News of Friends of Grasslands

Supporting native grassy ecosystems

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July–August 2018

Congratulations Margaret!

Congratulations to Margaret Ning on receiving an OAM in the Honours List on Monday 11 June:

Margaret Ellen NING, ACT,
For service to conservation and the environment.

The Governor General's website (https://www.gg.gov.au/australian-honours-and-awards/australian-honours-lists) says:

'Ms Margaret Ellen NING, ACT
For service to conservation and the environment.
Service includes:
Friends of Grasslands:
Member since 1996.
Committee Member since 1997.
ACT Herpetological Association (ACTHA):
Treasurer, current.
Member, since 1998.
Membership Secretary, since 2000.
Organiser, 'Snakes Alive!' exhibitions, current.
Member, Australian Native Plants Society.
Former Member, Canberra Ornithologist Group.'

This is lovely recognition of one of our most generous and dedicated FOG members and committee members, who has done so much in support of FOG and ACTHA and with people who are interested in and care about native grasslands in this region.

Photos (2017 & 2018) clockwise from top left: Margaret about to photo-monitor grassland condition at part of Old Cooma Common for the Monaro Golden Daisy project; demonstrating new tools for weed management, at Mt Oak; adding to the species list at Nerriga (purple hat); on the FOG tree-hollow hunt (blue hat), with John Brannan (see p. 13).

FOG and NCA – thinking alike (*see more about Stirling Park on p. 5*)

FOG, in 'Letters to the Editor', *Canberra Times*, 25 April

Dear Editor,
We write to celebrate burning Capital Hill. Last weekend the National Capital Authority and Rural Fire Service (RFS) volunteers successfully burnt the ecologically significant woodland between Capital and State circles. Burning the bush is always risky but essential for the health of grassland and woodland ecosystems, and managing wildfire risk. The window of time that our firies can effectively burn is being squeezed by climate change as the fire season lengthens. There are always complaints about proposed burns within Canberra and reasons not to proceed. We thank the Authority and RFS for having the gumption to proceed and to burn well.

Dr Jamie Pittock, Friends of Grasslands

National Capital Authority, on Facebook, 24 May

We are so grateful for the people who help us care for NCA-managed conservation areas like Stirling Park and Yarramundi Grasslands, and would like to give a special National Volunteer Week shout-out to Friends of Grasslands and those who volunteer for their work parties.

For ten years now, they have undertaken work including plantings of native plants, weed control, rubbish removal and other tasks that have made a huge contribution to the ecology and conservation value of these areas.

FOG also help involve locals such as the Yarralumla Residents' Association in the care and enjoyment of the NCA's natural assets in the area.

If you'd like to celebrate National Volunteer Week by joining in, FOG is having working bees at Yarramundi Reach and Stirling Park this Sunday. To get involved contact Jamie Pittock Jamie.pittock@fog.org.au

For this newsletter's contents list, see p.16.

FOG-related activities in July and August … and beyond!

Rampaging *Rutidosis:* Friday **6 July,** 1.30–3.30 pm

Sarah Sharp will be leading a mid-winter visit to a population of Button Wrinklewort *Rutidosis leptorhynchoides* at Crace Grasslands Nature Reserve in Gungahlin from 1.30 to 3.30 pm. This population has expanded significantly since it was first discovered in 1998. **Why?? Come along, and we will discuss some ideas.**

Do you know what else is at Crace Grassland Reserve? Come and find out! Be prepared for winter weather, so make sure you are fully rugged up. We will be driving everyone in to the site, so those with less agility are most welcome!

Please register with sarah.sharp@fog.org.au **by 3 July**. We will meet on the corner of Bellenden St and Hoskins St, accessed off Sandford St in Mitchell, at 1.30 pm.

'Getting to know your native grasses' at Braidwood

9.30–12.30 Saturday **11 August**

Geoff Robertson (President of FOG) will talk about native grasses and grasslands and their management in the Braidwood area at this workshop, run by Upper Shoalhaven Landcare Council, FOG and K2C. *Bring along your own mystery grasses for possible identification*. Free, with morning tea. **Register at** https://www.eventbrite.com.au/e/getting-to-know-your-native-grasses-tickets-46514168129. Nearer the date, the organiser will send details of the venue (in or near Braidwood) to those who have registered.

Winter talks & tea: Saturday **18 August**, 1.30–4.30 pm

This year's talks focus on restoring native areas of ACT. Come to **Mugga Environmental Education Centre, Narrabundah Lane, Symonston ACT**, on Saturday 18 August (a month later than usual).

Dr Darren Le Roux will outline the Barrer Hill Box–Gum Grassy Woodland restoration project in the Molonglo River Reserve, recreating woodland habitat for wildlife, including trialling unique structures that partly mimic functions of mature trees, and birds' responses to them.

Dr Brett Howland will speak about a 3-year trial of ACT Government ecological burns (22 of them) and their effects in restoring ACT's threatened grasslands. His talk will focus on early results in species composition, vegetation structure and kangaroo grazing pressure.

As usual, the afternoon is also about networking beside the wood stove, and munching a scrumptious afternoon tea. There may be a special general meeting, and if so the details will be advised nearer the time. **For there to be enough tea, be sure to register with** Ann.Milligan@fog.org.au by **Thursday 16 August** if you will be attending.

Looking ahead into September–October

Weekend 21–24 September, Narrandera NSW. Exploration of grassy landscapes with Rainer Rehwinkel. The detailed itinerary will be coming out soonish.

Saturday 29 September, a visit to grassland at FOG members' property in NSW (Sutton area), close to Mulligans Flat.

30 September, Sunday, workparties at both Stirling Park and Yarramundi Grassland.

Sunday 14 October, revisit woody grassland at a FOG members' property 'Ballyhooly', SE of Bungendore NSW, during flowering.

October, Hall workparty, date to be advised.

28 October, Sunday, workparty at Stirling Park.

Late October probably, new date for FOG *et al*. Grassland Forum, ACT.

Welcome to our new members!

Central West Local Land Services, Forbes NSW
Emma Ferguson, ACT
Griffith Woodland Volunteer Group, ACT
Fehin Coffey, ACT
Bridget Godwin, ACT
Bruce Campbell and Lucy Vincent, ACT
Jasmyn Lynch, NSW

Next FOG workparty – Sunday 26 August

A weeding workparty is planned for Sunday 26 August, starting at **9 am**. Your help is needed and always welcome.

Tools are provided. You need to wear suitable protective clothing (including hat) and footwear appropriate for the work and the weather, and bring your own drinking water.

Workparty convenors **provide morning tea**, making these into pleasant social occasions.

Please **register by two days before the date** of the workparty at the relevant email address below, so there are enough tools and tea for everyone, and to find out where to meet if you are not sure, and so you can be told if the weather forecast has led to a cancellation.

Workparties are cancelled if there is lightning; or there is heavy rain.

Stirling Park woodland, Yarralumla ACT
Sunday 26 August, 9 am. Please register with jamie.pittock@fog.org.au for details of meeting place etc., nearer the time.

Planting at Bullan Mura, Yarralumla

Sunday **1 July**, 10 am – 1 pm

Molonglo Catchment Group have organised a planting activity to revegetate two areas at Bullan Mura on Sunday 1 July. **It's free and includes morning tea.** Women volunteers will be planting traditional food plants in the Aboriginal women's area, which has been cleared of dense weeds over the past few years. Otherwise there are shrubs to plant, particularly under the powerlines, to minimise future disturbance to the area. Ngunawal custodians Karen Denny and Wally Bell will lead the work and provide information about the significance of this area.

Meet next to the Chinese Embassy opposite Lotus Bay in Yarralumla. Wear comfortable work clothes and bring a small pick or brickies' hammer and watering can to help with the planting. Register with MCG at Eventbrite, https://www.eventbrite.com.au/e/planting-day-at-bullan-mura-yarralumla-tickets-46830875409

News from the FOG committee

President's report *by Geoff Robertson*

We have now held two committee meetings since our AGM, and the new committee is settling in well and addressing the many areas of activity with which FOG is involved. The administration of FOG with Paul Archer as secretary and Janet Russell as treasurer is in good hands and between them and other committee members they are handling many behind the scenes issues that allow governance to happen unnoticed. I continue, not surprisingly, to get rave reviews about the newsletter. Also many people comment enthusiastically on FOG's other activities such as its advocacy work, field trips and on-ground work, and more generally its expertise, while membership, book sales and donations continue to grow.

The supported projects committee has agreed to two major grants and agreed in principle to two others which will be considered further at a later date. A lot of work goes into considering applications and developing procedures (thanks, Andrew Zelnik and team). An additional value added is that FOG members are assisting to offer their expertise in developing grant applications to ensure their successful outcome.

Our Monaro Golden Daisy project has been successfully completed, although activities associated with it will continue. Thanks, Margaret Ning, for your excellent administration of this project, and the many FOG members who one way or another are involved in it. Meanwhile FOG's work with NCA goes from strength to strength – thanks to Jamie Pittock and the many who support him. In relation to our NCA work, we are finalising our Occupation Health and Safety procedures which lift the level of oversight of this project.

I have attended two meetings of the recently reformed ACT Woodlands Working Group. Associated activities are the development of the ACT Woodland Strategy and the ACT Grassy Woodland Forum (27 & 28 June). One of the meetings was devoted to a briefing and seeking comments on the draft Woodland Strategy. It was good discussion where various stakeholders and experts provided some very good input, and the draft document looks very promising. Many FOG members plan to attend the Woodland Forum – and Jamie Pittock will provide a presentation on FOG's woodland work with NCA; Andrew Zelnik will give a short presentation and poster on FOG; and Ken Hodgkinson will present a poster on tree regeneration. Work is proceeding well on the postponed K2C–FOG–Ginninderra Catchment Group–EPSDD Grassland Forum (now including bus trip) which now is planned for late October.

On a lighter note, at the World Environment Day Dinner on 2 June, our FOG table won the 'best named' table: "Poa to the People".

Responses to 2017 Annual Report

Following our AGM, the committee decided to send our annual report to members of the ACT Legislative Assembly and many others, to illustrate what groups

... continues on next page

FOG Advocacy *by Naarilla Hirsch*

May

1. FOG opposed an application to the ACT Government for Ginninderry Stage 2 and all subsequent stages in the ACT to be granted an EIS exemption. This is a project that members of the advocacy group have been involved in, in the Bush on the Boundary consultation group and earlier consultation stages. Consequently we are aware of the huge amount of environmental assessment, analysis, publication and consultation that has been undertaken by the Development Joint Venture. However, there are extensive issues that require wide participation by not only government and other authorities but also by groups like FOG and individuals with ecological expertise. These include bushfire management, offset management for Golden Sun Moth Conservation Reserves, some NTG areas that will be impacted by urban development, some impacts on the Pink-tailed Worm-lizard in the area, and the loss of Hollow-bearing Trees. While FOG cannot say that a merit-track approach to subsequent development stages will necessarily be to the detriment of the environment, we did advocate that open and transparent planning is likely to give the best result, and did not agree that an EIS exemption is the way forward.

2. FOG provided comment on a development application for 117 Kent St, Deakin, which adjoins Red Hill Nature Reserve. The ACT Government has decided to develop an Integrated Plan for the Red Hill area, to inform future planning of this area. FOG's view was that this development variation should not be allowed before the completion of work on the Integrated Plan. FOG also noted that the site adjoins parts of the Red Hill Nature Reserve that do have ecological values, and has potential connectivity values.

3. The Commonwealth asked for comments on a proposed quarry at Rock Flat near Cooma, under the EPBC Act. FOG's main concern was the Grassland Earless Dragon, six of which were sighted in the area during surveys. There were also Striped Legless Lizards in the area. FOG recommended further work is required to determine the full impact on these threatened species and associated ecological communities on the site. FOG also suggested input from the SE Local Land Services and the National GED Recovery Team to assist in establishing the size and distribution of the GED population.

June

4. FOG provided its views to the ACT's Standing Committee on Environment and Transport and City Services on the Nature in our City inquiry.

FOG expressed its belief that the challenge to retain the natural environment by ensuring it is integrated into further development is achievable and should be the ultimate aspiration promoted by the ACT Government. However, it raised concerns about a number of issues, including the constant development pressures on our native grassy ecosystems and species (particularly those listed as endangered or vulnerable), the spread of invasive plants from gardens and nature-strip mowing into nearby reserves, and the impact of feral animals. Other factors that might assist in retaining and improving the value of our natural environment in urban ACT were suggested, including promoting the use of indigenous plants in our gardens, that indigenous land management and conservation support many of the same conservation values, and whether the North Mitchell Grassland Reserve might become a good example of simultaneously protecting the environment and engaging the community.

The full text of FOG submissions appears on our website.

President's report continued

such as FOG can achieve. We received favourable comments from Andrew Leigh MP, Suzanne Orr MLA and Bronnie Taylor MLC.

Andrew said: "I wanted to drop a quick note to thank you for sending in the Friends of Grasslands report for 2017. I am aware that FOG has been active and advocating for our grassland ecosystems for a fair time now and I appreciate this important work. As you note, these landscapes are a quintessential part of Canberra being the Bush Capital. I recently held a clean-up at **North Mitchell Grasslands** with Suzanne Orr MLA. As a town planner and environmentalist, Suzanne is an excellent ally and representative to have in the Legislative Assembly. Please let my office know if there's anything we can do to assist your work."

Suzanne stated: "Thank you for sending through a copy of the Friends of Grasslands (FOG) 2017 Annual Report to my office. From reading your report, I can see that Friends of Grasslands has had a very busy and successful year. I would like to thank you and the FOG group for the immense amount of work you do to maintain our natural environment. Your tireless advocacy for our grasslands is always appreciated and highly commended. I am aware that much of your work is heavily reliant on volunteers and as such I appreciate the passion your group must have to commit the significant amount of time and effort you do, to the cause. I have also noted from your report that you have made several submissions to the ACT Government on matters of planning and site development over the past year. I too believe that the environment should be prioritised in our planning processes and as such I commend your uptake of our consultation processes to advocate for this point. I would like to encourage you to continue these efforts as I believe hearing from environmental advocacy groups like your own can make a significant difference to the output of our planning processes. I commend the FOG group on the great year you have had in 2017 and I look forward to hearing about, and participating in, the excellent work that will no doubt continue into 2018."

Bronnie said: "Thanks for sending through the Friends of Grasslands Annual Report, it is interesting to see what FOG is up to."

I met with Michael Pettersson MLA in his office to discuss the ACT Grasslands Strategy, the upcoming ACT Woodland Strategy, and FOG's various aspirations and activities. He suggested that an organised visit by MLAs to some of Canberra's grassland sites later this year should prove successful. He will assist to organise it. I have arranged a meeting with Elizabeth Lee MLA later this year.

I was less successful in following up with the media; essentially, I ran out of time. However, we got a good run in *The Chronicle* with a Brett McNamara article 'Grassroots support needed', which appeared on 22 May: thanks Brett.

Photos (*by Andrew Zelnik*) from the Clean Up Day at North Mitchell Grassland, organised by Andrew Leigh, Suzanne Orr, FOG & Ginninderra Catchment Group

ABC News Online article on 'Jim', a long-time FOG member, now based in north Queensland

'Vietnam veteran's one-man war on waste inspires community to clean up Cooktown coast' appeared on Saturday 28 April. It describes how (quoting a small excerpt of the article):

> 'Over the past 12 months, the avid beachcomber has waged a one-man war on waste, alarmed by the volume of rubbish he has seen on far northern coastlines. "I was walking over tons and tons of microplastics, plastic bottles, and I thought 'Bugger this, I'll do something about it'," the 67-year-old said. "It's not just a hobby now. I'm pretty serious so I put 100 per cent into it." Up to three times a week, Jim boards his dinghy and scours the beaches surrounding Cooktown. He has collected a staggering 7 tonnes – more than 15 cubic metres – of waste. ... "It's never-ending but it doesn't discourage me. The bulk of the plastic I'm recovering is large and if it's not collected it'll end as microplastic as well, so you're trying to break the cycle. One man's not going to have a hell of an effect, but it's something and that's what counts."

The article, with a great photo of 'Jim', is at
http://www.abc.net.au/news/2018-04-28/vietnam-veteran-one-man-war-on-waste-on-fnq-beaches/9688860?pfmredir=sm

More FOG, NCA and Stirling Park happenings in April and May 2018

Above & below: In April, Peter Beutel (National Capital Authority) and John Fitz Gerald (FOG) addressed a group of ANU students during their field trip to Stirling Park. *Photos: Jamie Pittock.*

Increased National Capital Authority funding to manage key lands *by Jamie Pittock, 21 May 2018*

Friends of Grasslands has thanked the new Chief Executive of the National Capital Authority, Sally Barnes, and her staff for allocating additional FY19 funds to manage the significant grassy woodlands at Stirling Park and grasslands at Yarramundi Reach. In April, Sally Barnes visited Stirling Park with FOG members to discuss future land management. The recent Federal budget has allowed a modest increase in funding to undertake essential maintenance of the National Capital Estate.

The critical management activities to be funded by the NCA in 2018–19 are:

- Remediation for the small areas affected by broken sheet asbestos in Stirling Park;
- Assessment of the safety risk posed by old and falling pine trees in Stirling Park, which are nearing the end of their lives, and the development of a management approach;
- Appropriate signage at the entrance to Stirling Park; and
- A modest increase in funding to NCA for the annual works at the woodland and grassland sites on national lands.

Stirling Park and Yarramundi Reach are already benefiting by the NCA's investment in conservation planning, fire management and weed control. FOG considers that these additional interventions will significantly enhance conservation of cultural and natural heritage of these national lands. The work will enable greater public appreciation and use of these park lands. FOG is committed to continuing our volunteer contributions to conservation of these national lands in partnership with the NCA. We congratulate the NCA for their strategic investment in better management of these national lands.

Stirling Park workparty, 27 May

Top: Walking our water tank off Stirling Park. *Below:* Newly installed plants with roo guards. *Photos by Jamie Pittock.*

In May, FOG sent this letter to householders in Yarralumla as part of a flyer delivered to letterboxes.

Dumping of Garden Waste at Stirling Park

We in Friends of Grasslands are writing to neighbours of Stirling Park (Yarralumla) to seek your help to stop rubbish dumpers in Stirling Park. In particular, illegal waste has recently been dumped off Fitzgerald Street behind the Danish and Norwegian embassies, by Empire Circuit and below Forster Crescent.

While some consider that it is un-Australian to report rubbish dumping, we urge you to do so, because lawn clippings, autumn leaves and other garden waste contain seeds and other material from which plants that do not belong in Stirling Park can grow. Many garden plants take over the bush by outcompeting native plants for sunlight, nutrients and water. Examples include oak trees growing from acorns in dumped autumn leaves. Nature strips in Yarralumla have two particularly invasive exotic grasses, African Lovegrass and Chilean Needle Grass, whose seeds are spread through mowing. Some of these weeds create more fuel for fires, such as African Lovegrass. Recently dumped waste has included nasty weeds like Ivy and Cotoneaster. Dumped waste also smothers and kills indigenous plants and exacerbates weed invasion. Friends of Grasslands and the National Capital Authority currently spend around $50,000 per year controlling weeds in Stirling Park. We would like to devote these resources to other amenities in the Park.

You can report dumping garden waste or other rubbish by immediately contacting Access Canberra on 13 22 81 so that City Services rangers can take enforcement action. Car number plate information would be particularly helpful.

It is an offence under the *Litter Act 2004* to dump rubbish in a public place. Penalties include fines of $1,000 for individuals and/or $5,000 for businesses for basic littering, and much heavier fines and even imprisonment for more serious offences (see http://www.tccs.act.gov.au/territory-services/city_rangers/littering). To contact the National Capital Authority, who manage Stirling Park: phone: 02 6271 2888; email: info@nca.gov.au; Web: https://www.nca.gov.au/contact-us. For urgent matters please call the NCA On Call officer on 6273 4458.

Friends of Grasslands considers Stirling Park a Canberra treasure and overleaf we describe the Park, its importance for conservation, what Friends of Grasslands and the National Capital Authority are doing to restore it and how, if you wish, you might join us to do a better job.

Jamie Pittock, National Lands Volunteer Coordinator, Friends of Grasslands

On the back of the flyer, the text headings were 'Why is Stirling Park important?', 'Friends of Grasslands work at Stirling Park', and 'Enjoying Stirling Park'.

Short-beaked Echidna, *Tachyglossus aculeatus,* a spiny mammal that's not in a hurry

Michael Bedingfield

The Echidna ambles along at a leisurely pace, its body swaying from side to side, looking around with beady eyes and poking its nose here and there to sniff out something to eat. For other small animals speed is a form of defence and they may disappear in a trice, but not this one. In a fight or flight situation it does neither. It stays put and uses its sharp spines as a form of shield. It is unique among Australian mammals. Among other things, it is a monotreme, which is an ancient form of mammal that shows a link between reptiles and marsupial mammals. It has only one opening for both urogenital and excretory functions. Like marsupials it is covered in fur and gives milk to its infant in a pouch. But like reptiles the female lays a soft-skinned egg when giving birth.

An Echidna is normally solitary but when a female is in season, late winter locally, she may be seen with several males following her in a long courtship ritual. They will forage together and eventually she accepts a suitor. About two weeks after a successful romance a single egg is produced. It is kept safe in a small, backward-facing pouch on the mother's abdomen for about 10 days. After the egg hatches the mother suckles the baby from mammary glands in the pouch for up to three months. When the infant develops spines she builds a burrow and looks after it there, leaving it when she needs to go foraging. She continues to give it milk for some months.

The food of the Echidna is mostly ants and termites, and it breaks into suitable nests using its strong front legs and claws. With its long tongue covered in sticky saliva it catches the insects, pushing the tongue into the tunnels and cavities. In the process it also picks up bits of dirt and its scats usually contain some soil. It also eats some other insects such as beetle and moth larvae and worms. It has no teeth but grinds its food between horny pads on the back of its tongue and the roof of its mouth.

The full common name is Short-beaked Echidna, with scientific name *Tachyglossus aculeatus*. Other common names sometimes used include Spiny Anteater and Porcupine. The only close relatives are the three species of Long-beaked Echidna, all of which occur in New Guinea. They are larger animals and have a long snout that curves slightly downwards. These are the Eastern Long-beaked Echidna *Zaglossus bartoni*, Western Long-beaked Echidna *Z. bruijni* and Sir David's Long-beaked Echidna *Z. attenboroughi*. All three are threatened species. They were regarded as one species until recent times.

When danger approaches an Echidna on open but hard ground it will roll up into a spiky ball. If the ground is soft it uses its strong legs to dig down vertically into the soil, presenting a mound of sharp spines with its head and softer underside hidden. It will also take advantage of its surroundings and use objects such as rocks or logs to assist in its protection. It will wedge itself under or between such objects using its spines to create a strong grip.

Echidnas hibernate during the cooler winter months. They may emerge from their torpor from time to time and move around before returning to their inactive state. In colder climates these animals have dense fur and in the tropics the fur is minimal making them look spinier in the north. Thick bushes, rocks, logs and other natural debris are used for shelter. They have the ability to swim, and do so with only their snout above water. The size of a mature adult is in the range 30–53 cm with the male being larger.

The Short-beaked Echidna has no significant predators although one may be taken occasionally by a Dingo, dog, fox or cat, or the young by a reptile. Without particular habitat requirements except the availability of food, it is distributed widely across Australia in many different conditions from alpine to arid, from Tasmania to the tropics, and also occurs in New Guinea. There are no threats to the continuation of the species. Observing one when it is not aware of your presence is like watching a person on a holiday just having a day out 'to smell the roses'. Its quiet and placid personality is a great success and this unrushed way of living is quite satisfactory thank you.

References

The Australian Museum Complete Book of Australian Mammals. by many authors, edited by Ronald Strahan (1983, Angus and Robertson)

A Photographic Guide to Mammals of Australia, by Ronald Strahan and The Australian Museum (1997, New Holland)

http://www.environment.nsw.gov.au/resources/nature/Factsheet3Echidnas.pdf

https://en.wikipedia.org/wiki/Short-beaked_echidna

https://en.wikipedia.org/wiki/Long-beaked_echidna

Burn at Charles Sturt University Canberra – St Mark's grassland

Kym Witney-Soanes (CSU Green) & Mark Evans (Division of Facilities Management)

After months of planning, staff of Charles Sturt University's Division of Facilities Management in consultation with staff at the Australian Centre for Christianity and Culture (ACCC) and St Marks and the Friends of Grasslands, implemented a cool mosaic burn on the morning of Saturday 28 April. Conditions were perfect with an overnight minimum of 3°C and a maximum of 18°C with minimal wind. The burn was conducted by the ACT Rural Fire Service (RFS).

The purpose of the burn was to create inter-tussock spaces to stimulate growth of the diversity of native forbs (wildflowers) and grasses. Also, to minimise opportunities for the spread of introduced species including Bearded Oats, Perennial Ryegrass and Serrated Tussock.

Approximately 60% of the 2 hectare grassland site was burnt. We expect a prolific growth spurt in a diversity of species including the Kangaroo Grass, orchids, lilies and yam daisies. CSU is grateful for Sarah Sharp's expertise regarding this ecosystem. Sarah will return to the site in November to quantify the impact of this cool mosaic burn on the biodiversity values.

Drone footage was taken before, during and immediately after the burn. The RFS implemented the burn, lighting it at 10 am and completing mopping up by 1:30 pm. The RFS used this burn as a training opportunity.

One of the outputs from this exercise will be to produce a 'Guide to planning grassland burns in Canberra'. CSU plans to share this resource with ANU Green, the University of Canberra and other interested stakeholder groups.

Top right: During the burn on Saturday 28 April 2018. *Right & below*: St Mark's grassland (with resident Kookaburra), post-burn, Monday 30 April 2018. *Photos by Hazel Francis, Centre Manager, ACCC, Charles Sturt University.*

Serrated Tussock – a recent (June) comment from Wal Whalley (FOG member)

Wal writes: 'I was interested in John Fitz Gerald's article on 'Ghastly Grasses – A close up' in the last *FOG Newsletter*, including Serrated Tussock. We had a PhD student working on the autecology of Serrated Tussock some years ago and finally got one of her papers on seed dormancy of this species submitted to an international journal a week or so ago.

'The story is that the seeds have considerable primary dormancy when they are shed from the plant which is slowly broken if they are exposed to alternating temperatures but not by constant temperatures. If the seeds get buried in the soil (say at 5 cm), where the temperature is more constant than on the surface, then any non-dormant seeds go into secondary dormancy and so hang around as viable but dormant for a long time.

'If seeds are brought to the surface, their dormancy will be broken by alternating temperatures, particularly in the late summer or late winter. The result is a new crop of seedlings if water is available at this time and there are some non-dormant seeds at or close to the surface. If not, they go back into dormancy. No matter what the temperature sequences are, generally no more than 80% of the non-dormant seeds will germinate in any spring or autumn! We have no idea about how long a dormant seed population can survive in the soil and still provide non-dormant seeds ready to germinate if they are brought to the surface by disturbance in the spring or autumn when soil moisture is available.

'Once you have Serrated Tussock, you have it for a long time! What a weed!

'The results of the seed dormancy studies have already been 'published' in Annie's PhD thesis and we are now going through the hassle of getting them into the 'hard' scientific literature.'

Annie's thesis is:

Van der Meulen A. (2014). 'Invasion of the Northern Tablelands of New South Wales by *Nassella trichotoma* (Nees) Hack. ex Arechav.: landholder perceptions and seed ecology.' PhD Thesis, University of New England, Armidale, NSW, Australia.

Awn structure influences dispersal and burial of Australian grass seeds

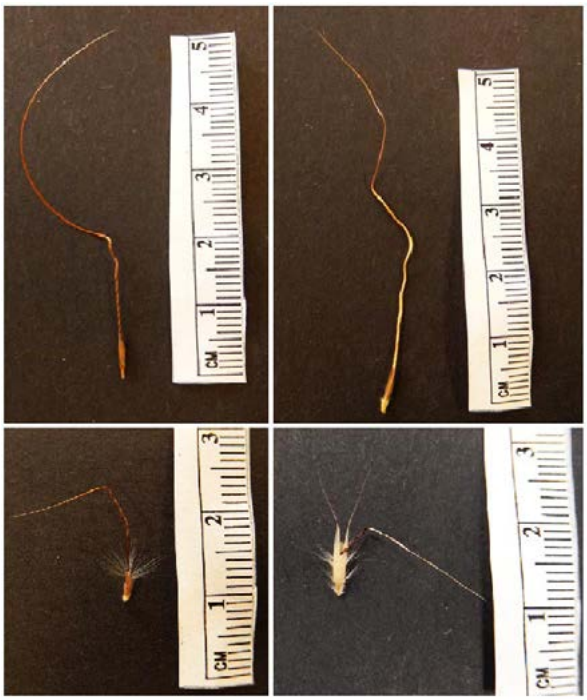
By Annette Cavanagh

I recently undertook an Honours project at La Trobe University, Melbourne, in conjunction with CSIRO, to investigate the influence of awns and awn structure on the dispersal and burial ability of native Australian grass seeds. This was part-funded by a research grant from the Friends of Grasslands.

An awn is a tail-like structure attached to the end of a seed. It is a common characteristic of many Australian grass species. Awns occur in different shapes, such as straight, curved, once-bent or twice-bent, and the number of awns per seed can range from one up to nine. Awns can also be rigid or they can be hygroscopically active.

Hygroscopically active awns move in response to changes in humidity. These awns are often twisted, and when they become wet they untwist and then as they dry they retwist. This twisting and untwisting action has been shown to move grass seeds across the ground and also helps seeds to bury into soil. You can watch a video of the hygroscopic awns of Kangaroo Grass moving seeds at https://blog.csiro.au/kangaroo-grass-seeds-hopping-towards-climate-change/.

While the use of awns in seed dispersal and burial has been demonstrated before, it is mostly unknown if there is a difference in dispersal and burial capabilities between different awn structures. My Honours project, therefore, aimed to address this knowledge gap.



Clockwise from top left: falcate (curved) awn, *Austrostipa nodosa*; bigeniculate (twice-bent) awn, *Austrostipa rudis*; three awns with central awn geniculate and different in form, *Rytidosperma caespitosum*; geniculate (once-bent) awn, *Dichanthium sericeum*.

The project

The first part of my Honours project involved determining how many different awn types (awn structure variants) are present in Australia's native grass species. To do this, I went through morphological descriptions of all of Australia's 1080 grass species using books and online resources to create an 'awn typology'. I found that just under half (42.6%) of all species have at least one awn, and from these awned species I identified 20 awn types. A single geniculate (once-bent) awn was the most common awn type in these grasses. The second most common awn type was three straight awns. This awn typology will provide a baseline for describing awns and comparing species into the future.

Using the awn typology, the second part of my Honours project compared the dispersal and burial of 30 species across ten awn types.

Annette submitted her Honours thesis in late April: 'Awn morphology influences dispersal, microsite selection and burial of Australian native grass diaspores'. It is expected that related journal articles will be published possibly later this year.

For further information contact Annette on email a.m.cavanagh@outlook.com.au or her thesis supervisors Dr Bob Godfree Robert.Godfree@csiro.au and Dr John Morgan J.Morgan@latrobe.edu.au.

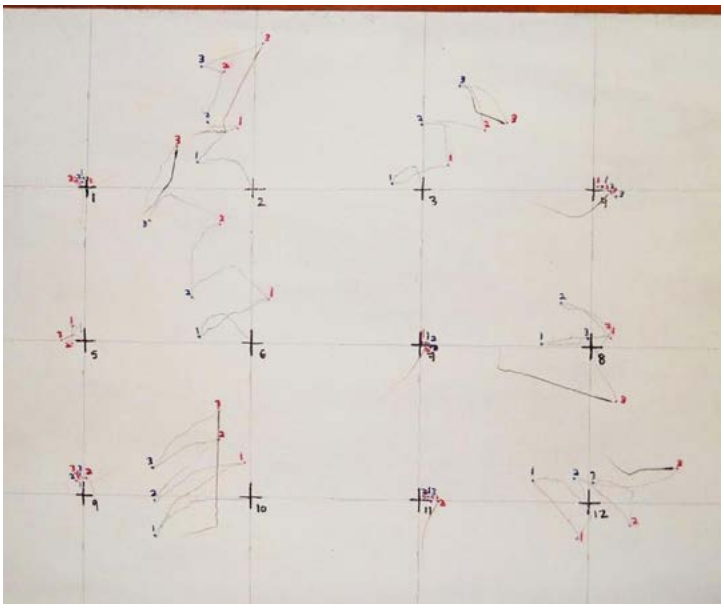
Measuring movement

To measure surface dispersal, I laid individual seeds out onto hardboards, sprayed them with water and then measured the distances that they moved across the boards when the awns untwisted and retwisted. I also repeated this experiment using seeds that I had cut the awns off.

I found that 'awnless' seeds moved much less than seeds with their awn intact. Some awned seeds moved up to 500 mm across the boards after five wetting and drying cycles, while awnless seeds only moved an average of 3 mm.

Species with a single geniculate awn or a single bigeniculate (twice-bent) awn were at least two times more efficient at dispersing across the surface than the other awn types. Species that had a single straight awn were the worst at surface movement.

It is likely that the bent awn types are the most efficient at surface dispersal because the bends act as pivot points, enabling the awn to act as a lever and move the seed across the ground. Their efficiency at dispersal also provides an explanation for this awn type being the most abundant in our native grasses.



Measuring the surface dispersal of seeds across a hardboard

Awn structure influences in Australian grass seeds, continued

Measuring burial

To measure the effect of awn type on burial depth, I placed seeds into soil so that they were just standing on their own with their awns protruding. I tested four burial treatments: placing the seeds into the soil vertically, at 45°, at 45° beneath a piece of wooden dowel, and with the awns removed. The seeds were then sprayed with water every second day for 21 days and after this time I removed the seeds from the soil and measured the depth that they had buried.

Seeds buried up to 13 mm into the soil, and seeds that were placed under the wooden dowel buried to three times more depth than seeds in the other treatments. Species with three straight awns were the most efficient at burying in this treatment. When there was no surface obstruction, species with a single falcate (curved) awn were the best at burying, while seeds that had the awns removed did not bury at all.

These results suggest that it is the awns that are assisting the burial of the seeds into the soil. It is also likely that seeds buried greatest under the wooden dowel because the awns could work against the dowel as they twisted to direct their movement into the ground.

I also replicated these 'laboratory' experiments in a simulated natural grassland and found similar results where the presence of surface obstructions increased burial depth: falcate awns were able to bury effectively without obstructions and bigeniculate awns were able to move the furthest across the soil surface.

Climatic differences

The third and final part of my Honours project investigated the relationship between awn length variation within species and climatic variables across the species distributions. I used herbarium specimens from the Australian National Herbarium, Canberra, to measure awn lengths of species of Kangaroo Grass *(Themeda triandra)*, Speargrass (*Austrostipa scabra*) and Bunched Kerosene Grass (*Aristida contorta*) from across many locations around Australia.

I had found in my laboratory experiments that longer awned species were better at dispersal and burial, so I expected that longer awned plants would be found in warmer and drier locations where faster dispersal and burial would be required to minimise the risk of seeds drying out.

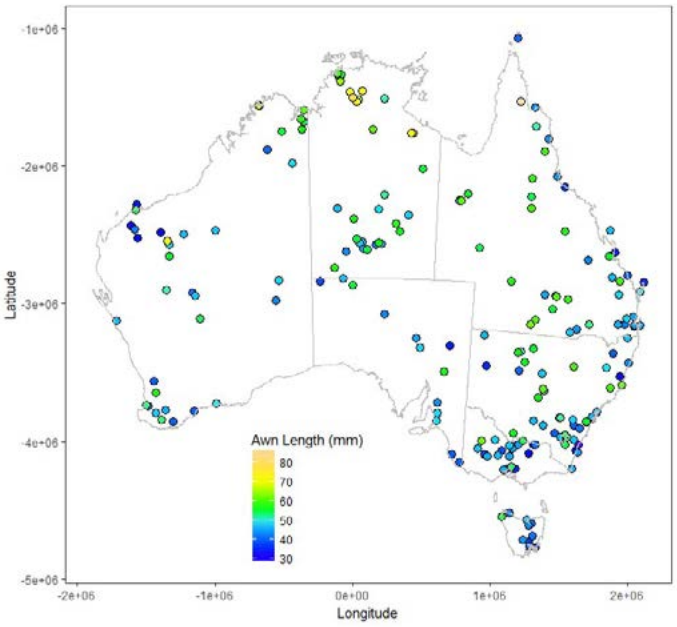
The results from this study showed that longer awns of Kangaroo Grass were found in inland and northern Australia where temperatures were higher. However, there were no awn length and temperature or rainfall relationships for the other two species.

Conclusions

The outcomes from my Honours project show that there is a large diversity of awn types present in Australia's native grass species and that awn types vary in their ability to disperse and bury seed. The difference in efficiency between awn types in these two important steps is likely to be why so many awn types are present in our grass species.

While further research looking at awn type relationships with grass life history traits, soil types and habitat preferences should be undertaken, this study has increased our understanding of the role and function of different awn types and will allow us to predict the survivability of species under different environmental conditions and will help to inform species distribution models. In turn, this will improve conservation efforts of threatened grasslands and will also allow predictions to be made on the potential distributions of invasive grass species.

Above: Seeds that lodged under a piece of dowel buried deeper into the soil. *Below:* Three-awned *Aristida latifolia* seed that has buried itself beside a soil clod.



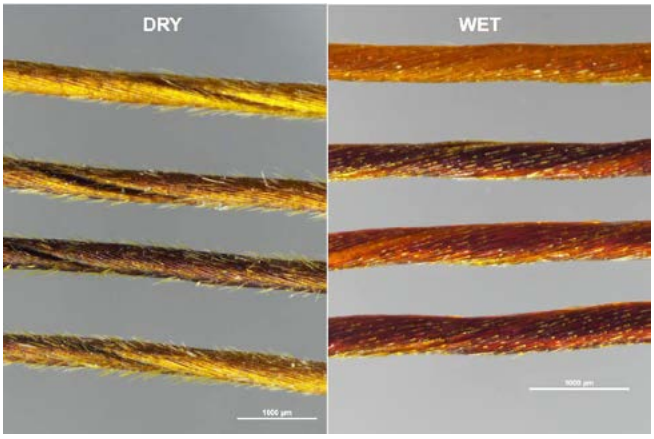
Kangaroo grass (*Themeda triandra*) awns are longer in inland and northern Australia.

I would like to sincerely thank FOG for providing me with a generous research grant. This grant was used to purchase seeds and equipment for my laboratory experiments, and for transport costs to visit Canberra from Melbourne to undertake research at the Australian National Herbarium.

Twists in the Tale – a Close-up *by John Fitz Gerald*

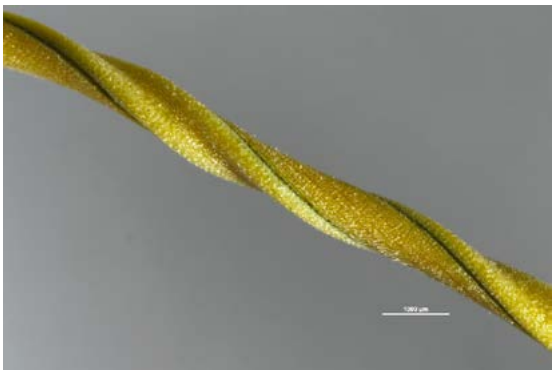
Editor Ann and I enjoyed a talk given in early May by Dr Robert Godfree from the CSIRO National Research Collections. Part of Bob's engaging presentation included results Annette Cavanagh obtained at Latrobe University, in conjunction with Bob. Annette's work is summarised on pages 8–9 of this newsletter.

Being a person interested in tiny things, I trained the hand lens and the microscope onto some awns from grass florets to become the topic for this month's 'Close-up'.



Above: Four awns of *Themeda triandra* imaged dry (left) then wet (right). Wet awns were imaged under water. Only part of the twisted column of each awn is shown. Fine hairs visible on the dry awns have flattened against the wet awns. See text for description of twist.

Below: An awn of *Anisopogon avenaceus* imaged dry: it clearly shows right-handed twist.



Annette systematically examined motion of 30 species of Australia's native grass due to twisting of the awns on the seed dispersal unit. I wanted to get just a flavour so pulled out five species: bigeniculate *Themeda triandra*, *Dichanthium sericeum*, *Austrostipa rudis*, geniculate *Bothriochloa macra*, plus *Anisopogon avenaceus* with its quite large (80 mm) central awn and two twisted lateral awns. I wetted and dried a few awns of each to see them rotate. Thinner awns react faster, but awns in all five species are easy to see moving in real time. For any reader liking to see this, stick a bead of Blu-Tack on a surface and poke the callus of a lemma into it: the seed unit is now held firmly and its awn is free to move, readily wettable with spray or drip of water and convenient to watch or photograph. Drying of course occurs naturally, more slowly, whenever the water evaporates.

Just to show that there's not much new on the planet, this twisting and its implications for seed burial have been known and written on for over 140 years. For example, Francis Darwin (son of the evolutionary icon, Charles) read to the Linnean Society in 1876 a paper [ref 1] on the hygroscopic mechanism leading to seed burial in several species including common grasses *Stipa* and *Avena*.

The awns I examined were tightly twisted when dry, and untwisted (sometimes relaxing into simple ribbons) when fully wet. Generally the complex shapes of the bent awn progressively simplifed when they untwisted; some modified into simple falcate curves, some almost straightened. The effect reversed with drying.

Surprises came as I watched some *Themeda* wetting and drying. Shapes of dry awns began as complex and gradually simplifed as they wet, changing to simple falcate, but the process did not end there. The awns continued on to a new complex and tightly twisted state when fully saturated. I present above two microscope images of four *Themeda* awns: wet awns are twisted very like dry awns but look closely and you'll see that the twist direction is reversed. *Themeda* awns, on wetting, first untwist but continue to rotate, twisting up in the reverse direction. I couldn't find any description of that in a short search of Internet and library, but it fascinates me.

Another intriguing character is direction of twist. Awns of all five of my species have the same sense of twist when fully dry: see above an image of the big awn of *Anisopogon*, dry, clearly twisted with the same sense as the dry *Themeda*.

It's probably simplest to describe the twist sense of dry awns as a right-handed helix. You can search the Internet for its definition, but it is probably quicker to pick up a common screw, bolt, even a screw-top bottle – its thread (note, not on gas fittings) will be a right-handed helix. Using these terms, twisting of *Themeda* awns transforms from right-handed, dry, to left-handed, wet.

The five species I observed, and also every image I can find of twisted grass awns, show them to be right-handed when dry. This includes the grass images beautifully drawn in Darwin's paper [1] so long ago, also those from a major microstructural study of *Avena fatua* [2]. Similar bias in twisting is observed in a few other systems in nature; for example, twining plants dominantly twist in a right-handed helix regardless of species or location ([3] – such as northern versus southern hemisphere).

Why twist at all? The literature can educate you as much as you have time to learn! I'd suggest starting on a recent review [4] which basically considers plant cells at a range of scales, and layering in structures like awns which swell selectively on wetting, shrinking again on drying. Mechanics of change in size with wetness are argued to produce torsion and twisting at the larger scale if preferential cell and fibre alignments exist. I found no explanation of why twist could be biased in the right-handed sense.

Thanks to both Annette and Robert for their inspiration on the topic.

References

[1] Darwin F. (1876) *Transactions of the Linnean Society* **1**, 149–167.

[2] Raju M.V.S. (1984) *Canadian Journal of Botany* **62**, 2237–2247.

[3] Edwards E. *et al*. (2007) *Global Ecology and Biogeography* **16**, 795–800.

[4] Elbaum R. & Abraham Y. (2014) *Plant Science* **223**, 124 –133.

The importance of agreed and consistent terminology when referring to invasive plants (*or* Let's limit the use of the word 'weed')

Paul Downey [x], Steve Taylor [y] and Sarah Sharp [z]

Plant species that occur in areas where they are not desired are typically referred to as 'weeds', although 'exotics', 'weedy', 'non-natives', 'nonindigenous' and 'aliens' are also used. Other terms include 'invasive', 'highly invasive', 'pest plants', 'problem plants', 'noxious plants', 'noxious weeds', 'declared species', 'environmental weed', 'disturbance weed', and combinations such as 'invasive alien species'.

Terms are often used interchangeably, confusing any distinction between their different meanings. Such confusion is compounded when the terms are applied generically, whether the species is newly established in an area or nationally significant.

Additionally, some terms have specific meaning under legislation. For example, in NSW, 'Noxious Weed' refers to species that are formally listed or declared under an Act, but in ACT legislation such species are termed 'pest plants' ('Noxious Weed' is not a legislated term in the ACT).

There is clearly a lack of definitions and standardisation.

Why it matters

The generic use of the term 'weed' has led to an unintended negative effect, because such species are often regarded as an issue for gardens or amenity areas, and of limited importance, whereas they may be a major biosecurity threat.

The result is confusion over the exact intent of management and the significance of the problem. Linkages to plant biosecurity have added to the confusion and highlighted the need for adoption of standardised language around such species, to reflect the nature of the problem.

For plants invading new areas, there are five defined states, and particular management approaches are designed to address those states (*see box, top right*).

Therefore, there is significant benefit for management if people only use terminology that reflects these states. Using the standardised language will help ensure appropriate levels of support, because the transition between each state represents a distinct change in the status of the species and the management required.

Recommended new clear terminology

A recent book [ref 1] has addressed this issue, and recommends the terminology be standardised as shown in Table 1.

More broadly the UN Convention on Biological Diversity defines an 'invasive plant' as one whose introduction and spread threatens biological diversity. That aligns with the standard definitions in Table 1, with one notable exception – which is that invasive plants do not need to be 'transformers' to threaten biological diversity. For example, the impact of invasive plants can be amplified when combined with other threats to biodiversity or ecosystems, such as disturbance and land clearing.

The five defined states associated with the process of plant invasion:

(1) spread to a new location (i.e. dispersal),
(2) establishment at a new location,
(3) recruitment at the new location (i.e. a self-sustaining population),
(4) subsequent spread, and
(5) posing a threat (i.e. to native species).

Management objectives are aligned to these five states, as follows:

(1) prevention,
(2–3) early detection and eradication,
(4) containment, and
(5) threat abatement (or asset protection).

Table 1. New globally-standardised terminology [1]

Term	Definition	Invasion state
Alien	Any plant species whose introduction is directly related to human actions (e,g. introduced through the nursery sector). This term replaces non-native, nonindigenous and exotic.	Importation
Casual	Any alien plant species that establishes at a location, but shows no evidence of recruitment at that location (i.e. a one-off event involving an individual plant).	Dispersal and establishment
Naturalised	Any alien plant species that establishes (i.e. casual) and reproduces (i.e. produces seeds or other propagules), which in turn results in the establishment of additional plants at that location (i.e. unaided by deliberate cultivation).	Self-sustaining population
Invasive	Any naturalised plant species that is actively spreading to new locations (i.e. unaided), which results in subsequent naturalisation events.	Spread
Transformer	Any invasive plant species that has established to the point that it has transformed or is transforming the ecosystem (i.e. altering fire regimes, modifying grasslands to shrublands, changing water flows, etc.) and impacting negatively upon native species or ecosystem processes. Such plants can also form monocultures.	Impact

Nassella neesiana, Chilean Needle Grass: example of a locally '**invasive**' species (**as in Table 1**). *Photo by Sarah Sharp*.

...continued next page

The importance of agreed and consistent terminology for invasive plants, continued

Our own recommendation

Based on the terminology presented in Table 1, we propose the use of the term ***invasive plant*** instead of 'weed' or 'exotic' when referring to any plant species which has naturalised and is spreading and/or posing an impact on biodiversity or agricultural production. And we propose the term ***new incursion*** be applied to casual and recently naturalised species (whose potential invasiveness may not be clear).

The term 'weed' may be better reserved for those plants we would prefer not to have in our gardens, as opposed to those in our bushlands.

These proposed terms are not ambiguous, and they are unlikely to lead to confusion. Priority treatment for such species would be more easily communicated and therefore undertaken.

This approach is also consistent with the broader government language around invasive species *per se*, especially in light of the recent focus on the biosecurity threat from such species.

We hope to see these terms used widely from now on, along with the standardised terms and meanings in Table 1, ensuring that all stakeholders are referring to the same things.

More examples illustrating Table 1. *Above L–R: Buxus sempervirens,* English Box, is an '**alien**' species in the ACT; *Coleonema pulchellum*, Diosma, is a '**casual**' species in the ACT (*photos from Canberra Nature Map & Wikipedia*).

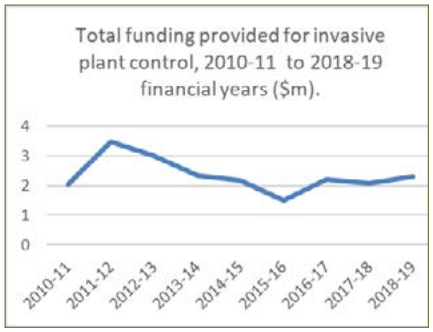
Below L–R: Hypochaeris radicata, Cats-ear or Flatweed, is a '**naturalised**' species in SE Australia (*photo by Sarah Sharp*); *Eragrostis curvula*, African Lovegrass, is a '**transformer**' species in SE Australia (*photo by Michael Bedingfield*).

Postscript: Funding news!

The use of the terms 'invasive plants' and 'invasive species' has paid big dividends in recent funding announcements by the ACT Government. Using the standardised terminology in the 2018–19 budget submission helped convince decision-makers of the utmost importance of the management of invasive plants to protect native biodiversity.

Previously 'weeds' funding applications suffered from the connotation of directing funds to an amenity issue. It is very hard to compete for funding with such a misconception of the issue!

The 2018–19 figure for Nature Reserves and National Parks will be an on-going amount per year adjusted for CPI increases. This is a great outcome for effective management, as it is ongoing funding.



ACT Government data

Further reading

[1] Hui C. & Richardson D.M. (2017) *Invasion Dynamics*. Oxford University Press.

[x] Plant Ecologist, Institute for Applied Ecology, University of Canberra; member, Weeds Advisory Group.
[y] Invasive Plants Coordinator, ACT Parks and Conservation Service.
[z] Plant Ecologist, Friends of Grasslands Inc.; member, Weeds Advisory Group.

Conference alerts (*see also p. 15*)

21st Australasian Weeds Conference
9–12 September, Manly NSW

The Weed Society of NSW Inc., for the Council of Australasian Weed Societies Inc., hosts this biennial conference of the weed management community to discuss and share practices and information, and go on field trips. Earlybird rego 'til 13 August. Details: www.21awc.org.au

'Striving for Restoration Excellence'
Conference of the Society for Ecological Restoration Australia
25–28 September, Brisbane

For people who care about the bush, sea & waterways: scientists, managers, practitioners, policy makers & planners. Earlybird rego 'til 27 July.
Details: https://www.sera2018.org/

National Landcare Conference 2018
'Landcare – Building a Better Tomorrow'
10–12 October, Brisbane.

Registrations are now open for the conference and awards. Details are at http://www.nationallandcareconference.org.au. Earlybird rego ends on 31 July, and there is a huge discount to register if you are a volunteer landcarer, i.e. not paid to do it.

Recent FOG activities

Hunting tree-hollows, Tuesday 1 May

In the afternoon of 1 May 2018 at Campbell Park ACT, 14 of us set out on a FOG activity in support of 'Canberra Tree Week. We wanted to become more aware of hollows in native trees, and of the types of trees that are (or not) likely to be hollow-bearing. Hollows are important habitat for many local fauna, including 26 bird species, 16 species of possums and bats, a frog and several lizard species as well as invertebrates.

We are very grateful to John Brannan and Dave Mallinson who joined the hunt to identify birds, and the trees and biodiversity, respectively. We also thank Darren Le Roux, Geoff Butler, Sarah Sharp and Jack Holland for advice on trees and hollows and choosing the actual site.

In this Box–Gum grassy woodland, downslope from Mt Ainslie, the trees ranged from vigorous very young bushes to old 'grandmothers' part live part dead. During the two hours we found hollows in a few Yellow Box trees (*Eucalyptus melliodora*), several Blakely's Red Gums (*E. blakelyi*), and in Scribbly Gums (*E. rossii*). None were apparent in Apple Box (*E. bridgesiana*) or Peppermint (*E. dives*). Some hollows were in relatively small trunks (<80 cm diameter). Afterwards, Geoff Robertson neatly summed up the experience by saying: "I found out how relatively few trees actually have hollows".

Above: Tawny Frogmouths spotted during the tree hollows hunt on 1 May. *Photo by Andrew Zelnik (AZ).*

Below: Ken Hodgkinson (*below; photo by AZ*) and Judy Smith (*below right; photo by AM*) at 'The Clearing' (mid-STEP), launching the STEP native grasses leaflet (*photo far right; by Andy Russell*) during the activity on 12 June.

A launch at STEP, Tuesday 12 June

In a fresh afternoon following morning rain, 26 people met for a FOG walk with STEP at the National Arboretum Canberra 'Forest 20', also known as the Southern Tablelands Regional Botanic Garden (or Southern Tablelands Ecosystem Park, STEP). Our walk through this garden 'forest' was planned to coincide with the STEP team's launch of their leaflet (*ooh!*) on the native grasses in this patch.

With *Grasses at the Southern Tablelands Regional Botanic Garden: Forest 20* in hand, you can find 12 native grass species of this region's natural temperate grasslands, planted in the garden's blocks. The leaflet's accurate illustrations by Michael Bedingfield show how the species look when in flower (summer/autumn); it also describes and illustrates the three most common local grass weeds. (Naturally, they are not present at STEP.)

Judy Smith, President of STEP, launched the leaflet, thanking its production team (Andy Russell, Max Bourke, Rainer Rehwinkel, with inputs from David Shorthouse and Isobel Crawford and graphic design by Mariana Rollgejser), and giving a short summary of STEP's history. Judy acknowledged the dedicated STEP members whose weekly exemplary care maintains this arboretum block. Dr Ken Hodgkinson, well-known grasses ecologist and a member of FOG committee, also spoke, congratulating STEP members on their magnificent effort in restoration by creating what is, in his opinion, the gem of the Aboretum. Ken thanked the authors and illustrator of the brochure on grasses for their very useful production, which FOG had supported with a $1500 grant for the leaflet in 2017, awarded by the FOG Supported Projects Sub-committee.

We thank Andy Russell and David Shorthouse who then guided us in two groups on an informative ramble through STEP. We heard that 'Forest 20' has never fitted the NAC's concept of a forest block but is now part of the routes of some of the arboretum guides. Frogwatch monitors the ephemeral planted wetland at the base of the slope. CIT horticulture students practise their on-ground and ID skills on STEP's unique range of captive species. And this year STEP ran 'STEP into Plein Air', inviting people to paint here in Tree Week.

STEP/'Forest 20' is well worth a visit at all times of the year, with several species in flower even now.

To obtain the leaflet, contact Andy at membership@step.asn.au

Recent FOG activities continued

'Upland Wetlands Workshop at Maffra Lake a great success'

Article about the day, as published in the ***Monaro Post****, Wednesday 23 May*

FOG was a co-organiser of this activity on Saturday 28 April at Maffra Lake TSR and Dalgety NSW, on the value of ephemeral wetlands in grassland.

More than 40 landholders and community members joined representatives from South East Local Land Services, Greening Australia and Biodiversity Conservation Trust at Maffra Lake on April 28 to learn about the conservation values and observe the abundant birdlife on a perfect but dry autumn day.

Rare and endangered flora, Omeo Storkbill (*Pelargonium* spp.) and fauna Grassland Earless Dragon (*Tympanocryptis pinguicolla*) are found in this Natural Temperate Grassland community.

Office of Environment and Heritage were monitoring these endangered species, and in consultation with contractors who were controlling the spread of African Lovegrass on the Travelling Stock Reserves (TSRs), they managed to reduce impact by spotspraying.

After a morning walk and talk around the periphery of the lake, armed with binoculars, drones and telephoto lenses, the group set off for the Buckley's Crossing Hotel in Dalgety for lunch and an afternoon of talks by each of the wetland specialists.

Leon Miners (Natural Resource Management Adviser, South East LLS) is currently working on Biodiversity on TSRs and the Monaro Upland Wetlands project.

Donna Hazell (Wetland Ecologist at South East LLS, Braidwood) shared her extensive knowledge of the Wetlands environment. Landholders and managers learned how to turn boggy wetland areas into an asset for their farm, and for the local environment. Donna explained why ephemeral wetlands function as buffers, sponges and climate moderators.

Nicki Taws (Project Manager and Bird Expert, Greening Australia) gave a detailed account of the value of Monaro wetlands for migratory birds that frequent the Maffra and other Monaro Lakes. David Eddy (Grassland Specialist, South East LLS, Cooma) spoke of grasslands and other plant values, including endangered species, of the Monaro Lakes.

Geoff Robertson – President Friends of Grasslands, and Chair of Kosciuszko to Coast – was the MC for the day, introducing Charlie Maslin, a local landholder who took drone photographs of Maffra Lake, and John Blay (Historian and Writer) who spoke briefly about a significant indigenous site at Maffra Lake.

For more information about the Monaro Wetlands Upland Project please contact Leon Miners, (02) 64521455 or leon.miners@lls.nsw.gov.au.

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Note: A short film made on the day is at https://open.abc.net.au/explore/07po0sm

Top: David Eddy describes the grassland in the lakeside TSR.

Middle: Maffra Lake with grazing sheep on the far side.

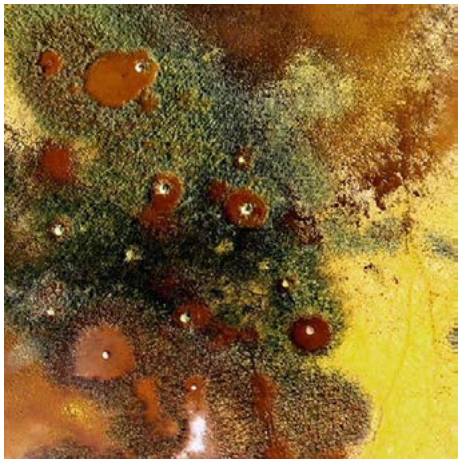
Bottom two: Lake (and sheep) seen from a drone.

Drone photos by Charlie Maslin. Others by Ann Milligan.

Rick Farley Reserve excursion in April

Andrew Zelnik took this (*at right*) and many other photos (*more on p. 15*) at the Rick Farley Reserve during the Malleefowl Learning activity, 6–9 April; see report in *News of FOG* May–June 2018, pp. 11–12.

Crescent-shaped entry of native scorpion burrow, and tip of Andrew's boot (for scale).



Recent FOG activities continued

Rick Farley Reserve excursion in April, cont'd.

Photos by Andrew Zelnik

A bunch of other dates & snippets

Black Mountain symposium 2018,

24 August 9–4.30; 25 August 9.30–noon

'The past 50 years informing the next 50'. Talks at CSIRO Discovery Centre on the Friday; walks in Black Mountain Nature Reserve on the Saturday. Themes: natural environment and cultural environment. Costs depend on what you choose to attend. Register at https://www.eventbrite.com.au/e/black-mountain-symposium-2018-tickets-45325809717

12th Australasian Plant Conservation Conference, APCC12

11–15 November, CSIRO Canberra ACT.

'Moving house – a new age for plant translocation and restoration' is the title of this week-long conference. Abstracts are due by Friday 27 July, and earlybird registrations close on Friday 31 August. If you join the ANPC you receive a discount on the registration fees. Find out more about APCC12, and register, at http://anpc.asn.au/conferences/2018.

Monaro dieback paintings by Sharon Field

September, Cooma Raglan Gallery and Cultural Centre

'Monaro Runes' will be an exhibition of paintings and drawings by Sharon Field, about the dieback of thousands of Ribbon Gums *Eucalyptus viminalis* on the Monaro. After Cooma in September, the exhibition goes on show in the US. To read more, see Tim the Yowie Man's article in the *Canberra Times* on 28 March, at https://www.canberratimes.com.au/national/act/why-are-more-trees-dying-along-the-monaro-highway-near-the-snowy-mountains-20180328-h0y278.html

Article praising *Call of the Reed Warbler*

Andrew Zelnik notes that *Overland* (a not-for-profit magazine) in April published a literary article praising (FOG member) Charles Massy's recent book *Call of the Reed Warbler*. The author, Phoebe Paterson de Heer, is a South Australian writer, editor and organic farmer. See https://overland.org.au/2018/04/an-agricultural-uprising-on-call-of-the-reed-warbler/

Top down, L-R: Intriguing flowers of an as-yet-unidentified small shrub near Spinifex and remnant native cypress woodland area.

Pituri *Duboisia hopwoodii* shrub in flower at edge of former lake bed.

Striped Skink (eastern form) *Ctenotus schomburgkii* found by Dave Hunter back at camp.

Some of the many Aboriginal artifacts across the former lake bed being revealed as time passes.

Spinifex hummocks on sand dune flanked by native cypress pines (on left) and mallee woodland (on right).

Contacts for Friends of Grasslands Inc. groups and projects

Website www.fog.org.au

To contact FOG (general & media): info@fog.org.au;
phones 0403 221 117 / 02 6241 4065 (Geoff Robertson)

Membership inquiries & payments: membership@fog.org.au
(application forms are at www.fog.org.au)

To join in FOG activities/events: activities@fog.org.au

To join FOG working bees:
Hall Cemetery woodland, ACT: john.fitzgerald@fog.org.au
Yarramundi Grassland, ACT: jamie.pittock@fog.org.au
Stirling Park woodland, ACT: jamie.pittock@fog.org.au
Old Cooma Common, NSW: margaret.ning@fog.org.au
'Scottsdale' (nr Bredbo), NSW: linda.spinaze@fog.org.au

Health & Safety matters: info@fog.org.au

FOG merchandise info (books, etc.): booksales@fog.org.au
(order forms are at www.fog.org.au)

Applying for FOG small grants: supportedprojects@fog.org.au

Correspondence & accounts:
Postal: PO Box 440, Jamison Centre, ACT 2614
Correspondence by email: secretary@fog.org.au
Accounts: treasurer@fog.org.au

Newsletters & e-bulletins: newsletter@fog.org.au,
or ebulletin@fog.org.au

To contribute to FOG advocacy:
advocacy@fog.org.au

Website matters: webmanager@fog.org.au
FOG's comprehensive website gives: the calendar of FOG happenings; information about grasslands and grassy woodlands; proformas for applications & orders; all advocacy submissions; all past newsletters (except the most recent).

FOG and others' dates, July onwards

1 July	Planting workparty at Bullan Mura, Yarralumla ACT
6 July	Rampaging *Rutidosis* – visit to Crace grassland, ACT
11 August	Geoff Robertson talk on grasses, Braidwood NSW
18 August	Winter talks & tea afternoon, Mugga, Symonston ACT
26 August	Stirling Park woodland workparty, ACT
21–24 Sept	Narrandera grasslands weekend, NSW
29 Sept	Visit grassland at members' property near Sutton NSW
30 Sept	Workparties at Stirling Park & Yarramundi Grassland, ACT
14 October	Revisit members' property 'Ballyhooly', Bungendore NSW
October	Hall Cemetery woodland workparty (date tba), ACT
28 October	Stirling Park woodland workparty, ACT
Late Oct	Probable date of FOG *et al*. Grassland Forum
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24–25 Aug	Black Mountain Symposium
September	Monaro dieback – paintings exhibition at Cooma NSW
9–12 Sept	Australasian Weeds Conference, Manly NSW
25–28 Sept	Ecological Restoration Conference, Brisbane Qld
10–12 Oct	National Landcare Conference, Brisbane Qld
11–15 Nov	12th Australasian Plant Conservation Conference, Canberra

In this issue (approximate titles)

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