News of Friends of Grasslands

Supporting native grassy ecosystems

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September & October 2025

Activities

Work Parties

Gurubung Dhaura
Sat 13 Sep 9-12:30pm
Sat 11 Oct 9-12:30pm
Register: Jamie Pittock

Budjan Galindji (Franklin Reserve)
Wed 3 & 24/9 and 1 & 22/10
9-11:30am. Register M Ning

Top Hut TSR (near Cooma NSW)
Sun 28 Sep and 26 Oct 9:30am – 3:30pm. Register: Margaret Ning

Hall Cemetery
Sat 4.10 and 1/11, 9-11am
Register John Fitz Gerald

Excursions

The Poplars Grasslands, QBN
Thurs 18 Sep 10am–12.
FOG's first visit in ten years.
Register: Margaret Ning

Great Southern Bioblitz 2025
Sat 25 Oct, Adaminaby area.
Register: Margaret Ning

Jamison ParkCare display
Fri to Sun 5-7 Sep.
Register: Margaret Ning

Scottsdale monitoring
30 Oct. Details Page 11

Stony Creek Nature Reserve
near QBN with local LC Group
Register: Margaret Ning

President's report

Jamie Pittock, President, Friends of Grasslands

A set-back and opportunities?

In this past month we received the disappointing news that a delegate of the Commonwealth Minister for the Environment has allowed construction of the northern road at Canberra Airport that further threatens the Canberra Grassland Earless Dragon. This troubling case raises the question of where we as a society draw the line on species extinction.

The Dragon is one of 110 threatened species that the Commonwealth Government has supposedly prioritised for conservation. It is thought to remain on only 8.14 km^2 of land in the Majura and Jerrabomberra valleys. Nearly all of the surviving habitat is controlled by the Commonwealth on Defence or airport land, or by parks services in the ACT and NSW. The new ACT Action Plan for the Dragon identifies just 3 genetically distinct populations on 14 blocks of land. A black and white case for conservation of all remaining habitat?

Not according to the ACT and Commonwealth Governments. Both governments have the power under the law to designate critical habitats to protect listed threatened species but have not done so in this case.

The Canberra Airport Group (CAG) over a dozen years have bit by bit worn down any meaningful conservation standards proposed by a pliant Commonwealth Department of the Environment. CAG have now received approval to proceed with a most environmentally damaging road route that bisects Dragon habitat. Every excuse in the book has been dragged out in a shameful process starting with 'Hardly any dragons have been recorded on the site in recent years.' CAG have been stewards of the habitat for a quarter of a century and the decline of what was always known to be a significant species has occurred on their watch.

CAG's mitigation measures agreed by the Commonwealth variation of approval conditions would make Sir Humphrey Appleby blush. A mere

million dollars of Dragon captive breeding money to make the problem go away. Some sort of 'gutter guard fence' that is supposed to stop Dragons getting squashed on the road. And yet another token measure lacking in any scientific rigor – tunnels under the new road. Habitat for predatory snakes? This pathetic collection of tokenistic gestures exposes the lack of investment by the developer and the Commonwealth to find an effective way of conserving the Dragon, a matter of national environmental significance. The Commonwealth approval rewards questionable behaviour on the part of the developer and sets a poor precedent for others. The Dragon sculpture in one of CAG's many office buildings highlights their hypocrisy.

So, where do we draw the line? The ACT Government is due to establish a formal urban growth boundary by June 2027 to control urban sprawl and promote development within the existing urban footprint. If implemented well this may protect the natural environment and agricultural land surrounding Canberra. At the same time, the ACT Government is undertaking studies of the so-called Eastern Broadacre region, the Majura and Jerrabomberra valleys, to identify land for industrial development.

FOG is advocating for better outcomes. We have the opportunity for both levels of government to declare and protect remaining critical habitat. FOG is identifying the last remaining few thousand hectares of unprotected natural temperate grasslands in the ACT to seek their protection. The urban growth boundary can and should be drawn to exclude this habitat from development.

By contrast to the self-serving behaviour of CAG and the Commonwealth Department, FOG's winter event in August highlighted how collaboration can restore and conserve grasslands. Inspiring speakers from NSW Local Land Services, Ginninderra Catchment Group and the company Environmental Restoration Design and Planning outlined new ways of conserving this endangered ecosystem. FOG will deepen our collaboration with these kinds of government agencies, non-government organisations and businesses for mutually beneficial conservation outcomes.

Survey of Travelling Stock Reserves in the ACT

Sarah Sharp and Margaret Ning

In Spring 2024 Margaret and Sarah located all the Travelling Stock Reserves (TSRs) on public land in ACT to assess their condition and issues requiring attention. Although previous studies have been undertaken of the TSRs in the ACT, there is little information available collectively about where they are, their condition, or how they are managed. They are public land (unleased), managed by Parks and Conservation Services. Their long-term management is historically short and intermittent bursts of high-grazing levels in the days when stock were driven to market or in times of drought, with no cropping or fertiliser addition. Since then, only intermittent grazing has occurred on most of these sites, so it was considered likely that these TSRs would still contain significant ecological values.

In the context of promoting protection and enhancement of ecological management of off-reserve areas of conservation value[1], we wished to find out more about a) how many there are remaining in the ACT, b) where they are located, c) if they require a higher level of management and d) whether they warrant secure protection.

[1] Conservation Council and Friends of Grasslands, 2022. Building a Biodiversity Network Across the ACT. BRIEFING_BIODIVERSITY NETWORK_Final_Version_December

In all, the locations of eighteen areas were researched: fifteen were identified from the 1935 Commonwealth Gazette[2] , a further three were identified from a 2018 nomination to the Heritage Register[3], one was identified at Gungahlin Hill from a 1958 map and a one was identified from a 1943 map[4]. Of the eighteen TSRs, ten still remain as unreserved public land. These were assessed on ground, species seen across the site recorded and condition issues noted. Of the other eight sites, three are in ACT's reserve system and were not assessed, three sites now in leasehold were only viewed from the road and two in urban Canberra were visited but have been largely destroyed and minimal native vegetation remains. Public Land in Kowen was inadvertently surveyed instead of Kowen TSR 5, and information about both the TSR and the public land were included in our assessment.

The plant and habitat assessments of the ten TSRs outside the reserve system and the public land at Kowen demonstrated that all were in moderate to very good condition overall in terms of native diversity and habitat. It is likely that in the majority, the woodland or grassland remnants would be critically endangered (CEECs) and habitat for threatened species, although as we didn't quantitatively survey the TSRs, we cannot conclusively tell whether they meet the criteria as Critically Endangered Ecological Communities (CEECs). The public land at Kowen, Kowen TSR 5 and Tharwa TSR 10 were particularly diverse. Rare or threatened species encountered include Variable Billy Buttons (Stromlo), Hoary Sunray (Royalla, Kowen), Yam Daisy (Kowen), Wild Sorghum (Tuggeranong, Tharwa), Creamy Candles (Stromlo), Sun Orchid (Kowen) and Early Nancy (Stromlo, Tennant, Williamsdale and Tharwa). Thirteen local eucalypt species were recorded. A Superb Parrot was observed in Hume TSR and there is potential habitat for Pink-tailed Worm Lizard in several of the remnants.

Pig damage was evident in a number of sites and there were likely deer droppings in one site, and most contained significant populations of invasive and transformative weeds, in particular African Lovegrass, Blackberry and St John's Wort.

It is heartening to be able to report that ten of the TSRs outside the reserve system retain significant biodiversity values and only two of the eighteen historic TSR locations have been destroyed by development as a result of their location within urban Canberra, although a further three TSRs within lease are likely to have considerably reduced biodiversity as a result of more intense management systems. The three TSRs now in reserve are ideally being managed for ecological outcomes. While it appears there is only a small number of people within the community and even within Government who are aware of the significance of these sites, our liaison with Darren Roso, Senior Conservation Ranger Ecologist with Parks and Conservation Service indicates that there is on-going management occurring, although much more could be done to retain these treasures.

Overall, they can be classified as overlooked and under-resourced.

A short description of the status and condition of each of the eighteen sites follows. The numbered TSRs refer to the identified TSRs from the Commonwealth Gazette, 1935. Those sites likely to contain or definitely containing remnants of CEECs are indicated.

TSRs and public land surveyed in 2024 in moderate to high condition

- *Hall TSR 1* consists of two areas, Block 314 and Block 16 divided by Barton Highway. Block 314 contains Yellow Box – Blakely's Red Gum Grassy Woodland, CEEC, Block 16 also contains Box-Gum Woodland, which may not meet the criteria as a CEEC remnant. Issues include Serrated Tussock, St John's Wort, Blackberry, Yorkshire Fog and Briar Rose.

- *Kowen TSR 5*, in Block 96, accessed from the eastern entrance to Sparrow Hill Road, contains Tableland Dry Shrubby Woodland, in part Yellow Box – Blakely's Red Gum Grassy Woodland. Data

[2] Commonwealth Department 1935 Gazette
[3] Nomination to the ACT Heritage Register, 2018
[4] 1943 and 1958 historic maps, accessed from ACTMapi

held by the Australian Native Plant Society's Wednesday Walkers indicate that the TSR contains a very high diversity of native species and is very likely to meet the criteria as a CEEC remnant.

- *Kowen Public Land*, part Block 124, accessed from the western entrance to Sparrow Hill Road, contains Tableland Dry Shrubby Woodland, in part, Yellow Box – Blakely's Red Gum Grassy Woodland, with a high diversity of native species including the threatened Hoary Sunray and is likely to meet the criteria as a CEEC remnant.

- *Hume TSR 6*, in Block 3 Section 8 contains Yellow Box – Blakely's Red Gum Grassy Woodland with a number of very old mature trees, but the understorey is dominated by introduced species, so is unlikely to meet criteria as a CEEC remnant. A Superb Parrot was observed in a tree.

- *Stromlo TSR 8*, in Block 59 contains *Eucalyptus macrorhyncha* Tableland Grass / Shrub Forest, Yellow Box – Blakely's Red Gum Grassy Woodland and is likely to meet the criteria as a CEEC remnant.

- *Paddys River TSR 9*, in Block 19 contains *Eucalyptus macrorhyncha* Tableland Grass / Shrub Forest and Yellow Box – Blakely's Red Gum grassy woodland, perhaps meeting the criteria as a CEEC remnant.

- *Tharwa TSR 10*, in Block 4, Section 27 (previously B1 S19), contains Yellow Box – Blakely's Red Gum Grassy Woodland, meeting criteria as a CEEC remnant. Roso (pers. com.)[5] informed us that TSR 10 identified in the 1935 Gazette is the same site as Tharwa TSR 10 identified in the 2018 Heritage Register nomination, although the 1935 map appears to indicate its location as south of Tharwa, and we were unable to relocate this area on the Territory Plan.

- *Tennant TSR 11*, in Block 92 contains Natural Temperate Grassland, identified as CEEC in the Grassland Strategy[6].

- *Royalla TSR 14*, in Block 1525 contains Yellow Box – Blakely's Red Gum Grassy Woodland. Much of the historic remnant was destroyed when the Monaro Highway was constructed, and only a small area remains on the western side of the railway line, but it is essentially contiguous with Box-Gum Woodland on the eastern side of the railway in NSW (managed by Royalla Landcare). The endangered Small Purple Pea and Hoary Sunray are present in both the NSW and ACT portions of the woodland. This small area is very likely to meet the criteria as a CEEC remnant.

- *Williamsdale TSR 15*, in Block 1484, contains some highly modified flat pasture, with patches of native vegetation, including, surprisingly, Early Nancy, across to a permanent rocky creek and a rocky slope containing Tableland Dry Shrubby Woodland. The creek is accessible by stock.

- *Tuggeranong TSR*, in Block 13, contains Tableland Dry Shrubby Woodland, with almost total groundcover of African Lovegrass, although a range of native species is also present.
- Other TSRs in ACT's reserve system that were not assessed

- *Coppins Crossing TSR 7*, in Block 11, Sections 49, 50, 82 is a Special Purpose Reserve, surveyed by Barrer 1992[7] and reported as being of high conservation value. It is now within Molonglo River Park.
- Orroral Valley TSR 13 is now in Namadgi National Park, south of the confluence of Orroral and Gudgenby Rivers.

[5] Darren Roso, Senior Conservation Ranger Ecologist, personal communication 2024, 2025
[6] ACT Government 2017. ACT Native Grassland Conservation strategy and Action Plans. Environment, Planning and Sustainable Development, Canberra.
[7] Barrer P. 1992. *A study of flora and fauna of the lower reaches of the Lower Molonglo River Corridor ACT.*

- *Gungahlin TSR* identified on a 1958 map accessed from ACTMapi is Gungahlin Hill, within Gungaderra Nature Reserve, containing high conservation-value Tableland Dry Shrubby Woodland and Yellow Box – Blakely's Red Gum Grassy Woodland, CEEC.

The TSR identified from a 1943 map[8] is within the western edge of Mt Ainslie Nature Reserve, and is likely to be the existing dirt track.

Historic TSRs that have been destroyed or are in lease

- *Ginninderra TSR 2*, in Block 555, is in the south-western corner of Gundaroo Drive - Barton Highway. Most of the TSR has been destroyed by the extension of Gundaroo Drive (south); the part remaining on the easement of the road is almost all exotic.

- *Macquarie TSR 3*, in Block 54 Section 1 and Block 52 Section 5, Catchpole Road was located on the historic Weetangera Road. This site is now developed, replaced by playing fields and car parks adjacent to the Big Splash.

- *Majura TSR 4*, in Block 513 on Sutton Road is in leasehold. From roadside inspection it appears that the western end of the block may contain Box-Gum Woodland.

- *Tennant TSR 12*, Block 87 on Gudgenby Road south of TSR 11, is in leasehold. Inspection from the road suggests the vegetation is predominantly introduced, although the outline of this block is still apparent on the ground.

Recommendations to go to the ACT Government for consideration:

1. Ensure all of government are aware of the significance of the TSR remnants (and other unleased government areas) to ensure they are adequately managed and acknowledged for their conservation values.
2. Improve signage and access.
3. The eleven remnant sites in good condition should be:
   a) Quantitatively surveyed at an optimal time to identify whether they meet criteria as threatened community remnants, and/or have high conservation areas with threatened or rare species present and, if so, protected as Conservation Areas[9];
   b) Managed to improve their biodiversity and other values; and
   c) Surveyed for Aboriginal and other cultural values.
4. Review and update the nomination to the Heritage Register to include all eleven areas of high conservation value.
5. Undertake similar assessments on other unleased land such as horse paddocks, historical special- purpose reserves and vacant unleased land, to review their condition and identify requirements for management and/or protection.

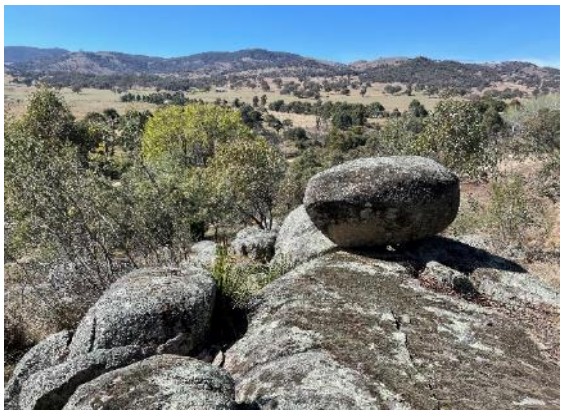
All the sites that are on public land may be visited without gaining permission to enter the sites. More information on their location and the full report of this study[10] are available by emailing Sarah at sarah.sharp@fog.org.au.

[8] 1943 and 1958 historic maps, accessed from ACTMapi

[9] Conservation Council and Friends of Grasslands, 2022. *Building a Biodiversity Network Across the ACT.* BRIEFING_BIODIVERSITY NETWORK Final_Version_December.

[10] Sharp S. and Ning M., 2025. *Review of the condition of ACT's Travelling Stock Reserves*. Friends of Grasslands.

Our thanks for the help provided by a number of people in locating and providing additional information about the sites. Particular thanks go to Darren Roso and Wally Bell.




Left: Tharwa TSR 10; Right: Tennant TSR 11, Natural Temperate Grassland



Left: Hollow in Blakey's Red Gum at Hume TSR; Centre: Swainsona recta at Royalla TSR; Right: valley and creek in Williamsdale TSR. All photos in this article: Sarah Sharp.

Membership report

Ann Milligan

FOG has welcomed three new members between 1 June and 1 September this year – two based in NSW and one in ACT. FOG now has 186 members: 113 in ACT, 61 in NSW, 8 in Victoria, 2 in South Australia, 1 in Tasmania and 1 in Western Australia. ('Member' means couples, families and businesses, as well as individuals.)

The membership renewal/application form (which we would like to receive each year with up-to-date details) asks how we describe ourselves. From the answers it seems that 94 members are Conservationists/ Naturalists, 48 are Landholders/ Land-managers; 49 are Professionals (current or retired), 64 are involved in Landcare/ Parkcare and 10 are 'Other'. Many of us have ticked more than one description, and only 36 have given no indication. What an interesting and varied collection of grassland friends we all are!!

A Weedy Mass – Onion Grass revisited

John Fitz Gerald

I wrote about some aspects of the weed Onion Grass *Romulea Rosea* for FOG news in Nov-Dec 2024, pages 10-11. Our local weather over the past 12 months looks to have been ideal for bringing in a bumper crop of the weed again this year, especially in mown strips of parks and along kilometres of road reserves. So far, the plants present as stands of thin green leaves well above winter-dormant grasses near ground level, but we all know that pink flowers and, later, huge numbers of seeds are set to follow.

I've been back in Umbagong District Park nosing around in previously mown areas where the weed is dominant. Our assistants, the Sulphur-crested Cockatoos, have been chewing away on patches of corms, but I fear that their digging does not completely eliminate the underground corms. In areas ignored by birds, I've estimated up to 1000 *R. rosea* plants per square metre. That multiplies up to 100,000 seeds per square metre!

Downey's weed assessment places this species into the medium priority category, albeit at the upper end. The Onion Grass plant growth appears very active in areas burned earlier in 2025 but this is possibly because grass growth is yet to restart and the weed is enjoying lack of competition – its dormant underground corms are completely sheltered from autumn burns.

I wanted to photograph a corm mass so I dug out a clod from a thick patch of leaves and carried it home. Then I soaked the clod and gently sprayed the soil away.

In addition to the bunch of globular corms expected, I found a dense mass of tangled fibrous roots – see my photo (left). For scale, the corm in the bottom right is a little larger than 10mm in diameter. To locate you relative to the soil surface, the bleached section on each leaf, 20-50mm long, was underground at the time the clod was dug.

Therefore the fibrous mass associated with corms lives well and truly underground. This would place it out of reach of grass fire, summer hot-dry spells and, potentially, chemical herbicides. The mass is likely vital to channel water and nutrients into the corms. When an Onion Grass corm is dug by a volunteer weeder, my experience is that usually few or no fibrous roots are attached – soil disturbance and entanglement of the fibrous network breaks them off.

Close inspection of the photo will show that some roots in the mass are distinctly thickened – I wonder whether leaving them underground can provide the nucleus to start other plants? Sadly, this observation and speculation does not lead me to any new strategy for beating this formidable, moderate-priority weed, but maybe readers can make better suggestions.

Superb Parrot, *Polytelis swainsonii*, true to its name but vulnerable

Michael Bedingfield

Australia has many beautiful and colourful parrots, with all kinds of lovely colour combinations. The Superb Parrot is a great example and lives up to its name by having very good looks. The adults are medium sized for a parrot and grow to about 40 cm long from bill to tail. The tail is long and slender, the wings are pointed and backswept and their flight is swift and graceful. The males are the most attractive, with bright green plumage, bright yellow forehead, cheeks and throat, and a red band just below the throat. The females are a slightly duller green with a pale green-blue face. Both male and female have a coral-pink bill and an orange iris. Juvenile birds resemble the female.

The Superb Parrots go by the scientific name of *Polytelis swainsonii*. They are listed as vulnerable in the ACT, NSW and Australia wide, as well being endangered in Victoria. They are endemic to inland south-eastern Australia.

These parrots are usually seen in small flocks or family groups. They occur mainly west of the Great Dividing Range on the inland slopes and plains of NSW, but spread into the tablelands including northern ACT. They also occur in inland Victoria and are a vagrant into Queensland.

References state that there are only 5,000 to 8,000 pairs left in the wild. The numbers have declined significantly over the past 100 years. The main reason for this parrot's demise and the major threat to its future is the loss and degradation of its habitat. Their habitat includes both nesting sites and areas used for foraging. Nesting and foraging sites may be quite separate. Migration routes and movement corridors are also very important since these birds don't like to travel long distances over open country.

The gradual clearing of land for agricultural purposes is the main driver of habitat loss, and includes the destruction of Box Woodlands. Logging for timber production and firewood collection are also significant. Of particular concern is the loss of suitable hollow-bearing trees. As the number of trees is reduced there is increased competition for nesting hollows from other birds and animals. There are also other threats including illegal trapping for the avicultural trade and climate change.

The breeding season for this parrot is spring and early summer. They normally like to nest in loose colonies in old large eucalypts that have tree hollows and often near a watercourse. Usually nesting sites are within 10 km of box-gum woodland or within such woodland. The River Red Gum forests, which occur along the major inland rivers such as the Murray and Murrumbidgee, are important nesting sites. On the NSW slopes and tablelands they will nest in the woodlands. In Canberra they nest in semi-urban environments where older trees have been retained. During the time of incubation the females stay with the nest. The males fly away from the nesting areas in flocks to forage for food for themselves and their partners, travelling up to

10 km to suitable feeding sites. Four to six eggs are laid and incubated for about 22 days. After hatching, the nestlings are fed by both parents for about 40 days up until the young begin flying themselves. The young are able to breed after one year and they can live for up to about 14 years in the wild.

When the breeding season is over Superb Parrots migrate away from the nesting sites and use a variety of woodland types, grasslands and other kinds of habitat. These may include unnatural places such as farms and urban parks. The most significant nesting sites are in the Riverina district. Birds from there will migrate long distances within their range and some will go all the way to northern NSW during the winter, returning to the Riverina in spring. Most of the time Superb Parrots feed on the ground, eating the seeds of native grasses and other plants, but also the seeds of wheat and oats. They also feed in trees and shrubs where they will eat wattle seeds, as well as fruit, flowers, nectar and some insects.

The references include the National Recovery Plan and the ACT Action Plan for the Superb Parrot. These list a variety of actions required to ensure the continuance and the improvement of the population numbers. Protecting and enhancing areas with confirmed breeding colonies, as well foraging sites and migration and connectivity corridors, are the most important priorities stated in the plans. This would also enhance habitat for a lot of other threatened species. Let us hope that the decision-makers keep these requirements in mind and that these birds begin to thrive once again.

Main references:
https://www.agriculture.gov.au/sites/default/files/documents/polytelis-swainsonii-recovery-plan.pdf
https://www.act.gov.au/__data/assets/pdf_file/0011/2545940/superb-parrot-action-plan-2019.pdf
https://www.environment.gov.au/biodiversity/threatened/species/pubs/738-conservation-advice-05052016.pdf

Lanyon Art Prize 2025 - Cathy Franzi

Cathy Franzi, ceramic artist and FOG member, has won this year's $10,000 Lanyon Art Prize for her nine porcelain vases (pictured below) titled 'Fine Open Grasslands'. An exhibition is open to the public in the Lanyon Homestead dining room from 23 August to 2 November 2025, Wed-Sun 11am-4pm (free entry 10am-11am). All works are for sale.

These porcelain vessels represent the small yet diverse and exquisite plants of the original native grasslands, an ecosystem managed by Ngunnawal people in the open country where Lanyon now lies.

The common names of these plants often reflect colonial times, such as the small orchid *Eriochilus cucullatus*, or Parson's Bands, named after the distinctive necktie worn by ministers c1845. Others such as *Microseris lanceolata*, or Yam Daisy, have a direct reference to an important Indigenous food source. Many, including *Swainsona recta*, are now threatened species found in only a small number of locations.

They will be displayed on the homestead's mantlepiece and side-table alongside and in contrast with their existing vases and ornaments which are decorated with the introduced flora of an English garden.

Three Grasses from Offshore: Close-up

John Fitz Gerald

Exotic grasses again this time, not high-risk invasives but annoying to find growing in native-diverse patches. These are all C4 species which grow and set seed in warmer months. NSW is the Australian state most affected by all three grasses below.

Our first grass is *Eleusine tristachya*, commonly known as Goose Grass, sometimes as Crabgrass. This is a low growing, short-lived perennial. ALA shows 2800 records, more than half from sites in NSW, across SE states in Australia.

It is native to temperate South America but introduced to many other countries with temperate climates. My image shows two old dried brown florets with lemma and palea intact, plus three dark flattish seeds from other lemmas.

Here in the ACT, Downey's 2022 assessment of naturalised alien plants rates this species as of low priority.

Our second grass is *Chloris gayana*, Rhodes Grass. This is a tall perennial species, native to tropical and southern Africa, and widely introduced around the world. ALA shows 6,600 records, more common in coastal regions but growing too through inland areas in all states. Downey rates it as a weed of moderate priority in the ACT.

Fortunately the species does not do well in our cold weather - CNM shows only a handful of sightings. I've revisited one of those sightings for five years in a rocky cutting along William Hovell Drive in Belconnen. That patch seems stable but I cannot detect any germination from dropped seed. My image (above left) shows six florets I've carefully separated; each of these was the largest and lowest floret in its spikelet. These dark florets have a short awn, about 2-3mm here, and a lemma with minor tufts of hairs. I searched my collection but found no seed in any florets; maybe this reflects our cold climate, maybe it was just not a good year for pollination. In the field I noticed stolons that are characteristic of the species - see my growth image (above right) with new leaf tufts connected by a thick stolon, beginning to send down roots. This looks to be the

way that this patch could slowly expand. It is likely that the plants established from seed after William Hovell Drive was bulldozed through grazed land early in the 1980s, so recruitment through seed may be possible in ACT. This patch will be eliminated when duplication of William Hovell gets under way soon.

Our final grass is *Chloris virgata*, Feathertop Rhodes Grass. This is a mid-height, short-lived perennial species native to temperate and sub-tropical Americas. ALA shows 1700 records from all states except Tasmania. Downey rates it as a weed of low priority in the ACT.

My image shows five spikelets. Each of them is two-flowered with a lower floret that is larger and fertile and a smaller infertile upper floret. Both dark florets have awns six or more millimetres long. The lower floret also has a dense tuft of hairs. Comments have been posted on CNM that the species loves asphalt and almost seems allergic to soil. I can add that it also loves concrete, being often found near footpaths and gutters. As the authoritative comment I'll quote Rose et al (2013): "…. found in disturbed areas, …. creek banks and cultivated paddocks". Therefore, don't rely on this plant being like its sister species that has difficulty producing fertile seed in ACT's climate, instead manage it to prevent escape from favourable patches created by us within our suburbs.

High magnification images were taken using the Nikon microscope at the National Seedbank in the Australian National Botanic Gardens. Images can be reproduced freely with reference to the Creative Commons licence CC BY

Information above was gathered from websites, principally:
ALA - www.ala.gov.au. CNM – canberra.naturemapr.org. plantnet.rbgsyd.nsw.gov.au. Plants Of the World Online – powo.science.kew.org. Rose et al. (2013). Grasses of NSW Tablelands. Published by NSW Department of Primary Industry

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Scottsdale Monitoring

Linda Spinaze

For the past 15 years FOG has assisted monitoring the Bush Heritage property of Scottsdale. This year we have nominated Thursday 30th October as the date.

We need volunteers to assist us with this activity. No special knowledge is needed, but native plant identification skills are handy. **This is a great opportunity to see parts of Scottsdale not normally available to visitors**, although this depends on which area is monitored this year.

Coffee is available on arrival, and lunch is provided by Bush Heritage. Scottsdale is situated 4km north of Bredbo. We usually car-share if possible. Please contact Linda Spinaze (linda@xamax.com.au, or 0417 276 497/ 6288 6916) if you are interested in enjoying a day on one of our local special places.

Advocacy Report

Matt Whitting

In reverse order

August

Territory Plan amendment: removal of FUA overlay from Bluetts Block & Coombs Peninsula, 11/8
FOG supported the proposal to amend the Territory Plan by removing the FUA (future urban area) overlay from Bluetts Block and parts of Coombs including Coombs Peninsula (here). FOG questioned the proposed removal of 1.4 ha from Molonglo River Nature Reserve near its junction with Weston Creek.

FOG well-represented at Landcare's ACT Environmental Volunteers Conference, 9-10/8
FOG members were active presenting, participating in and networking between sessions during field trips on 9 August and during the above conference (10 August).

Various media after the final decision on the northern road at Canberra Airport, 4/8
Led by the Conservation Council, FOG is quoted in various media after the Federal Environment Minister declined a request by FOG to revoke the approval by which Canberra Airport Group (CAG) can now construct and operate the unnecessary 'northern road' between Fairbairn and Majura Road in Pialligo. With CAG in the media stating they will now deliver a nature-positive outcome, the decision has allowed the road, subject to new conditions requiring: 5.64 ha of grassland rehabilitation 'on airport'; some other, untested mitigation measures; and by paying the ACT Government one million dollars in supposed compensation. Our final update on this story, still on the web for now, is here. FOG will continue to monitor CAG's delivery against its new and continuing obligations.

Comment on the plan to rezone part of 20-24 Lockyer Street, Goulburn, 2/8
FOG noted the site is predominantly cleared pastureland with some dams and isolated remnant trees (here). We called for mature trees with nests or hollows to be retained and that consideration be given to retaining one or more dams as a native wetland, enhancing habitat for use by native species.

Comment on development proposed at 722 Canberra Ave Jerrabomberra, DA202544243, 1/8
FOG submitted (here) that, if approved, this proposed light industrial development just west of HMAS Harman would lead to *significant* indirect impacts on one of the nation's most important grassland remnants, and on several grassland threatened species. We noted the proponent seeks approval to clear the development site *prior* to undertaking adequate threatened species surveys, and *prior* to a decision on the Eastern Broadacre strategic assessment.

Comment on amendments proposed to the NSW Native Vegetation Clearing Code 2018, 1/8
FOG and the Conservation Council commented, jointly (here), on amendments proposed to the Code. FOG said the amendments "head in the right direction but they do not go far enough". If passed, the changes are so weak they will *prevent* the achievement of any promised nature-positive outcome for biodiversity in NSW. The long list of prescriptions that permit clearing – and their underlying basis in a variety of "rights" – are outlined. Rather than permitting this destruction, FOG said "a legal framework is needed now sufficient to encourage land managers to retain and restore native vegetation on their property."

July

Two letters to, and an investigation by WorkSafe ACT of, Defence Housing Australia, 1-20/7
On 1/7, FOG and the Conservation Council wrote to Defence Housing Australia (here) and the Compliance Branch of the Federal Env Dept (here) seeking urgent action to mitigate the impacts of (i) two clearings and (ii) runoff from two unbounded piles of earth on and adjacent to Striped Legless Lizard habitat and Natural Temperate Grassland at North Lawson Grasslands. After a photographer pointed a long lens at the clearings and piles (9/7), we noticed the piles of earth are surrounded by 'Asbestos warning' tape. On 20/7,

a follow-up letter was sent to DHA (here), and a report was made through Access Canberra about the possible asbestos threat (here). That report has triggered an investigation by Worksafe ACT.

June

FOG and others decry Capital Airport Group's absurd attempt to "move" large grassland habitat of the critically endangered Canberra Grassland Earless Dragon, 23/6 and then into July

A media release co-authored by FOG raised alarm about the Capital Airport Group's plans to "move" Natural Temperate Grassland. In the days that followed, **Georgia Stynes interviewed Matt Whitting (23 June starting at 1 hr 6 min** here), then **Saskia Mabin interviewed Matt Whitting (7 July starting at 2 hr 16 mins** here) and CAG Manager of Aviation **Stephen Byron (8/7 starting at 2 hr 19 mins** here).

Report on a "Proof of Concept" survey to detect the Monaro Golden Daisy (*Rutidosis leiolepis*) using a new remote sensing method

Neil Murdoch, former Biosecurity Officer, Snowy Monaro Regional Council, Cooma NSW

Introduction by Andrew Zelnik

In 2022 the Snowy Monaro Regional Council (SRMC) was awarded a Friends of Grasslands (FOG) Grassy Ecosystem Grant of $1,500 for this project. Neil's report below is an edited version of his report originally submitted in the latter half of 2023 as part of the grant acquittal. FOG's grant assisted with costs for drone hire for two aerial surveys of flowering Monaro Golden Daisy (MGD) at Old Cooma Common in summer 2022-23; data processing and analysis; and follow up MGD ground truthing checks to test survey method efficacy. At the time the test site had unusually tall and high grass biomass density conditions due to several consecutive years of high (La Nina) rainfall. FOG also provided GPSed MGD sighting observations from a comprehensive on-ground search in late November and early December 2018.

For the FOG Supported Projects team the merits in funding this innovative project primarily lay in: (a) the potential of this method to minimize survey effort and expense and to more efficiently and comprehensively detect the presence and abundance of a targeted plant species, especially over large and/or difficult to physically access grassland areas; (b) discovering the limits of this survey method under one of the more challenging detection scenarios likely to be encountered in practice; and (c) provide a "proof of concept" of the method for wider use in surveying for threatened and other native grassy ecosystem plant species.

Neil retired from his position earlier this year. However, since July 2024 the not-for-profit Centre for Invasive Species Solutions has been continuing the related research. Their objectives include enhancing and expanding the underlying WeedRemeed technology (colour picking, Artificial Intelligence and Machine Learning) to more accurately detect both weed and threatened native plant species for use nationally and commercially, particularly in the emerging Nature Repair Market. Completion is currently scheduled for the end of March 2026.

Abstract

A convergence of developing technologies (Cloud computing, Drones, AI/Machine Learning) is rapidly accelerating the capacity of environmental practitioners to undertake remote sensing and mapping operations at a finer resolution and fraction of the cost of previous methods e.g. helicopters, fixed winged planes, satellites etc. A suite of software programs can now analyze imagery to detect colour or form, or 'stitch' a data set together to build an ortho-mosaic image (high-resolution map created by multiple aerial

photos) from which topographic information can be gathered such as height and slope, drainage, and NDVI (NDVI is the Normalized Difference Vegetation Index - a widely used metric for quantifying the health and density of vegetation using remote sensing).

Our focus has been on invasive weed species and we have developed a user interface for a cloud-based program that enables a practitioner to analyze an image data set to extract georeferenced images of a target weed species. We have applied the same method to test the efficacy of the platform to detect the threatened Monaro Golden Daisy (Rutidosis leiolepis), listed as Vulnerable (C'wlth, NSW), on Old Cooma Common Grassland Reserve (OCCGR), Cooma NSW. Our results indicate that the method is currently not suitable to differentiate Monaro Golden Daisy (MGD) from other "yellow flowered" species with sufficient accuracy to be deemed effective. Trials with other native and exotic species have been successful and further development of the platform could produce a useful tool to establish presence/absence data, or rapid assessment of a site, although timing and seasonal conditions are a major factor in capturing quality data.

Method

Imagery was captured via an Unmanned Aerial Vehicle (UAV or drone), a DJI M210 Matrice and mission planning software from DroneDeploy to fly a grid pattern 30 metres Above Ground Level (AGL) at 7 metres per second and taking three images per second. The image file sizes were ~20MB each and stored on a microSD card. Each flight captured up to 2000 images. The images were uploaded to WeedRemeed, a cloud-based weed detection solution developed in collaboration with SMRC, South East Local Land Services, and 2PI Software for processing. WeedRemeed utilizes the Amazon S3 Bucket for scalable processing and incorporates an image library.

This form of survey is dependent on seasonal and temporal variation for example some species may only be detected during a short flowering period in summer whilst grassy weeds may be prominent in winter when the native grasses are senescing and the library catalogues images based on prevailing seasonal conditions e.g. wet summer/ dry autumn etc in order to capture colour variation in species throughout the seasons. The library also stores the colour signature of samples (known as swatches) of various species. A swatch is run against a data set to detect a plant. A long-term goal is that swatches of various species can be stored and extracted by other practitioners, the concept being that over time a large database is built for common use.

A ground search was undertaken at the commencement of the survey for the purpose of verifying that plants were indeed in flower. Since the image library had no verified MGD swatch to reference, an initial training image of a flower had to be captured by the drone so that a sample colour signature could be used for post processing.

Figure 1: A swatch (left) made from a verified sample of the Monaro Golden Daisy

The sample image of the flower was edited in Microsoft Paint by cropping down to a subset of representative pixels measuring approximately 10 x 12pxl (Figure 1). The representative pixels included mostly "core" yellow pixels with some background colour incorporated as well. Many swatches can be built from a single sample and it is a matter of trial and error to find a swatch that gains the highest number of positive detections and the lowest number of false positives.

The workflow for the survey was relatively straightforward as can be seen below in a similar survey carried out for Mouse-ear Hawkweed (*Pilosella officinarum*) surveillance.

Figure 2: Typical workflow for data capture and processing

Proving the novel approach employed to detect the MGD on OCCGR was going to be viable relied on two-time-critical factors: 1) Undertaking the survey in an optimum period when the majority of plants were in flower; and 2) Undertaking a "ground truthing" survey whilst the plants were still in flower. The initial data capture was undertaken in mid-December 2022 whilst it appeared that most plants were still in flower. The captured data was uploaded to WeedRemeed at the conclusion of flying each day and the images were run against an array of swatches to determine those best suited to detection. Once a suitable swatch was selected it was then run against batches of one thousand images.

However, the follow-up ground-truthing after the drone surveys whilst the plants were still in the same flowering condition was not able to be conducted due to unavoidable delays including a researcher taking taking time off to recover from the COVID-19 virus, and then followed by being temporarily seconded to other duties to help deal with a biosecurity outbreak in the Hunter Valley. Therefore, by the time the post-processing commenced, the plants had gone to seed and lost their flowers.

Results:

Our results indicated we were finding the MGD in locations that had been identified in a ground survey conducted by FOG in 2018 - see map in Annexe 1 below. However, our imagery in many instances, also suggested a higher abundance of plants than that recorded in the 2018 FOG survey. For example, the notes for one FOG patch location indicated a strip area measuring approximately 4m x 1m , containing a combination of scattered individuals and clumps of various size, whereas our images indicated a larger area on which the plants had established. However, due to the lag between image capture and processing we could not unequivocally say that all the yellow flowers detected in the drone survey flights were MGD as

we knew Common Everlasting (*Chrysocephalum apiculatum*) and some exotic species were also present at the location. A subsequent ground survey in the autumn made it easier to spot MGD without their flowers and did reveal that the patch area had indeed increased in size since the last survey in 2018. The aerial survey and subsequent ground survey indicated that MGD plants were present at every location identified in 2018 bar two.

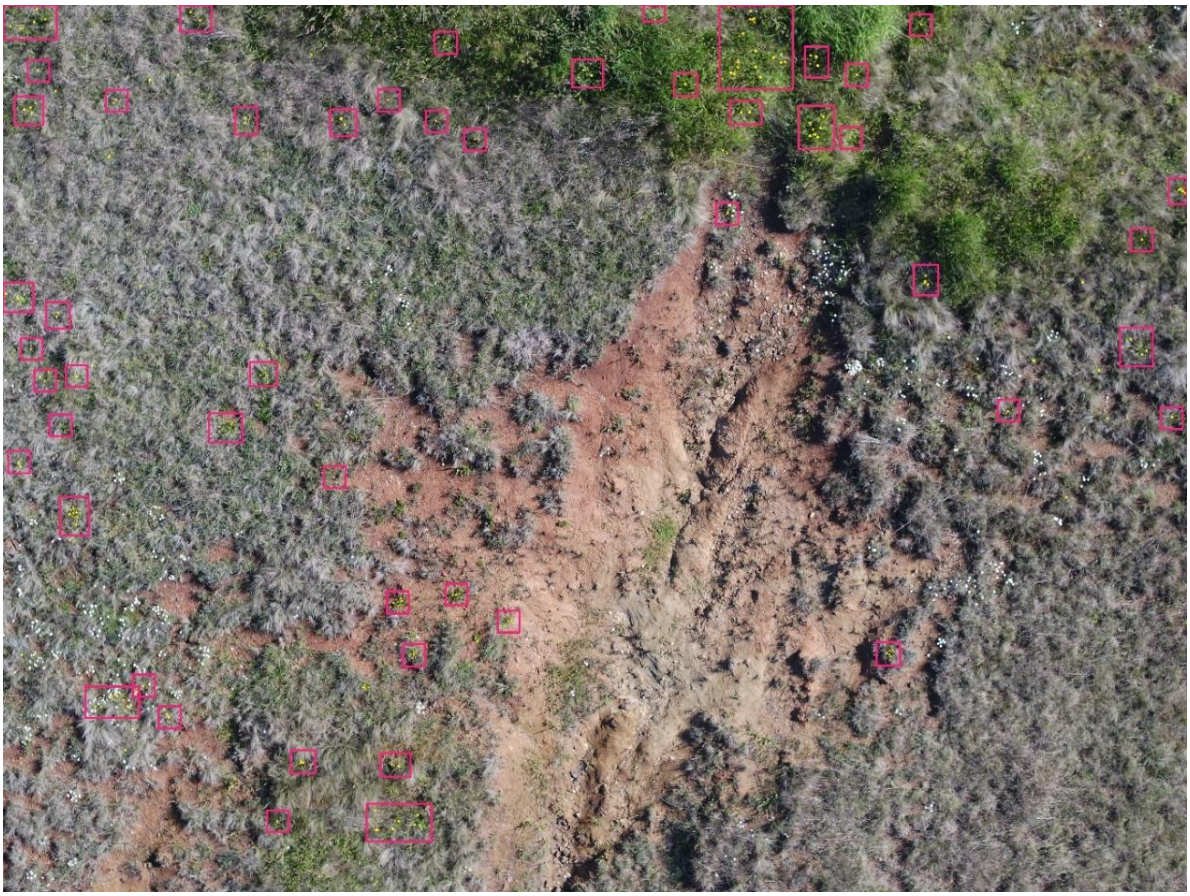

Figure 3: Detections (boxed) from late 2022 drone survey flights at one of FOG's 2018 survey locations

Discussion:

Undertaking an aerial survey is not a proxy for rigorous ground survey but rather a quick method to identify the location of a target species so it can be more thoroughly inspected on the ground. For example, SMRC together with NSW National Parks & Wildlife Service have been conducting drone operations in the NSW High Country to identify the presence of Orange Hawkweed (*Pilosella aurantiaca aka Hieracium aurantiacum*), a prohibited species. Once the plant is detected with the use of aerial imagery and colour picking software, ground crews and even sniffer dogs are brought in to conduct a thorough ground search.

A drone can cover up to 200 hectares in a day, and often over terrain that would make large scale ground searching impractical or impossible. Further, the data captured by a drone can be stored and re-analyzed as advances in processing improve or interrogated at a later date, for example for the presence of formerly unidentified threats.

The trials we have conducted to date on various native and exotic species, for example exotics Sweet Briar, Scotch Broom, Gorse and Serrated Tussock (Figure 4) do suggest that it is possible in some cases to isolate and extract enough data out of a sample (via an algorithm employing *K means clustering*) to provide an almost unique colour signature for a species.

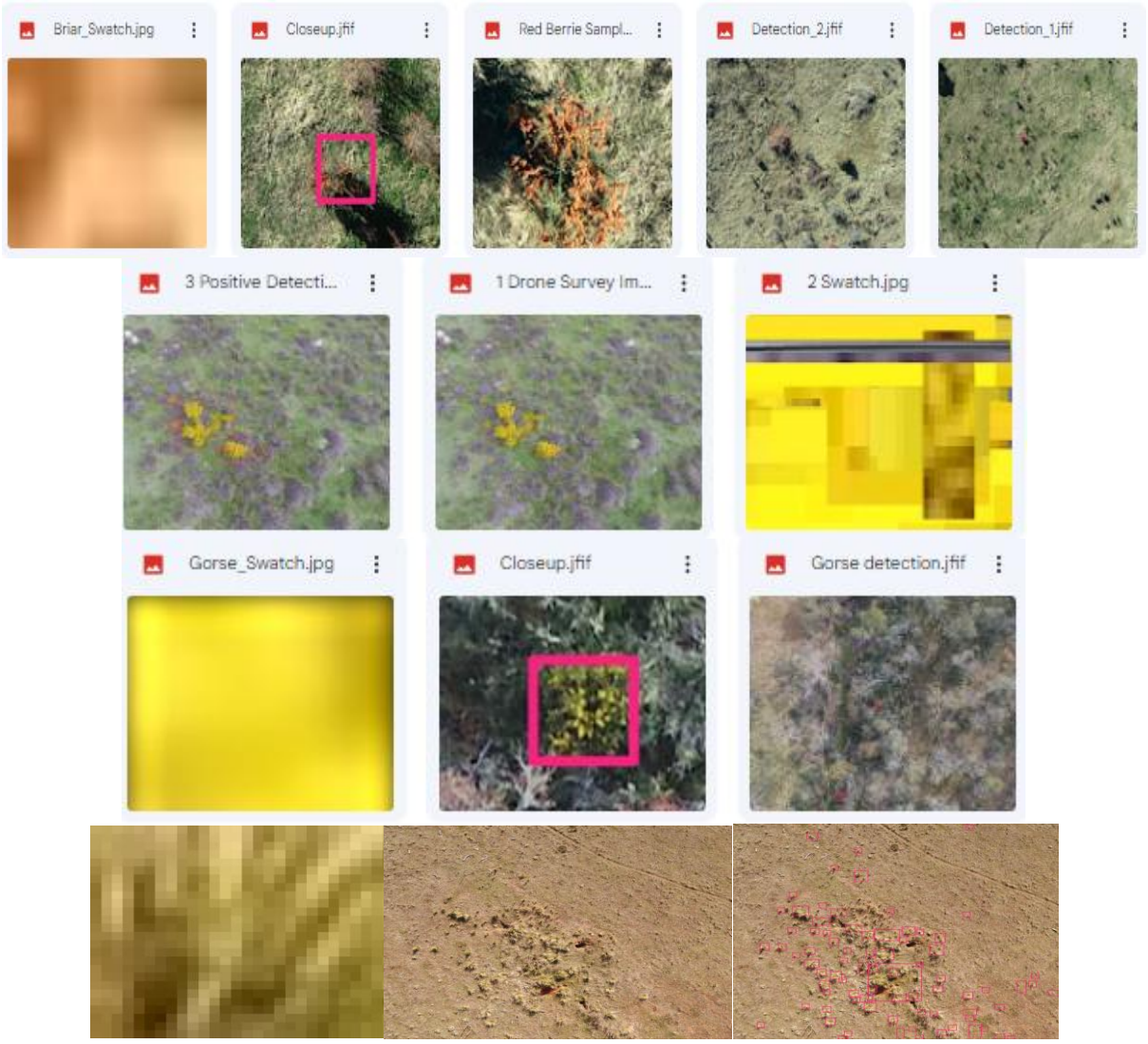

Figure 4: Sweet Briar, Scotch Broom, Gorse, and Serrated Tussock

There are, however, several caveats and rules to be applied to validate the above finding. For example, the sensor extracting the initial training sample reference image must be the same type of sensor that collects the survey data to ensure pixel values are constant i.e. use of the same camera/image sensor equipment setup throughout the survey data capture process.

Further, soil type, slope and drainage and seasonal conditions amongst other processes are known to drive change in plant morphology and must be taken into account when building a colour swatch from a sample. Having a mixture of a target species plants simultaneously present at different stages of their growth cycle can also complicate the process but there are ways to combat this challenge, for example by taking sample swatches from flowers both at the budding stage and when in full bloom and running both against the data concurrently.

Whilst our survey method was effective at detecting MGD it was not able in this instance to filter out enough false positive detections of other yellow flowered species to be considered successful. A similar survey was undertaken in the high country to test the efficacy of the program to detect a target species in a field populated by other yellow flowered species. The chosen target was Billy Buttons (*Craspedia sp.*) and was located in an area populated by Scaly Buttons (*Leptorhynchos squamatus*) and exotic Catsear (*Hypochaeris sp.*). In this instance we reported 100% target capture with less than 5% false positive readings (Figure 5).

Fig 5: Example, detection of Billy Buttons. Note unboxed "off target" yellow flowered plants not detected.

The solution we have developed is still in its infancy but future iterations should improve accuracy. A "next step" currently being worked on is to introduce Edge Detection technology into the program thus providing additional plant "form" information to augment the colour picking capability, essentially building a hybrid system of statistical algorithms and Machine Learning.

Thank you to Friends of Grasslands for funding this project and for their continued interest in protecting native grasslands on the Monaro.

See next page for Annex 1

Annex 1: Location of existing and new sites for Monaro Golden Daisy on Old Cooma Common

Old Cooma Common 2018 Survey
Old Cooma Common New Plants
Old Cooma Common Boundary
LPI Basemap

Contributions welcome

Do you have a story from your favourite grassland or grassy woodland that you would like to share?

If so, please contact the Editor: newsletter@fog.org.au

News Roundup

Paul Archer

ParkCare photo exhibition

The ACT Parks and Conservation Service has advised that a photo exhibition is now open at Namadgi National Park Visitor Information Centre that showcases beautiful imagery from VisitorAssist volunteers. The collaboration between ParkCare and the Namadgi Visitor Centre team has provided an opportunity to recognise the works of VisitorAssist volunteers, and display their photos that highlight the wildlife, plants and heritage of the Australian Alps region.

VisitorAssist volunteers operate predominantly from Namadgi National Park and Tidbinbilla Nature Reserve, guiding and educating visitors on the unique natural and cultural values of the region. The exhibition is on show at the Namadgi National Park Visitor Information Centre, Naas Rd, Tharwa. It is open from 9am-4pm (Weekdays) and 9am-4:30pm (Weekends/Public Holidays) until 31 October 2025.

Landcare ACT filming at Blue Gum Point

Our regular work party at Blue Gum Point on 14 June was joined by a group of Landcare volunteers and a team of professional videographers to record the event. *Here is a link* to the resulting videos which feature several FOG members. All up, we had a total of 25 people on a perfect winter's day and together we moved several small mountains of woodchips for mulching around the many new native plants we have installed this year.

New report: Victorian grassland earless dragon

Link provided by Jamie Pittock

The Victorian Biodiversity Council has recently released a new report: *Delivering houses and saving dragons: Overcoming government policy and implementation failures to ensure the survival of the Victorian grassland earless dragon*, June 2025' The full report is available here.

Canberra grassland earless dragon

Link provided by Ann Milligan

The August edition of the Conservation Council newsletter 'Yellow box' (available here) has a detailed report on the recent decision of the Commonwealth Minister for the Environment and Water Murray Watt to allow Canberra Airport Group (CAG) to proceed with construction of the proposed northern road adjacent to Canberra Airport. FOG's response can be found on the home page of the FOG website here.

Plains Wanderer in South Australia

Link provided by Ann Milligan

An article in The Conversation on 12 August 2025 by Saskia Gerhardy and Steven Delean of the University of Adelaide: *We tracked one of Australia's most endangered birds into strange new habitat* describes their new research which shows that more than 250 of these birds are thriving in habitats previously considered unsuitable, on the western edge of its range. The Conversation article is available here and the full research report is available here.

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A revelatory side trip to June Wilkinson's grazing paddock in the Brothers area at Bobundara, NSW, during our mid-November 2020 'Best of the Monaro TSRs' trip (see Jan-Feb 2021 issue). FOG and Upper Snowy Landcare Network members enjoyed the abundance and diversity of native wildflowers and other native plant species on this very high quality Natural Temperate Grassland. Notable amongst the wildflower expanse were the uncommon Lanky Buttons, Billy Buttons, rare Notched Swainson-pea, threatened Silky Swainson-pea, patches of Lobe-seed Daisy, and the odd patch of Blue Devils on the verge of flowering. An all too rare sight on the Monaro and a testament to two generations of judicious land stewardship. Photo & caption: Andrew Zelnik.