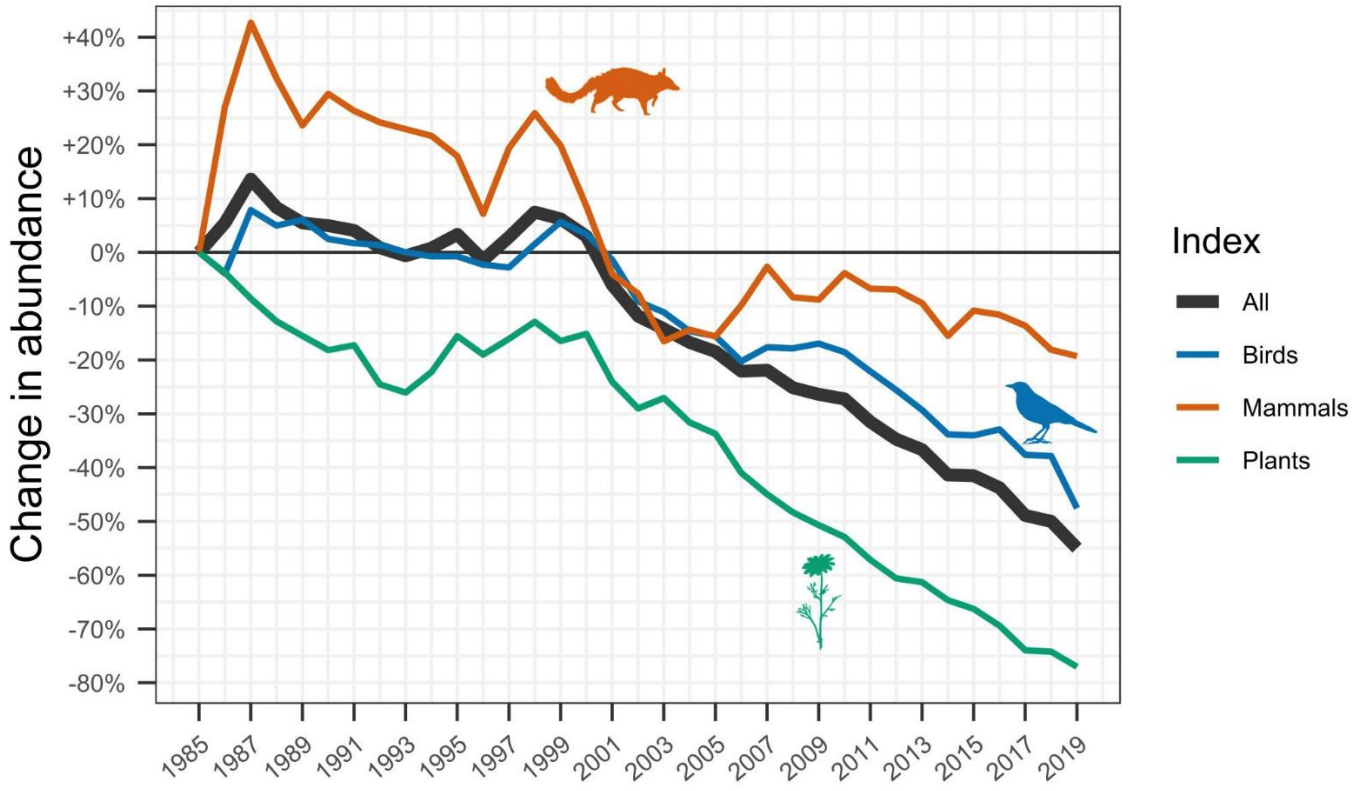
Geoff Robertson

For many years, I have been frustrated by the lack of statistical information on whether our threatened ecological communities and species are recovering or declining. Statistics are slowly emerging to answer this question. Now thanks to the Threatened Species Index (TSX) we have an important step forward. The following is my attempt to provide a brief guide on how to have a quick look at this site and become better informed.

Before going there, I might give a few quotes from the site which summarise its key features:

- The first of its type in the world;
- The TSX provides reliable and robust measures of change in the relative abundance of Australia's threatened and near-threatened species at national, state and regional levels;
- Understanding these changes in species populations is crucial for monitoring progress towards global conservation targets. Moreover, the TSX allows users to measure and report on the benefits of conservation investments, as well as justify and design targeted responses and raise the profile of threatened species;
- The TSX can assist policy makers, conservation managers and the public to understand how some of the population trends across Australia's threatened species are changing over time;
- It will inform policy and investment decisions, and enable coherent and transparent reporting on relative changes in threatened species numbers at national, state and regional levels.

The key results are shown in the following graph which I think is fairly self-explanatory:



As the graph shows there are indexes for birds, plants and mammals. These are also available for each state and territory. I would direct the reader to the following pages: Plants, Mammals and Birds. In each page there is a link to each state and territory, although there is nothing on ACT mammals. The two short films on plants and mammals are certainly worth viewing and provide further valuable insights.

I will leave it to the reader to discover how the indexes are constructed. The reader will observe many gaps – e.g. there is nothing on herpetofauna and invertebrates and data by regions is rather weak. However, what is provided is a major step forward. It provides a framework on which national and international mansions might be built.

News Roundup

Paul Archer

Murray-Darling Basin Plan to be extended under a new agreement, without Victoria – but an uphill battle lies ahead

Jamie Pittock, The Conversation August 22, 2023

INTRODUCTION

"Federal Minister for Water Tanya Plibersek today announced a new agreement to restore Australia's largest and most important river basin. It comes just months before the original Murray-Darling Basin Plan was to be completed. This was a plan to benefit people and nature, to protect river communities, industries and the environment against future droughts. It was forged in response to the gruelling Millennium Drought, when the Murray River stopped flowing to the sea.

It was clear too much water was being taken out of the system and everyone would suffer if Basin states could not find a better way to share. But it has been much harder to strike the right balance than first hoped. When it became clear in July it was no longer possible to deliver the plan in full and on time, the federal government started hatching a new plan.

Now Plibersek is offering “more time, more money, more options, and more accountability”, acutely aware that “the next drought is just around the corner”. But she faces an uphill battle, with Victoria still holding out. Further, the legislation is yet to go before parliament and needs to be passed before Christmas.”
The full article is available here

GED: Victorian grassland earless dragon rediscovered west of Melbourne

Link from Margaret Ning
After more than 50 years of no sightings, and the very real possibility that it was extinct, the Victorian grassland earless dragon (*Tympanocryptis pinguicolla*) has been rediscovered west of Melbourne.

According to the Biodiversity Council, the survival of this species is now on a knife edge and will be determined by whether sufficient political will and resources are dedicated to securing its survival. The expert group founded by 11 Australian universities estimates that $56 million will be needed over 10 years to secure this species and says that the majority of this cost would be used to buy and rehabilitate key remaining areas of grassland habitat which are at imminent threat from development and agricultural intensification.

Biodiversity Council Lead Councillor Professor Brendan Wintle from the University of Melbourne said: “This is an exciting discovery and second chance for this beautiful little reptile. It was once common and widespread across Victoria’s plains grasslands but is now in such low numbers we could not detect it for more than 50 years. If we do not respond appropriately, it is at very real risk of extinction. Thankfully we know what is required to secure and recover the species – what remains is for governments to dedicate the resources to do so. The good news is that this work will also benefit many other species whose fates are also tied to these once vast but now rare grasslands. This includes species like the golden-sun moth, striped legless lizard and many orchids and other wildflowers”.

GED: ‘Dragon detectives: citizen science confirms photo-ID as an effective tool for monitoring an endangered reptile’.

Link from Roger Farrow
Reference: Gould J et al. (2023). Wildlife Research. doi:10.1071/WR23036. CSIRO Publishing.

ABSTRACT
*“Context***.** Among amphibians and reptiles, traditional methods of capture–mark–recapture (CMR) have relied on artificial marking techniques (in particular, toe clipping), which has raised concerns because it may impact climbing ability, survival, and behaviour. A potential alternative involves the exploitation of natural biometric identifiers that are already present, including scale configuration or colour patterns. These natural markers can be applied in photo based CMR, which has several advantages over artificial markers, including reduced costs, the reduction of harm or stress, and the potential for public participation in conservation and research.
Aim. Our aim was to test the feasibility of applying citizen science in the manual visual identification of the endangered Monaro grassland earless dragon (*Tympanocryptis osbornei*) using dorsal pattern as a natural marker.
Methods. We collected photographs of dorsal patterns of wild *T. osbornei* individuals using a smartphone device under field conditions. We subsequently recruited participants anonymously from the public using social media to complete an online survey, in which they were asked to correctly match these field-captured images of individuals from small image pools, mimicking the process of detecting recapture events.
Key results. Participants were able to successfully detect recapture events from small image pools based solely on a comparison of dorsal patterns. High consensus was reached on all matches included in the online survey, with the majority vote among participants representing the correct matching of individuals on all occasions.
Conclusion. Our results indicate that there is sufficient intra-specific variability and temporal stability in dorsal patterning for it to be used as a reliable natural marker for identifying *T. osbornei* at the individual level.
Implications. Our findings suggest that photo-CMR could be applied to other agamids with similar dorsal patterns, making it a potentially valuable tool and an alternative to artificial marking for monitoring wild populations of Australian lizards in the future.”

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Fold here

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