



# News of Friends of Grasslands

Supporting native grassy ecosystems

ISSN 1832-6315

May & June 2025

## Activities

### *Work Parties*

Gurubung Dhaura

Sat 10 May 9-12:30pm.

[Very Big Planting Day at Blue Gum Point.](#)

Our contractors should have felled the last big woody weeds and we need to move in and plant the newly cleared lakeshore. With 250 trees, shrubs and understory plants to get in the ground we will need every volunteer possible to get the job done in half a day. Please bring a friend!

Sat 14 June 9-12:30pm, Plant maintenance. Register: [Jamie Pittock](#)

Budjan Galindji (Franklin Reserve)

Wed 7 & 28 May 9-11:30am

Wed 4 & 25 June 9-11:30am

Register: [Margaret Ning](#)

Top Hut TSR, near Cooma  
NSW.

Sun 18 May work party

Register: [Margaret Ning](#)

### *Excursions*

Sun 25 May, 10am-12 noon,

Queanbeyan projects. Visit

the Button Wrinklewort

Nature Reserve in

Letchworth, and take a river

walk with possibility of

platypus and rakali.

Register: Margaret Ning

## President's report

Prof Jamie Pittock, President, Friends of Grasslands  
*Curtailing urban expansion: new opportunities to conserve grassy ecosystems?*

Some good news! On Thursday 10th April the ACT Legislative Assembly passed a motion proposed by the Greens, and backed by the Labour Government, to set an urban growth boundary for Canberra for the first time. There is a commitment to introduce legislation by June 2027.

This is a welcome commitment to conservation of grassy ecosystems since the last few thousand hectares of unprotected habitat adjoin the Canberra urban area. The motion calls on the Government to consider the need to protect land of environmental value and agricultural land use; and to set a boundary considering the future land needs of the Territory. Critical for conservation are ACT Government planning for Western Edge development, and a joint ACT-Commonwealth assessment in the Eastern Broadacre area.

In 2014, the ACT and Commonwealth Governments agreed to a strategic assessment under Commonwealth environmental law to support development in the Eastern Broadacre area covering the Majura and the Jerrabomberra valleys. Strategic assessments consider proposed development impacts on matters of national environmental significance on a broad scale. Projects or activities covered by an approved strategic assessment do not need individual approval. It is unclear from public statements why this assessment is progressing very slowly.

In 2022-23 the ACT Government commenced consultation on a draft East Canberra District Strategy under ACT planning legislation (that coincides with the Eastern Broadacre area). While one of five strategy drivers is stated as "Protect, conserve, and enhance priority grassland, woodland and aquatic habitats and environmental values", it is unclear how this would be achieved given that the other four drivers for economic development are earmarked for extensive "possible change areas", but are Natural Temperate Grasslands habitats for species such as the critically endangered Canberra Grassland Earless Dragon. Proposed "environmental conservation" areas are limited to the southern third of the area. It is unclear from publicly accessible reporting why this draft strategy has not progressed since 2022.

FOG supports the establishment of an urban growth boundary that excludes remaining high conservation value habitat from development.

### *The Dragon*

The fate of the Canberra Grassland Earless Dragon is in limbo at the time of writing. The Capital Airport Group has started construction of sections of a road around the north end of Canberra Airport. The road would bisect the largest remaining area – 340 hectares – of critically endangered Natural Temperate Grassland habitat left in the ACT. There will be a last chance to stop the road if, after the upcoming election, the incoming Commonwealth Minister for the Environment revokes the Morrison Government-era approval.

In the meantime, there are very limited resources for captive breeding of the three Dragon sub-populations, for restoration of habitat, and for release of captive animals to supplement wild populations. Further, there is no research on whether claimed mitigation measures, such as tunnels under roads, would help or worsen the fate of the Dragon. With only around 40 hectares of occupied habitat remaining, the Airport and two governments stand condemned for failing to take effective action to conserve the Dragon.

### *Thank you*

A big thank you to Janet and Andy Russell, who are following family interstate. As elaborated elsewhere in this newsletter, Janet and Andy have been major contributors to FOG on Committee and in other roles for many years. Their commitment to grasslands conservation is deeply appreciated and we wish them well with their move.

See you in our grasslands.

Best wishes – Jamie

---

## Will the next Federal Environment Minister resist aggression and give Canberra's Dragon a chance?

### *Matt Whitting*

Sometime before 20 Feb 2025, Canberra Airport Pty Ltd (CAG) *assumed* – provocatively, aggressively – that the Australian Government Environment Minister would make a decision favourable to them. With the review examining CAG's approval for the Northern Road at Canberra Airport still underway, CAG executed a contract and initiated construction of the Northern Road at Canberra Airport fully cognisant they may not be allowed to finish construction and operate the road.

We say, when the review outcome is determined, CAG's recent actions must not be considered by the Minister. The decision must instead be about whether the existential threat facing the Airport population of Canberra Grassland Earless Dragons should be nullified. Looked at in reverse, it is a decision about whether one of three remaining Dragon populations should be given a chance to survive.

National environmental law provides that the Minister must consider whether, as we assert, the original approval would not have been granted if it were known then that there are not tens of Dragon populations widely distributed but just three populations living on a mere 40 hectares.

In that circumstance, with the Dragons listed as threatened at the level critically endangered, any collision between a bulldozer or B-double truck and a Dragon could be fatal for not just the Dragon concerned but the entire species.

**Fact 1:** Dragons are good at hiding. CAG argue Dragons everywhere are in decline, and that is true; however, they are not extinct and two Dragons were seen on the Airport in 2020 (monitoring results since 2021 have not been shared with FOG). We know their populations rise and fall. In a letter to the Federal

Environment Department, Associate Professor Paul Cooper from the ANU's Research School of Biology observed in Nov 2023 that Dragons had been found recently around Melbourne after 30 years of searching and assumptions the species was extinct. Paul wrote 'the lizards can "disappear" but still be present in a locale for many years.'

Fact 2: The best part of the Airport population's habitat is yet to be disturbed. While CAG's recent bulldozing has been extensive, going well beyond the road reserve and into so-called 'heavily disturbed farmland', the area regarded by experts as the best habitat for Dragons is yet to be bulldozed. In April 2020, an ecologist working for CAG reported that the land destroyed already had a "moderate cover of native grasses [and] contained some suitable burrows and had a structure similar to low quality [Dragon] habitat, but was considered very unlikely to be occupied by [Dragons] due to its history and recent fluctuations in condition" (CAG's [Northern Road Strategy](#), pdf p. 161 of 182). We note the area destroyed already was considered worth searching. It may have been a candidate for nature repair, for creating habitat for a recovering population.

The habitat CAG are avoiding during the review surrounds an existing dirt road rarely travelled. It is natural temperate grassland described in April 2020 as being "high to very high quality habitat" (pdf p. 179 of 182). Earthworks there will destroy that habitat. The structure of the soil that supports the burrows in which the Dragons shelter and hunt, that has been there for millennia, will be gone.

Fact 3: We cannot believe CAG. The *Airports Act 1996* (Cth) requires that, for each of 22 federally-leased airports around Australia, there must be an approved master plan in effect and that plan must be updated every eight years. CAG has had several plans since it first leased Canberra Airport. In their *2020 Master Plan*, approved by the Transport Minister in February 2020, CAG state that "the alignment of the road is agreed with all parties" (p. 135). That statement needs bulldozing. FOG has been actively objecting to the Northern Road since it was first proposed in CAG's *1999 Master Plan*.

#### Conclusion:

Allowing the completion and operation of this unnecessary road will put at risk a cherished Canberran. FOG does not oppose all development. We do oppose stupid development. Minister, please nullify CAG's approval for the Northern Road at Canberra Airport.

---

**Snap rally to save the dragon 12 to 1pm  
Petrie Plaza Tuesday 6 May  
See Page 18 for details**

## Tributes to Janet and Andy Russell

*Margaret Ning and Geoff Robertson*

*We were asked to say something about our dear friends Janet and Andy. We circulated some thoughts and asked others to add theirs. However, when the comments rolled in, we decided to publish the comments separately. Originally we circulated the following about Janet and Andy. Our readers might also like to offer their thoughts.*

Andy's interest in plants has been a long one, and when the Crimson Spider Orchid (*Caladenia concolor*) was found on his pastoral property he became an active and enthusiastic member of the recovery team. As a member of FOG and ANPS Andy helped to establish STEP, in which as a founding member he played the roles of public officer, treasurer, membership officer, editor and contributor to the newsletter *Of interest at Forest 20*.

For many years he was FOG's public officer and returning officer, and he attended numerous field trips with Janet. He was the first leader of the Hall cemetery group, a regular attendee at working bees and guru on plant ID

and weeding. He and Janet are both very knowledgeable and practised in growing indigenous grasses and forbs. Their garden at Aranda has been an excellent example of the cultivation of native indigenous plants.



Janet was a FOG committee member for many years, and served as secretary, treasurer, archivist and projects group member. She attended many field trips and functions. She was also a major contributor to the FOG newsletter. Her gardening column 'Cultivation Corner' was both insightful and practical.

Between them Janet and Andy took on many often challenging roles and performed them to an extremely high standard. Each had their own individual style, and most importantly, they each contributed to and implemented FOG's values and strategies.

*Photo: Andrew Zelnik, Janet 2<sup>nd</sup> on the left, Andy 1<sup>st</sup> on the right*

## Brigitta Wimmer

Janet was a very early adopter of Canberra Naturemap and talked me through it at times when I was stuck with their website. She also contributed to ANPS with articles and photos. I admired Andy's and Janet's perseverance at staying more closely connected to nature by growing native, mainly indigenous plants. At their current residence, they had about 80 pot plants on their balcony high above their usual 'terra firma'. And when I once drove Margaret and Janet on a field trip they didn't look up at the landscape flying past because as map lovers they were too busy putting 'flags' and what-not on their screens. I have many other memories but I'm sure you will get lots from others who have known them better and for longer.

## John Fitz Gerald

A couple of things. Andy and Janet led the Hall volunteers from 2008 to 2013. Both have been very active contributors of sightings to Canberra Nature Map, many of them from grassy-ecosystem field trips with FOG and ANPS, others from STEP. Janet with her archival experience has done some very important committee work, keeping FOG organised. With a couple of others from the committee she set up the protocols for holding, analysing, keeping and disposing of our records. These were initially in hard-copy form but she also pushed us into the electronic age and got us using Dropbox for record storage.

## Ann Milligan

My good friends Janet and Andy Russell are moving to Adelaide, where I trust they will enjoy exploring the native grasslands and woodlands in that different environment.

Looking through FOG's newsletters 2004–2024 has shown me how much this couple has been involved in FOG, contributing active leadership for at least 15 of those years. For instance, Janet joined the Committee in 2004, was FOG's Secretary from the AGM in 2005 until 2007, and shared responsibility for answering queries to [info@fog.org.au](mailto:info@fog.org.au) until 2015 and beyond. Meanwhile, at the 2006 AGM, FOG appointed Andy Russell as Public Officer, a job that he only handed over a couple of years ago. At the 2017 AGM, when no-one stepped forward to be Treasurer, Janet took it on until the 2023 AGM, also helping administer FOG's Grassy Grants (from 2017 until the end of 2022). And did you know that Janet and Andy have been checking the PO Box at Jamison on FOG's behalf for years and years?

From January-February 2006 until at least July-August 2011 Janet was contact-person/part-organiser for FOG's activities program, which included innovative adventures and training. The Russells have been in FOG groups visiting numerous places – Tasmania, Victoria, all over NSW as well as across ACT – and have composed several of the activity reports afterwards. Well worth a read.

Hall Cemetery woodland is one of FOG's regular working sites. Andy, supported by Janet, led the working bees from the first one in April 2008 until the end of 2013 when John Fitz Gerald took over, and Janet's writings about that vegetation's ups, downs and progress appear in many newsletters.

Speaking of writing, if you, like me, are trying to establish a native grassland garden, you will be interested to read Janet's 39 articles called (mostly) 'Cultivation Corner'. Look at FOG newsletters from the January-February 2008

edition (which reports the first meeting of FOG's then-new Cultivation and Conservation Group at the Russell's native garden in Aranda) until September-October 2019. In her engaging descriptions of their garden's and plants' fortunes, through drought and rains, Janet mentions helpful sources she turned to for information, and methods they tested to achieve success. Janet's more recent articles show us indoor orchids, high-flying insects, and verge and median-strip plants we probably never 'see' as we drive past.

I'm looking forward to reading future *News of Friends of Grasslands* when (I hope) the Russells will be telling us about the native plants in their new home.

*Andrew Zelnik*

I cannot add much more about Janet and Andy, the dynamic duo of Canberra region plants, other than to echo the fine sentiments expressed by all above about the stalwart and multifaceted nature of their contributions to FOG's mission and of their willing and eager participation in FOG's many and varied activities. All the while many of us have appreciated their good company and good humour.

In my time at FOG most of my interaction was with Janet when we were both serving on Committee. I'm particularly grateful to Janet for her diligent and invaluable support and wise counsel on the FOG Supported Projects Sub-committee from 2017 to 2022, assisting me with the delivery and administration of the Grassy Ecosystem Grants program. I am also grateful to her for being my colleague during this time and taking on a coordinating role on the associated former FOG Public Fund Management Committee. Allied to this, as one of her last roles in her position as Treasurer, Janet played a key role in and did a mountain of work towards setting up FOG as a registered charity with the Australian Charities and Not-for-profits Commission (ACNC) in 2022.

*Cathy Robertson, Secretary, Friends of the ANBG*

When Susan Parsons, the Canberra Times gardening writer, published a story about the Russells' garden in the Canberra suburb of Aranda in 2010, she injected a colossal amount of growth hormone into Canberrans' interest in growing and conserving our southern tablelands plants. The occasion was the opening of the Russell Garden for the Canberra Open Garden Scheme program, on the October long weekend.

Parsons' article featured an image of the Russell duo framed by the forks of a giant *E.rossii*, to illustrate her story. She was obviously excited by their creativity, and she was impressed by the perfectly planned garden, featuring a thriving display of exclusively Australian plants, most but not all of which were local species.

At that time, commercial nurseries did not stock local species. This meant that the source for the Russells' plant collection was seed collection in the wild or from cuttings shared amongst members of Friends of Grasslands or the Australian Native Plants Society. The only authoritative plant image reference for local species was *Grassland Flora: A Field Guide for the Southern Tablelands (NSW and the ACT)* self-published by D. Eddy, D. Mallinson, R. Rehwinkel and S.Sharp. Consequently, Janet became a self-taught expert seed germinator and cutting grower, and Andrew adapted his skill at plant recognition to become an expert in southern tablelands species.

Together the duo developed techniques for soil composition, water flow lines, shade, sun, understorey and canopy to ensure a pleasing and thriving display of forms, foliage, grasses, shrubs, vines, trees and flowers. They labelled all the plants meticulously with their correct botanical names. From germination to flowering, the plants were cared for both scientifically and practically.

Particularly important for education purposes were Janet's spread sheets, which recorded the botanical name, the location of the plant and the details about provenance and date of planting. And of course, Andy's homemade swales were a novelty worth learning about.

The Russell Garden provided inspiration, motivation and learning for the visitors who came that long weekend in October when it was opened as Aranda's Canberra Open Garden. It was a tremendous success. Several hundred people came to enjoy it, proving that many Canberrans cared about their local plants. And it was a great way to raise money for the new project which Andrew was so passionate about: Southern Tablelands Ecosystem Park (STEP) which had opened in the National Arboretum, Canberra.

However, Andy and Janet's Garden is but one small part of their story: their industry and financial support are embedded in all aspects of Canberra's native plant conservation network.

# Golden Sun Moth, *Synemon plana*, sun loving by nature

*Michael Bedingfield*

According to the CSIRO's biosecurity experts, the greatest cause of extinction of Australian native species is invasive alien species. These include mammals such as foxes and cats, which prey on small native species. Also there are the herbivores such as rabbits, horses, camels, goats, deer etc, and the omnivorous pigs. On the plant list are African Lovegrass, Serrated Tussock, St John's Wort, Blackberries, various Thistles, and many others. They replace native flora, change the plant ecology and change the soil so that the natives can't compete. There is a multitude of other exotic plant species as well, some not so invasive but that have still become naturalised. Moreover there are invasive insects such as the European Honey Bee and European Wasp, fish like the Common Carp, Cane Toads, disease-carrying fungi, contagious viruses and many other species of various categories. Invasive species change native habitats and ecosystems and make life difficult for so many native species to survive and thrive.

These invasive exotic species are causing a massive biodiversity transformation that is currently affecting every part of Australia. Unfortunately this is to the detriment of many of our unique native plants and animals. The Golden Sun Moth is one native insect affected by the immense changes we see happening around us.

The main habitat for this moth is natural temperate grassland, but it can also occur in open grassy woodlands, native pasture and secondary grasslands. The larvae of the Golden Sun Moth feed mainly on the roots of native grasses, so they are very dependent upon areas where there is relatively undisturbed natural habitat. They require situations that are open and receive plenty of sunshine. The vegetation structure needs to have only moderate-sized grassy tussocks. The moths also need inter-tussock spacing for basking in the sun to warm their bodies and for females to display their colours for males to see. Thick grass cover and dense biomass are not suitable. However both our natural temperate grasslands and grassy woodlands have been reduced considerably in area and are compromised by weed invasion. They are classified as endangered ecological communities and the Golden Sun Moth is going down the same road. The references below include the ACT government's Action Plan for this moth. The document gives the management requirements for protecting this precious insect into the future.



*Synemon plana* is the scientific name of the Golden Sun Moth. It is classified as endangered in the ACT and vulnerable at the national level. The population is spread widely but sparsely through Victoria, Southeast NSW and within the ACT. Small populations also occur near Perth and Darwin. Usually they are found in small fragmented remnants. This unique species is active during the day rather than nocturnal like most other moths. The sexes of adults have different colouring with the female being more colourful. She has upper wings which are dark brown with patterns of light grey. The hind wings are bright orange with some dark brown spots and an edge of dark brown. She also has a long extensible ovipositor. The males have similar colouring except that the hind wings are bronze or brown with dark brown patches. Both sexes have clubbed antennae, which is also unusual for moths but is normal for butterflies. Females have a wingspan of about 31 mm and the males' wingspan is about 34 mm. I have provided a drawing of an adult female.

The larvae of Golden Sun Moths are known to feed on the roots of wallaby grasses, *Rytidosperma* species, and spear grasses, *Austrostipa* spp. Recent research indicates that they can also feed on Chilean Needlegrass (*Nassella neesiana*), an exotic species biologically related to spear grasses. The larvae are underground feeders and live in silk-lined burrows close to the roots on which they feed. There is no certainty about the larval period but it is believed to be one to three years. When mature enough they pupate underground and emerge as adults when conditions suit them. Breeding occurs from mid-October to early January. The adults emerge only on warm, dry, sunny days. The winged adults have no functional mouthparts so they don't feed or drink and are short lived, surviving only for one to four days. The females walk or flutter short distances only. The males fly around at a low height of about one metre looking for a female displaying her brightly coloured hind wings. After mating the females move around laying eggs within the base of tussocks of their preferred grasses. They can lay up to about 150 eggs. After about 21 days the eggs hatch, the caterpillar larvae tunnel into the soil and the cycle begins again.

With a multitude of alien plants and animals becoming naturalised in Australia one wonders what our natural world will look like in 1000 years time. In the meantime we have a job to do to protect the native species as best we can. The Golden Sun Moth is regarded as a 'flagship species' because it is an attractive insect dependent on relatively good native grasslands and grassy woodlands for its survival. Focusing on protecting the moth leads to the greater good of preserving these ecological communities as well. Therefore we shall continue to lobby for its safety into the future.

Main references:

<https://www.environment.gov.au/biodiversity/threatened/species/pubs/25234-conservation-advice-07122021.pdf>

[https://www.act.gov.au/\\_\\_data/assets/pdf\\_file/0010/2545957/golden-sun-moth-action-plan-2017.pdf](https://www.act.gov.au/__data/assets/pdf_file/0010/2545957/golden-sun-moth-action-plan-2017.pdf)

<https://www.csiro.au/en/news/all/articles/2019/may/invasive-species-are-australias-number-one-extinction-threat>

---

## 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](mailto:newsletter@fog.org.au)*

# Crace Grassland visit

Ann Milligan

Saturday 19 April 2025. Crace Grassland is the large open area east of the Barton Highway (on the left if heading towards Northbourne Ave), between Gungahlin Homestead (a CSIRO site) and the racecourse. The standout rocky knoll is called Crace Hill, according to Google maps.



Photo (left) by Andrew Zelnik: A Spur Goodenia scald just outside the main Button Wrinklewort conservation area bounded by the star pickets, with Crace Hill knoll in the background to the east, and 'waves of wort' in the distance to the south east.

ACT Government rangers actively manage the whole grassland, where they are also testing methods for controlling St John's Wort (SJW) and Chilean Needlegrass. The methods and results were much discussed on Easter Saturday, 19 April, when Margaret Ning and I met keen Rangers Pat and Leah who kindly drove us to the

grassland's Button Wrinklewort (*Rutidosia leptorhynchoides*) patch. As outlined in last year's newsletters, SJW control is being widely tested in Canberra these days: for example, at Budjan Galindji Grassland (Franklin), and by several landcare groups, as well as by ACT Government employees. Saturday's verbal comparisons at Crace Grassland therefore gave extra value to this FOG outing, despite us being the only two FOG people.

The real reason we were there was to look at the Button Wrinklewort, which is fenced off from any cattle in the greater Crace grassland. Margaret wanted to know how well this daisy was surviving after not much rain since January. It was doing OK! Several plants had one or two flowers still brightly golden and button-like, though most of the plants did look rather dry. This grassland would be glorious in a year of average summer rainfall. There were many Lemon Beautyheads (*Calocephalus citreus*), Spur Goodenia (*Goodenia paradoxa*) and Common Everlasting (*Chrysocephalum apiculatum*), almost all with dried-up flowerheads. I saw several brave *Vittadinia* plants still barely in flower, and there were a few proud freshly blue *Wahlenbergia* bells.

Of grasses, I noted only a few short stalks of Kangaroo Grass (*Themeda triandra*) near the gate, some Red-leg Grass (*Bothriochloa macra*) there too, and otherwise at least a couple of Wallaby grasses (*Rytidosperma* spp.) including Whitetop and a taller species, and occasional Hairy Panic (*Panicum effusum*). The few native plantain seedlings we saw – small healthy dark green and fleshy-looking plants in the patches of orange-coloured bare soil – were strikingly different from the dried-up non-native plantains lying flat, hairy and exhausted among other vegetation. Otherwise, the only weeds seemed to be some sparse SJW, in one corner of the picketed area and a few empty brome grass seedheads.



Photo (left) by Andrew Zelnik. Example of habitat condition for Button Wrinklewort plants within the picketed conservation area showing the dried-upness of the *Rutidosia*, still with a few flowers.



# Back amongst the Weeds - close up

John Fitz Gerald

I'm going to swing my pendulum to the nasty end and look at seeds of three troublesome invasive species, two grasses and one forb.



My first grass is unfortunately a very common weed on FoG work sites – *Lolium arundinaceum* or Tall Fescue. “Hang on” I hear some of you saying straight away, “I know this large perennial grass as *Festuca arundinacea*”. It certainly used to be, and online botanical reference sites are midstream in updating their entries! Australian Plant Name Index (APNI), Atlas of Living Australia (ALA) and Canberra Nature Map (CNM) are leading the pack in using genus *Lolium*, while Plantnet, VicFlora and Plant Census of the ACT (version 4.1) still list *Festuca*.

The backstory on the name revision ties back to DNA studies as early as 1993. There is an extensive literature on all this that a determined reader will find through web-searching. The discussions are quite complex as this species has been intensively bred and developed to improve its performance as pasture. The most helpful reference to the name-change which I have found is available online at the Australian Office of the Gene Technology Regulator (see below for detail). The Office’s analysis relates to genetically modified forms “that may be released into the Australian environment”. Their 2022 resource document begins with a Taxonomy introduction which is both easy to read and short.

P.O. Downey ranks this tall robust C3 grass as a weed of moderate priority in the ACT. ALA contains 2800 records of its presence mainly across Victoria, south-eastern South Australia, eastern NSW, Tasmania and south-western Western Australia. CNM lists 61 sightings across our area. The species is native in Europe, across to the Himalayas, and in north Africa. It has been introduced by cultivation into pasture elsewhere and become widely naturalised around the world. My image shows four florets across the base which remain wrapped by both a bristled lemma and a palea. Across the top are four dark chunky seeds which I managed to unwrap although some of the palea adhered to grains in places. The scale bar in the bottom right corner is 1 mm.



My second grass is *Eragrostis cilianensis* or Stinkgrass. This is a native of Africa, Asia and southern Europe, now naturalised worldwide. It is a C4 annual grass, often growing only to about 40cm tall. ALA has almost 3500 reports distributed through all states though mostly in NSW and Victoria. CNM shows 31 sightings. Downey ranks its weed-priority as low in the ACT. My image shows that its small brown ellipsoidal seeds are only 0.5 mm long (scale bar here is 0.5 mm). I suspect that such small rounded seeds would easily roll or be washed down-slope by water and wind.

My troublesome forb is *Marrubium vulgare* or Horehound. In this part of the world we know it as a local menace in areas that have been heavily modified by grazing sheep. It is ranked by Downey as a weed of low priority in the ACT. This perennial aromatic species is native to Europe, east Asia and north Africa.



ALA contains nearly 50,000 Australian records, a clear legacy of a country which ‘rode on the sheep’s back’ in colonial times. The distribution concentrates right across south-eastern Australia and Tasmania. Horehound is currently declared a weed in South Australia, Tasmania and Victoria. CNM shows 134 sightings. My image shows that its bullet-shaped black seeds are about 1.5 mm long, flat at one end and tapered at the other (scale bar here is 0.5 mm). This species has its own profile in the ACT Weeds Manual which notes that its seeds could remain viable for five to seven years.

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 - Atlas of Living Australia, [www.ala.gov.au](http://www.ala.gov.au)

CNM - Canberra Nature Map

APNI – Australian Plant Name Index

Office of the Gene Technology Regulator (OGTR), The Biology of *Lolium multiflorum* Lam. (Italian ryegrass), *Lolium perenne* L. (perennial ryegrass), *Lolium arundinaceum* (Schreb.) Darbysh (tall fescue) (2022).

[www.ogtr.gov.au/resources](http://www.ogtr.gov.au/resources)

Downey P.O. (2022), List of Alien Plants Naturalised in the ACT

ACT Weeds Manual, [sactgc.org.au/act-weeds-manual/](http://sactgc.org.au/act-weeds-manual/)

---

## 2025 Revegetation Trial with Ryecorn at Yarramundi Grassland

*John Fitz Gerald*

On 2nd April the National Capital Authority (NCA) posted a brief item on its Facebook page, including a set of photos, about its trial sowing of Ryecorn. That post was shared the following day on FOG’s Facebook page. I’ll take the opportunity to follow this up and provide interested FOG readers with some more detail.

The project is directed by Craig Sellars, Open Space Manager for NCA. For on-ground work at Yarramundi he engages BurHor, an experienced horticultural service contractor based in Queanbeyan. FOG has been involved along the way in the planning steps of the process and in assisting on-site where needed.

On 13th September last year, the Rural Fire Service put an ecological burn across about 5.5 ha on the western edge of Yarramundi Grasslands. The burn was patchy in some areas, more continuous in others. The commuter cycle-path formed the NW edge of this burn, which was relatively complete here because pre-existing biomass was high. Regrowth of both exotic and native cover was quite active within 2-3 weeks; unfortunately St John’s Wort was conspicuous. On the positive side, fresh leaves on this weed were excellently exposed in the low vegetation, so NCA engaged BurHor to boom-spray with the selective chemical Starane. FOG helped to identify and mark areas rich in native forbs to be treated by spot-spraying which occurred in mid-October. A mid-November assessment showed fair results on the SJW but a second spray was judged worthwhile and occurred late that month.

The assessment also identified some dense patches of the tall form of African Lovegrass, with many plants racing to flower. NCA decided to focus on a couple of patches where the ALG was dominant, managing it initially with herbicide then with a trial oversowing with a cover crop. The cover crop chosen was Cereal

Rye, also known as Ryecorn, an annual crop plant bred for sterility. The cover crop will have died down by late 2025, when a further assessment of its effectiveness as a weed control will be made. This approach reflects the experience that ALG notoriously accumulates in soil seedbanks and is therefore very difficult to eliminate.

Selected ALG patches were first controlled at Yarramundi in late November by spot-sprayed glyphosate. The areas browned by herbicide were slashed in mid-January 2025. While planning in mid-February for seed sowing, it became obvious that exotic grass was unacceptably common through the patches. The culprit was mainly ALG, partly young plants missed during spot-herbicide but probably also new germinations. Paspalum, Setaria, Wild Oats, Tall Fescue, Chilean Needle Grass and others were also common. Two rectangular plots were selected for sowing and re-treated by slashing then boom-spraying with glyphosate in early March. One plot was sprayed with glyphosate at normal concentration, the other was given a "suppression" spray at half concentration to trial whether this would save some of the native grasses present yet still eliminate exotics. The total plot area is around 1200 square metres.



BurHor returned on 26th of March to sow sterile Ryecorn seed through both plots at the rate of 150 kg/ha. The sowing was done with their tractor-towed aerovator which first forces metal plugs in to loosen the soil surface but not dislodge existing tussock roots (see photo of array of metal plugs alongside).

Seed is dropped onto the plugged soil and the surface recompact with a trailing roller, all in a single pass. The end result is that seed sown firmly contacts the ground. Granular fertiliser was spread around to assist growth. A handy fall of rain on 28 March completed the picture.

The crop came up quickly in the still-warm autumn soil. Germination was well under way by 5th March - see my accompanying picture below of chunky seeds (2-3mm thick and 5-7mm long) and emergent shoots which, by that date, were already up to 5cm tall.

Three weeks later the coverage is thicker with stems carrying multiple leaves up to 15cm long. Any readers keen to check the agriculture for themselves can walk from the Lindsay Pryor Arboretum carpark for about 250 metres along the newly resurfaced cycle path towards Black Mountain and the two bright-green plots will be obvious on the lake-side of that path.

This thick cereal crop will stand out when fully flowering later this year at Yarramundi - plants should be one metre tall with laterally compressed heads of grain around 10cm long and florets with awns to 5cm or longer. Future management actions will depend on the character of the grass base that emerges as the crop subsides. If the weed control has been effective, plots will be ready to oversow with seed of native grasses and forbs, but possibly minor herbicide intervention will be required first. Craig and the NCA are watching the trial keenly and hope that evidence from it can lead to reclamation of some other weedy grassed areas of National Land at a larger scale around our capital city.



# Advocacy report

*Matt Whitting*

*In reverse chronological order:*

## *April*

*Submissions on the protection and better management, under NSW law, of (i) native grasslands and (ii) critically endangered ecological communities 15 April.*

In March, the NSW National Resources Commission invited FOG to provide views on two unpublished Issues Papers on these two matters central to FOG's raison d'être. FOG's advocacy machine went into full swing. We are not able to publish the Issues Papers or our responses; however if you are interested please contact [matt.whitting@fog.org.au](mailto:matt.whitting@fog.org.au) for details.

## *March*

*Airport Road: What happens during the Caretaker Period?*

Please see the article on Pages 2 and 3 of this Newsletter.

Attendance at the Rally organised by ACT Greens, on the Northern Road at Canberra Airport, 24 March. FOG was well represented, and recognised for its ongoing advocacy concerning the issue of the Northern Road at Canberra Airport.

*Submission to the Inquiry into the Planning (Territory Priority Project) Amendment Bill 2025, 20 March*

This Bill, if passed, would result in the automatic addition of public health facilities and public housing projects to the list of Territory Priority Projects (TPPs). [Our submission](#) offered "substantial yet qualified support for the Bill". While supporting the efficient achievement of major government policy outcomes that will be of significant benefit to the people of the ACT, "FOG is concerned to ensure the loss of third-party appeal rights to the [ACAT] is limited appropriately."

*Submission on the developing Nature Conservation Strategy*

On 9 March, FOG submitted comments (unpublished) on the developing Nature Conservation Strategy. Our comments built on those put by the Conservation Council ACT Region earlier in the month. Both sets of comments flowed from discussions in meetings as well as from an email received on 23 Dec 2024, containing an overview of the Strategy's development to that date. If you are interested please contact [matt.whitting@fog.org.au](mailto:matt.whitting@fog.org.au) for details.

## Membership renewals

Thank you to all the members who have renewed for 2025. If you haven't yet renewed your membership for this calendar year, we remind you that you need to do so *before 31 May* to remain a member and continue to receive our newsletter and activities updates (unpaid members will be removed from the mailing list this June). Your ongoing membership of FOG is important to our success.

*How to renew:* Membership costs \$30 for an individual, or family, or not for profit organisation, \$10 concession for student or pensioner, and \$60 for other corporate bodies. You can pay by Direct Debit: BSB 633 000 Account 124770835. Include 'M'ship' and your name in the Reference. To pay by cheque or money order (payable to Friends of Grasslands), send it and your membership details to: FOG Membership, PO Box 440, Jamison Centre, ACT 2614.

*To update any of your details,* use the membership form at [fog.org.au/membership.htm](https://fog.org.au/membership.htm) and email it to [membership@fog.org.au](mailto:membership@fog.org.au). Thank you for your continuing support.

# Drought effect on microbe homeostasis in soils of native grass species grown in monocultures and mixtures

*Chioma M Igwenagu, Yolima Carrillo and Catriona Macdonald, Hawkesbury Institute for the Environment, Western Sydney University, Richmond NSW*

*Introduction by Andrew Zelnik*

*In 2021 Chioma was awarded a FOG Grassy Ecosystem Grant of \$792 to assist with the costs of a chemical analysis of soil samples associated with her grant project. This was part of Chioma's final year PhD research - investigating soil nutrient management and the microbial ecology of twelve key grassland pasture species in Australia. The project, jointly funded by Meat and Livestock Australia, Dairy Australia and Western Sydney University, aimed to investigate soil nutrient management and microbial ecology in pasture systems under climate extremes. The grant project involved analysis of total carbon (C) and nitrogen (N) in soil representing microbe substrates, associated with two native grassland species (a wallaby grass and kangaroo grass), grown in monocultures and mixtures exposed to six months of drought treatment in the field. Total C, N, and phosphorus (P) content of the microbial biomass in the 132 soil samples was analysed. The aim was to use this data to determine microbial stoichiometric response (chemical ingredient mixing ratios) to changes in soil nutrient availability, in order to extend understanding of microbial nutrient cycling and adaptation in soils associated with native grassland species under climate stress.*

*The soil samples used were from the Pasture and Climate Extreme (PACE) experimental field site located at the Hawkesbury Institute for the Environment on the Hawkesbury Campus of Western Sydney University (WSU). PACE is a research project investigating the impacts of extreme climate conditions on a range of pasture species that support the success of Australia's livestock and dairy industries.*

*In 2022 an article relating to Chioma's research, and of which she was a co-author, was published in the journal *Frontiers in Plant Science* (vol.13, Article no.836968) and in 2023 she obtained her PhD. She now works as a Natural Capital Advisor at Central West Local Land Services NSW.*

---

## Drought effect on microbe homeostasis in soils of native grass species grown in monocultures and mixtures



Fig 1. PACE research facility: six rain-out shelters with 32 subplots in each, sown with 12 pasture species in monocultures and mixtures. Half the plots were exposed to drought and half were well-watered, as a control. A subset of plots was exposed to warming treatment with heat lamps. Drought was imposed during the 2019 winter-spring six-month season and relieved during the 2019 to 2020 summer-autumn season.



Fig 2. (A) Winter growth of pasture plants at PACE, in plots exposed to drought and warming conditions. (B) PhD students (Manju, Karen and Chioma) harvesting during August 2018. For this work wallaby grass (*Rytidosperma caespitosum*), kangaroo grass (*Themeda triandra*) and kangaroo/wallaby mixture were the focal species. Sampling was conducted during winter-spring drought and summer-autumn post-drought.

### Understanding microbial nutrient responses to drought: ecological stoichiometry

Ecological stoichiometry studies a consumer's (e.g. microbes) elemental carbon (C), nitrogen (N) and phosphorus (P) ratios in relation to the ratios of their resource (e.g. soil). It applies the concept of stoichiometry homeostasis which studies the degree to which microorganisms (consumers) constrain their elemental composition irrespective of changes in the elemental composition of their resource (soil).

Studies show that microbes may or may not express stoichiometric homeostasis in response to changes in their resource stoichiometry under stress. Being non-homeostatic (i.e. stoichiometrically flexible: Fig.3A) may help microbes resist or adapt to stress and thus may promote nutrient cycling. On the other hand, if microbes maintain stoichiometric homeostasis they are likely to be sensitive to stress (Fig.3B) which could impact nutrient cycling and affect plant nutrient availability.

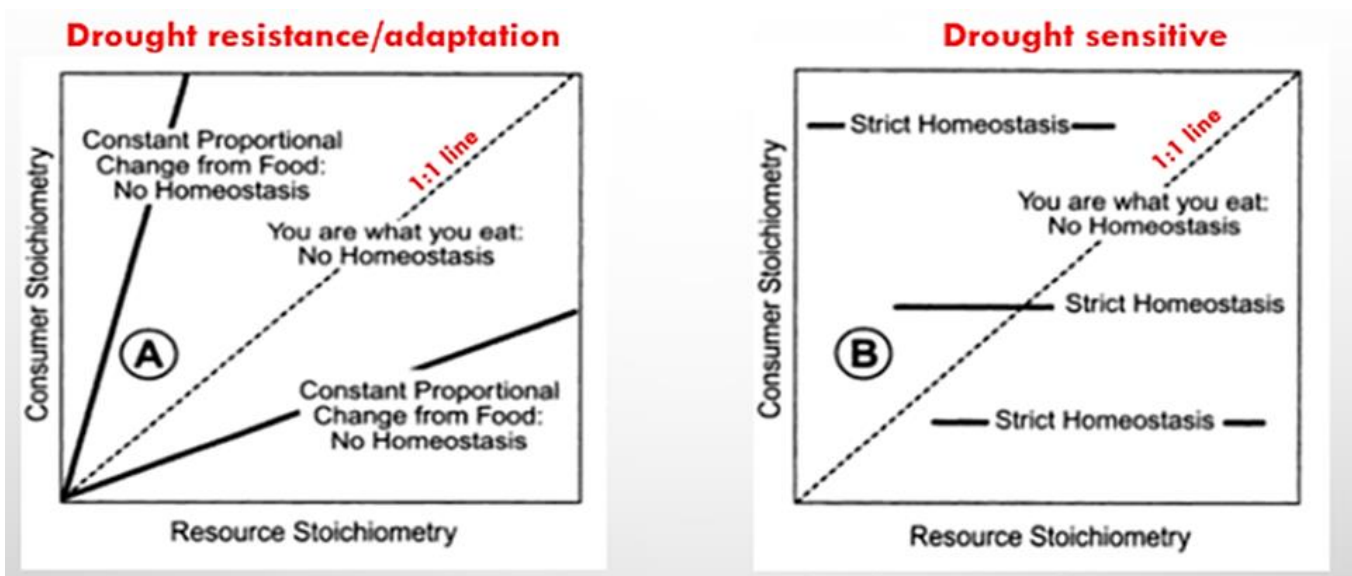


Fig 3. The stoichiometric relationship between consumers (microbes) and resource (soil). (A) shows a flexible relationship (non-homeostasis) and (B) shows a relationship of non-homeostasis on a 1:1 (intercept -slope) line.

Source: Sterner & Elser (2002)<sup>1</sup>.

<sup>1</sup> Sterner, R. W., & Elser, J. J. (2002). *Ecological Stoichiometry: The Biology of Elements from Molecules to the Biosphere*. Princeton University Press

Table 1. Stoichiometric scaling (Persson et al., 2010)<sup>2</sup>

Scaling	Stoichiometric status
$0 < 1/H < 0.25$	strongly homeostatic
$0.25 < 1/H < 0.5$	weakly homeostatic
$0.5 < 1/H < 0.75$	weakly flexible
$1/H > 0.75$	flexible

Ecological stoichiometric theory has been used to study the ways microbes cycle or retain nutrients, to assess microbial community resistance and resilience, and to predict microbial responses to soil-nutrient changes under environmental stress, but its use in predicting drought stress has gained little attention. Although vital to understanding grassland ecosystem carbon and nutrient cycling and adaptation, it has not been used to assess native grassland ecosystem response to climate stress such as drought. This is an important consideration for native pasture species conservation.

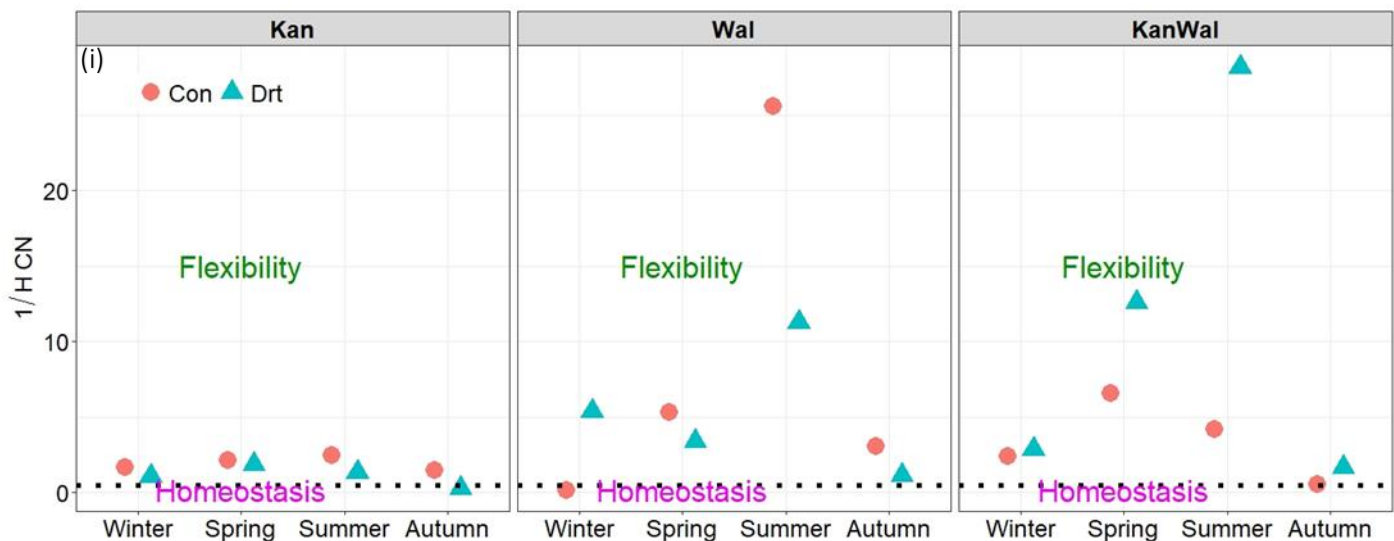
### What we did

We measured microbial carbon, nitrogen and phosphorus and soil total carbon, nitrogen, and phosphorus and calculated their ratios (microbial C:N, C:P, N:P and soil C:N, C:P and N:P). We then correlated the relationship between microbial and soil elemental ratios to determine the slope which is used to determine the degree of homeostasis (1/H) with scaling shown in Table 1.

### What we found

Stoichiometric scaling showed that the degrees of microbial C:N homeostasis (1/H) of all species were generally flexible under drought (Fig. 4i). Microbial stoichiometry under kangaroo (Kan) grass was stable across season.

Under wallaby (Wal) grass microbes became more flexible with winter drought but reduced flexibility under drought in other seasons. Under a mixture of kangaroo and wallaby (KanWal) microbes were more flexible with spring and summer drought.



<sup>2</sup> Persson et al., (2010). To be or not to be what you eat: Regulation of stoichiometric homeostasis among autotrophs and heterotrophs. *Oikos*, 119(5), 741–751. <https://doi.org/10.1111/j.1600-0706.2009.18545.x>

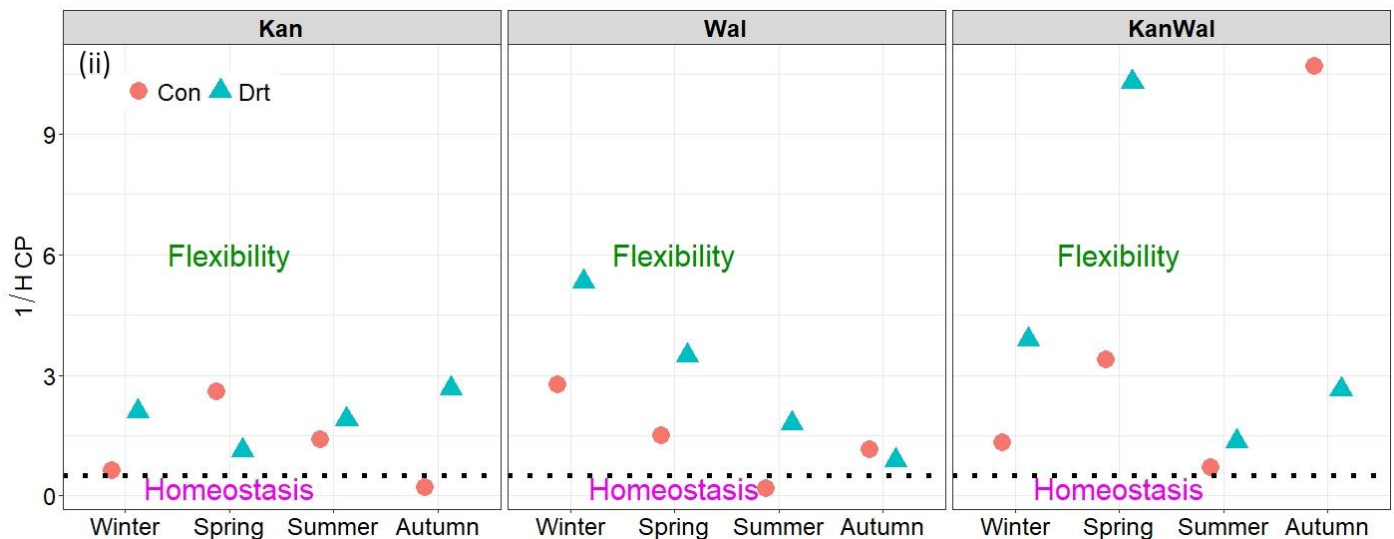


Fig 4. The degree of microbial C:N (i) and C:P (ii) homeostasis (1/H) of kangaroo grass (A), wallaby grass (B) and kangaroo-wallaby grass mixture (C) when droughted in winter and spring, and drought-relieved in summer and autumn. Con (solid circle) represents the control (well-watered) system and Drt (solid triangle) the droughted system.

Stoichiometric scaling showed that the degree of microbial C:P homeostasis (1/H) of all species were also generally flexible under drought (Fig. 4ii). Under kangaroo (Kan) grass microbial C:P was strongly flexible with drought compared to control across season except in spring. Wallaby grass, and KanWal mixture were also more flexible with drought across season but not in autumn when flexibility reduced substantially, especially under KanWal.

### The implication

The concept of microbial stoichiometric flexibility means that changes to the soil nutrient status impacts an organism's elemental composition ('YOU ARE WHAT YOU EAT' as illustrated in Fig 3A), while microbial homeostasis implies that microbes take on a conservative nutrient approach irrespective of changes in soil nutrient status ('YOU ARE NOT WHAT YOU EAT').

Overall, microbes under the studied native species were more stoichiometrically flexible during drought and after drought compared to those in well-watered plots. This means that microbes adjusted their elemental composition in response to changes in soil N and P (which could be a drought adaptation/resistance strategy) during drought and after drought. Microbes under kangaroo grass conserved their N use compared to P use in response to drought and post-drought condition. It remains unclear how microbial stoichiometric responses to drought affect plant-microbial competition for nutrients, and the implications for native species conservation.

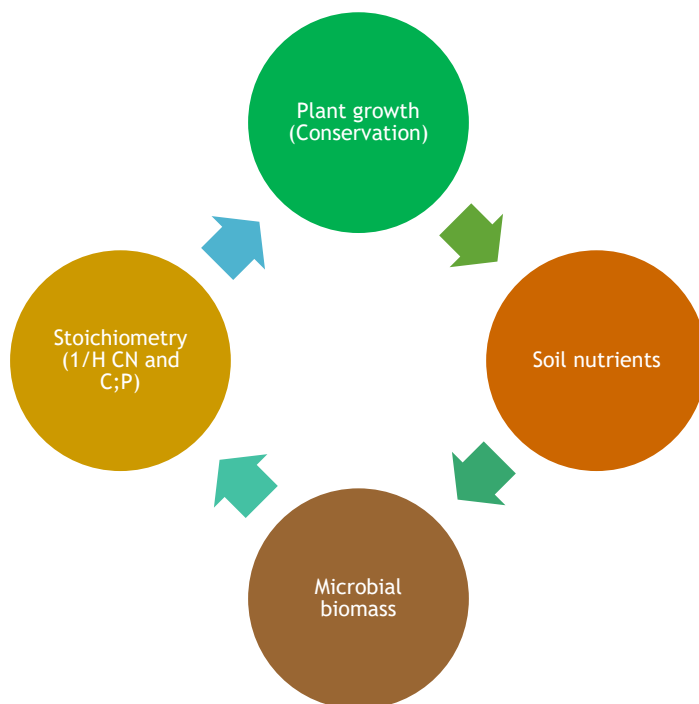
*Under drought and after drought, microbes stored fewer nutrients. Lessened nutrient storage by microbes may affect nutrient availability for plant growth*

### Next step

We established that microbes are stoichiometrically flexible in response to drought. It is now important to understand how these findings relate to plant growth under stress conditions so that we can fully understand how microbial nutrient balance affects native-species conservation.



Fig 5. The importance of the relationship between ecological stoichiometric theory and plant growth in understanding how to conserve native species.



## Opportunity knocks

### *Plant minder needed*

In the first week of May FOG will receive delivery of plants for planting on national lands. However, we will only be able to plant around half on May 10<sup>th</sup>, and so will need to look after the other half for a month or two until we can plant them. We're looking for a volunteer to look after around 200 tubestock in trays for 2 months. This involves watering the plants every 1-2 days. Please contact Jamie Pittock if you can help.

### *Training opportunities for first aid and asbestos identification:*

The National Capital Authority has again provided welcome funds to train volunteers to help run our work parties safely. If you would like to undertake the one day 'provide first aid' course at St Johns Ambulance in Deakin, or the half day 'asbestos awareness' (blue card) course at CIT in Bruce, then we can cover the fees. We ask that trained volunteers then come to a couple of work parties each year to apply your skills. Please contact Jamie if you are interested.

### *Weed spraying volunteers wanted:*

Graeme Hirth has stepped back after many years of voluntary work at Gurubung Dhaura leaving a big gap in FOG's program. We are looking for volunteers who might be willing to take a 5L tank of herbicide (supplied) and spot spray isolated St John's Wort and/or Vinca and/or African Lovegrass plants on a monthly basis (i.e. around 2 hours per month). Training provided. Please contact Jamie if you are willing and able to help.

# News Roundup

*Paul Archer*

## *Dragon Rally*

From the Conservation Council's *Yellow Box Newsletter* 2 May 2025.

The Canberra Airport has yet again betrayed its own commitment to save the Canberra Grassland Earless Dragon from extinction, by restarting construction of its deadly and unnecessary "Northern Road" directly over one of the three remaining populations of the Canberra Dragon.

Help grow the FOG / Conservation Council campaign by attending the FOG / Conservation Council [snap rally on Tuesday the 6th of May at 12pm in Petrie Plaza](#) where we will publicly call on the Airport and newly elected government to halt construction of the deadly and unnecessary Northern-Airport Road. If you can't make the snap rally, then spread the word so others can go in your place! And there are plenty of other ways you can get involved! See [here](#) for details



## *Report slaps an official price tag on Australia's precious natural assets*

The Conversation, February 27: Climate regulation through carbon storage was worth A\$43.2 billion to Australia in 2020-21, according to a report which seeks to put a monetary value on the benefits flowing from our natural assets. Australia's first [national ecosystem accounts](#) were released by the Australian Bureau of Statistics in February. Together, they reveal the key ways our environment contributes to Australia's economic and social wellbeing in dollar terms. The full report is available [here](#)

## *Earless dragons were presumed extinct in Australia, now Daisy and Kip have sniffed out 13 of them*

An article in The Guardian on 8 April 2025 described how wildlife detection dogs successfully sniffed out 13 critically endangered earless dragons in previously unknown burrows in Melbourne's west, after a training program launched by Zoos Victoria in 2023. The Victorian grassland earless dragon – Australia's most imperilled reptile – had not been seen for 50 years and was thought extinct before its remarkable rediscovery on privately owned grassland in 2023. Given this "second chance" at survival, Garry Peterson, the zoo's general manager of threatened species, said the organisation launched intensive training and search efforts the same year. "We're really lucky to have a second opportunity with this species that was presumed extinct," Peterson said. The full article can be found [here](#)

## *Riversong concert 17 May*

The Australian River Restoration Centre, a charity dedicated to restoring Australia's river systems through partnerships with people and communities, is hosting a charity event, Riversong, on the 17th of May at the National Museum of Australia in Canberra. It is promoted as "a rich program of historic and contemporary music that captures the voice of our rivers. Through song paired with immersive big-screen

visuals, Riversong will take you on a journey, reflecting on how rivers have shaped our lands and the critical role they play in a changing climate". Tickets and further information are available at:

<https://www.riversong.au/>

### *Turning lawns into meadows?*

Turning lawns into meadows can have big benefits for people, wildlife and the climate. Here's why 'meadowscaping' has become the latest gardening craze in the US. When Sara Weaner Cooper and her husband bought their first home in Pennsylvania, they knew they didn't want a perfectly manicured front lawn like their neighbours. They wanted something that was more than just turf – a flourishing, wild meadow home to diverse species of plants and animals. The full story is available [here](#)

### *Corpse flower at the ANBG*

*Margaret Ning*



On Monday 10 February, I was lucky enough to score one of the free tickets allocated by the ANBG for viewing the Corpse Flower that had rather suddenly become the talk of the town. While I did 'see' the flower, I didn't get any sense of 'stench', which I'm not really concerned about. The flower itself was spectacular, even though it had closed considerably by the time I saw it.

Briefly; "An *Amorphophallus titanum* or titan arum, commonly known as the corpse flower, has bloomed at the Australian National Botanic Gardens in Canberra for the first time. The 15-year-old plant started unfurling its 135 centimetre-tall flower spike on Saturday afternoon, emanating a putrid stench described by some as smelling like "dead rat".

For a full explanation with heaps more information see [here](#). Photo (left) by Margaret Ning.

## Contact us

General inquiries, health and safety	<a href="mailto:info@fog.org.au">info@fog.org.au</a>
Media inquiries	0407265131 (Jamie Pittock), 0403221117 (Geoff Robertson)
Membership enquiries,	<a href="mailto:membership@fog.org.au">membership@fog.org.au</a>
Events & work parties	<a href="#">Calendar</a>
Book order forms	<a href="#">Grassland &amp; Woodland Flora.</a>
Small grassy ecosystem grants	<a href="mailto:supportedprojects@fog.org.au">supportedprojects@fog.org.au</a>
Advocacy contact	<a href="mailto:advocacy@fog.org.au">advocacy@fog.org.au</a>
Website matters	<a href="mailto:webmanager@fog.org.au">webmanager@fog.org.au</a>
Projects / work party contacts	Hall Cemetery, Ginninderry: <a href="mailto:john.fitzgerald@fog.org.au">john.fitzgerald@fog.org.au</a> . Scrivener's Hut, Gurubung Dhaura (Stirling Park), Blue Gum Point & Yarramundi Grassland: <a href="mailto:jamie.pittock@fog.org.au">jamie.pittock@fog.org.au</a> . Budjan Galindji (Franklin) Grasslands, TSRs & Old Cooma Common: <a href="mailto:margaret.ning@fog.org.au">margaret.ning@fog.org.au</a> . Scottsdale: <a href="mailto:linda.spinaze@fog.org.au">linda.spinaze@fog.org.au</a>
Newsletter contact	<a href="mailto:newsletter@fog.org.au">newsletter@fog.org.au</a>
Contact addresses	<a href="mailto:secretary@fog.org.au">secretary@fog.org.au</a>
Payments & accounts	<a href="mailto:treasurer@fog.org.au">treasurer@fog.org.au</a>
Annual reports	<a href="#">annual reports</a>
FOG Committee	<a href="mailto:secretary@fog.org.au">secretary@fog.org.au</a>



*View from threatened Eucalyptus globulus dry forest and woodland looking southeast to Maria Island NP from Lords Bluff area on 'Okehampton' east of Triabunna during FOG January 2024 Tasmania trip. FOG's modest 2019 Grassy Ecosystem Grant of \$1,000 contributed to a condition improvement plan report for ~300ha of important remnants of native grassland and grassy woodland (including three threatened vegetation communities and six listed or rare threatened plant species) in three areas of this 1,385ha grazing property. The plan included fencing, grazing and weed management options and priorities. Photo & caption: Andrew Zelnik.*