



July–August 2017

Activities in FOG ahead

Mid-winter afternoon of talks with tea, 15 July 2–5 pm

With great pleasure we announce that our two speakers on Saturday 15 July, for the afternoon of talks and tea, 2–5 pm, will be **Dr Lydia Guja** and **Ms Karen Retra**. They will tell us about: ‘**Ex situ seed conservation at the National Seed Bank**’ (Lydia) and ‘**Getting to know native bees and other pollinator insects**’ (Karen).

Karen Retra is a ‘neighbourhood naturalist’. She encourages and observes native bees in her suburban garden and surrounds, taking photos and videos, and doing a lot of sitting around and watching! Karen says she is inspired by the diversity, roles and habits of the many, many species of beneficial insects that we often overlook. Karen is co-founder of the Wild Pollinator Count, a national citizen science project encouraging awareness of pollinator insects each spring and autumn (see <https://wildpollinatorcount.com>). After this talk, you may be inspired to join the count by watching a flowering forb for 10 minutes and reporting the insect visitors helping it set seed.

Dr Lydia Guja is Seed Conservation Biologist at the ANBG Seed Bank. Her staff profile (online) says: ‘With a focus on Australian native seeds Lydia investigates seed conservation biology, threatened species conservation, endangered species and communities, seed ecology, seed dispersal, seed physiology, ecophysiological germination thresholds, stress tolerance, and landscape restoration.’ That includes the effects of environmental stress on seed dispersal, germination, and establishment; and conserving Australia’s plant diversity, including rare and endangered species of the Australian Alps, ACT region and Commonwealth Terrestrial Parks, through ex situ conservation methods, namely seed banks and living plant collections; and much more. .

Please register with Paul.Archer@fog.org.au soon, for catering and seating at **Mugga Mugga Environmental Education Centre, 129 Narrabundah Lane, Symonston, ACT** (opposite the gate to Therapeutic Goods Administration). This should be an afternoon of celebration (see announcement at right) as well as fascination and conversation!



The crew at the Stirling Park May workparty. Photo: Jamie Pittock.

Notice of Special General Meeting, 15 July 2017

Members of FOG are invited to attend a **Special Meeting on 15 July at Mugga Mugga Environmental Education Centre**. It will take place during the mid-winter talks and tea afternoon (2–5 pm). The purpose of the meeting is to consider a recommendation from the Committee to award Honorary Life Membership to **Edwina Barton**, FOG’s first convenor, and **Naarilla Hirsch**, in accordance with Rule 12 in the Friends of Grasslands’ Rules.

Members at the meeting will be informed of the extraordinary contributions that Edwina and Naarilla have made to Friends of Grasslands, to the support of grassy ecosystems, and to biodiversity and conservation more broadly.

Both Edwina and Naarilla will be present to receive the award, should the membership accept the recommendation. Friends and supporters of Edwina and Naarilla are welcome to attend.

Please register with Paul.Archer@fog.org.au for optimal catering and seating.

Spring work and walk dates

STIRLING PARK Woodland – the next workparty is on **Sunday 27 August**. We will send out a reminder to register and notes on where to meet, by email to regular participants and more widely in the 22 August *News of FOG*. After that, workparties are booked for **Sundays 29 October and 26 November**.

The annual wildflower walk at Stirling Park will be on **Sunday 12 November**.

YARRAMUNDI GRASSLAND workparties: **Sundays 24 September & 26 November**.

HALL CEMETERY woodland workparties: **Saturdays 7 October & 11 November**.

For this newsletter’s contents, see p.14.

News from the FOG committee

FOG awards \$4,800 in five grants

Earlier this year FOG advertised grassy ecosystem grants for grassy ecosystems projects that it might sponsor. It received a number of interesting and varied applications and inquiries. FOG established a subcommittee (the Supported Projects Group: Andrew Zelnik, Kim Pullen, Kat Ng, Sarah Sharp and Geoff Robertson) to consider the applications. The FOG committee has agreed to the subcommittee's recommendations that the following grants be approved.

1. 'Attitudes and latitudes: Towards a global perspective of grassland ecology'; Dr Rachel Standish, Murdoch University (WA), \$1500. This grant will be used to help complete work on a review paper to mine information from the titles, abstracts and keywords in papers to answer the question: Do regional differences in climate and other factors such as fire regime and land-use (broadly, 'latitudes') contribute to the development of theories that are limited in scope (broadly, 'attitudes')? FOG's Supported Projects Group likes the global and attitudes perspectives, from which we will learn a lot; Rachel will be providing regular reporting to FOG.

2. Brochure on local native grasses and grass-like species growing at the Southern Tablelands Ecosystems Park, National Arboretum Canberra; Judy Smith, \$1500. This project aims to publish a pamphlet describing and portraying the species to help with identification. FOG likes its valuable education and advocacy focus and will work with STEP to develop the brochure.

3. Quantify awn length variation in Kangaroo Grass seed and other native grasses across Australia using CSIRO collections; Annette Cavanagh, supervised by Dr Bob Godfree, Latrobe University (VIC), \$500. Annette and Bob have observed that seeds with longer awns move further than seeds with short awns, and tend to bury deeper. Annette is investigating whether selection for seeds with long awns might help improve the success of grassland restoration with Kangaroo Grass and other native grasses. FOG's contribution will cover travel expenses to enable Annette to come to Canberra to measure samples at CSIRO and the National Herbarium.

4. Research on use of fire for grassland rehabilitation in Kangaroo Grass – Red Gum woodlands, Western Plains of Victoria; Dr John Morgan, La Trobe University, \$500. John and his students are trialling whether, in long unburnt grassy woodlands, reductions in species richness due to the cessation of frequent fire can be reversed by the return of fire. Additionally, they will investigate if the abundance of currently sparse species can be increased, how exotic species will respond to a change in disturbance regime, and what the effects will be on trees that have established in the inter-fire period. The Country Fire Authority will conduct the trial burns. FOG believes this question is critical to the development of best practice management of grassy ecosystems. FOG's contribution will assist in the purchase of materials.

5. Contribution towards travel expenses of Conservation Volunteers Australia (ACT group) for work at Old Cooma Common Grassland Reserve. Since August 2016, the CVA in ACT has organised nine working bees at Old Cooma Common Grassland Reserve complementing other weeding work there, especially under the LLS grant. FOG is truly appreciative of the CVA's efforts. Normally the CVA charges a fee to pay for the coordinator and travel expenses. However, at Old Cooma Common their contribution has been pro bono. Earlier this year FOG applied for a Landcare grant to pay for a year's CVA work on OCC in 2017 for these working bees. That grant application was unsuccessful so FOG has decided to make a contribution to partly reimburse the last year's travel expenses. Value \$800.

We look forward to seeing articles on these projects in future newsletters.

Reminder about donations

FOG welcomes donations to its Public Fund to support FOG grants to undertake significant research, education and on-ground projects supporting grassy ecosystems. (See grants already awarded, this page.)

Donations may be made by **direct debit** BSB/ Account: 633 000/153493960 (Bendigo Bank) and please be sure to (a) identify yourself in the reference/description box, and (b) email our treasurer@fog.org.au with details of your name, address and phone number, so that she can identify your payment and issue you with a receipt. Donations by **cheque** (made payable to 'Friends of Grasslands') may be mailed to Treasurer, Friends of Grasslands Inc., PO Box 440, Jamison Centre ACT 2614.

FOG is listed on the Register of Environmental Organisations (REO) under the Income Tax Assessment Act. That means that donations over \$2 to the Public Fund can be claimed as tax deductions by the donor. FOG will issue you with an official receipt from the Public Fund, and you can claim the amount as a deduction in your tax return for the financial year in which you made the donation.

These details are also on the FOG website at <http://www.fog.org.au/donations.htm>



Hard at work on 30 April, Stirling Park.
Photo: Jamie Pittock.

From the FOG Committee, continued from page 2

Welcome to

Michael Noyes and family, Canberra, who have recently joined FOG.

Membership update

Because we have just had a flurry of overdue memberships coming in I think this is a good opportunity to give an update on the membership statistics for Friends of Grasslands. We currently have 204 members. Our membership base is similar to last year, and has increased slowly over the years. To date, FOG has gained seven new memberships this year. The loyalty of members is gratefully acknowledged; some of you have been with FOG for more than 18 years (up to 23 years), and many for over 10 years.

I thought you may be interested in the geographical spread of our memberships, based on postal addresses: 120 live in or work in ACT; 71 in NSW (of these, 45 reside or work in the Southern Tablelands, and 26 elsewhere in NSW), 1 in Queensland; 2 in South Australia; 2 in Tasmania; 6 in Victoria and 1 in Germany. It is great that the list includes members from outside the Southern Tablelands.

Although we don't have details for all members, of those records we have, 57 members describe themselves as landholders or land managers, 72 work or have worked as a professional in natural resources management, 62 members belong to Landcare or ParkCare groups and 106 members describe themselves as conservationists or naturalists. Many of our members describe themselves as belonging to two or more of these categories. It is heartening to see such a range of interests within our membership base.

We would love to hear more from you: for example you might like to send us an article, of any length, for our newsletter, telling us what you do or what interests you in your region, or letting us know of any issues you may have in regards to grassy ecosystem conservation. If there is anything that you would like to raise with us, please do so. The simplest contact address is info@fog.org.au, and your queries or information can be passed on to the relevant committee person.

Sarah Sharp, Membership officer

Booksales

Just a reminder to you all, that we have **Woodland Flora** and **Grassland Flora** books for sale, which can be purchased through booksales@fog.org.au. I am more than happy for people to save on the cost of postage if they wish to organise with me to collect them from my home in Fraser, ACT. Bulk orders are available at reduced rates. You may also purchase these books from several retail outlets, including the Australian National Botanic Gardens Bookshop, the Cool Country Natives nursery in Pialligo, the Namadgi National Park Visitors Centre (all in ACT) and CSIRO Publishing (online). If you know of other outlets that may wish to sell the books, please provide me with their details and I will contact them.

Sarah Sharp, Book Sales

Ecological burn at Stirling Park on 13 May

Peter McGhie writes: The Rural Fire Service carried out a burn for the National Capital Authority on the lower slopes of the northern end of Stirling Park on 13 May. The burn achieved its objective of clearing high fuel load, including piles of cut material from past work parties. In particular, the burn was not too hot

which should ensure strong regeneration of native flora and habitat for native fauna. It was followed by 6 mm of rain. The burn flushed out (but the team looked after) several Blue Tongue Lizards, and smoked out a native beehive and a lot of rabbits/hares. *The photo above is the fire photo'd from Acton by Alan Robertson, and the photo below, on the spot, is by Jamie Pittock.*



Hollows as Homes

As reported in *News of FOG* January–February, FOG was a signatory on a nomination to the ACT Scientific Committee in 2016, for protection of hollow-bearing trees in ACT. In that context, the **Hollows as Homes website**, noting hollows and their users, may be of interest; see <https://www.rbgsyd.nsw.gov.au/Hollows-as-Homes/Hollows-as-Homes>.

Bushfire Management: Balancing the risks

Friday–Saturday 21–22 July

A community symposium on research, strategies and expectations for fire management in ACT in a changing climate. See <http://www.npaact.org.au/event.php?id=1533> and <http://www.npaact.org.au/res/File/2017/BushfireFlier6.pdf>

From the FOG Committee, continued from page 3

FOG and the Ginninderry development

FOG has been approached by a number of people concerned about the proposed Ginninderry development (across the ACT–NSW border, west of Belconnen), and its impact on the Ginninderra Falls area of Ginninderra Creek and associated biodiversity and heritage values. This short item explains FOG's response.

FOG is concerned by any development that affects biodiversity, especially if it has an impact on threatened ecological communities such as grasslands and grassy woodlands and threatened species within them. Members of FOG have for several years been involved in two of the groups that have engaged with the Ginninderry development: namely, the Biodiversity Working Group of the Conservation Council ACT, and the West Belconnen Bush on the Boundary Reference Group. FOG also makes submissions in response to all calls for public comment that relate to the West Belconnen development (see <http://fog.org.au/advocacy.htm>), the most recent being on 6 April.

The proposed development is a complex issue. Many in the conservation movement support the aspirations of the development because the developer proposes to include

many conservation-, heritage- and biodiversity-friendly elements (as well as social and economic elements). Much investigation, including many detailed surveys and additional research projects, is taking place into the likely impacts and what could be done to avoid them. On the other hand, other conservationists are concerned about urban sprawl and negative impacts. The Ginninderra Falls Association is particularly concerned about the long-term plan for northern edges in the area and is seeking crowdfunding for further research (<http://ginninderra.org.au/>).

FOG's focus, disappointing to some, has been, and remains, restricted to careful deliberation and articulation of the grassy ecosystems issues involved. FOG's 6 April submission was its response to the Development Application lodged for Stage 1 of the residential area in the ACT, right alongside the Strathnairn Arts Community precinct. The Bush on the Boundary Reference Group has recently been told that Ginninderry's application for rezoning of the NSW part has now been lodged with the Yass Valley Council. FOG looks forward to release of the resulting draft environmental plan and to the important call for new public comment.

Geoff Robertson, FOG President

K2C, Landcare awards & other news

Community Engagement: Creating a formula for success

A K2C forum/workshop

9.30 am, Friday 21 July, Jerrabomberra

This K2C workshop/forum will be led by Debbie Hunt and friends. Debbie is the Community Development Officer at the NSW Office of Environment and Heritage. Her role is to help build community group strength and organisation. Within the K2C region there are many community-conservation groups wanting to develop and promote their messages more clearly, and to successfully present those messages through the media. Groups want to gain greater community support, open up financial pockets to support conservation, develop the skills of members and recruit new members who might share the organisation burden, and the list goes on. Debbie will be showing forum participants how to create a formula for success in community engagement.

To register: contact Geoff Robertson by email to geoffrobertson@iprimus.com.au or phone 0403 221 117 or 02 6241 4065. The forum is sponsored by two K2C partners: NSW Office of Environment & Heritage (Queanbeyan) & ACT Government Environment, Planning & Sustainable Development Directorate.

Nominations due soon for Landcare Awards

The 2017 Australian State and Territory Landcare Awards cover a wide range of individual and group categories. They are a chance to recognise people who work to protect the environment and/or deliver more sustainable agriculture. All groups and volunteers involved in protecting or improving the environment are encouraged to look at the possible awards and send in nominations.

Nominations close soon: e.g. NSW 17 July; ACT 31 July. For details see: <https://e-award.com.au/2017/landcareawards/newentry/about.php>

Butterfly newsletter: Did you know?

Suzi Bond, lead author on *Field Guide to the Butterflies of the ACT* (see **Kim Pullen's book review, on p. 13**) sends out a newsletter about butterflies in the local (ACT) region in the form of email updates. These emails note particular species flying, or something exciting that has been seen, or they call for records of particular species. Suzi mostly sends them out during spring–autumn, which are prime butterfly seasons in the ACT. Suzi says she would welcome butterfly stories from readers of *News of FOG*, and that anyone can ask to be on her newsletter mailing list by emailing her at chowchilla29@yahoo.com.

A Field Guide to Spiders of Australia

by Robert Whyte & Greg Anderson

A new guide, from CSIRO Publishing, June 2017.

See: <http://www.publish.csiro.au/book/6899/#sthash.efhPOVpM.dpuf>

FOG advocacy

Naarilla Hirsch & Sarah Sharp

May

1. The ACT Government released the draft ACT Native Grassland Conservation Strategy and Action Plans for public comment. These included the revised action plan for the Natural Temperate Grassland (NTG) community and for all endangered grassland species except the Pink-tailed Worm-lizard (PTWL). The document was large and most of the advocacy group were involved in preparing FOG's long submission on this important document.

FOG welcomed the release of the Draft ACT Grassland Strategy and Action Plans March 2017 and acknowledged both the work done in producing them and the ACT Government's commitment to maintaining and sustaining Canberra's grasslands. FOG also applauded the inclusion of rocky, sub-alpine and montane grasslands within the scope of the Strategy and Action Plans.

However, FOG was disappointed with the lack of community consultation to this point, and recommended that a workshop with stakeholders be called to expand on the Strategy and Action Plan objectives, actions and proposed outcomes. FOG's belief was that the Strategy and Action Plans could be significantly improved.

Major concerns included a lack of clarity about the terms used for the different types of grassland identified in the Strategy, absence of the Pink-tailed Worm-lizard Action Plan from the document, identifying the need to develop and

implement site management plans and operational plans for all sites (both in reserve and off-reserve), and a need for editing and more clarity within the document. The description of the current situation, on which the future actions in the document are based, needs to be updated and broadened: for example, to include a summary table of grassland sites and key attributes, and more recent findings of research, surveys and on-ground activities. The actions in the Strategy and Action Plans need to be expanded so that the document has a wider focus and is more aspirational. The Strategy should ensure conservation and protection of all sites that meet the criteria as the endangered community under the Nature Conservation (NC) and EPBC Acts, regardless of tenure. It should also encourage a collaborative approach between government and community by identifying specific areas in which the conservation community may be involved beyond the provision of labour for weeding. Many other concerns were also raised.

2. In its comments on the ACT Government's Draft Animal Welfare and Management Strategy, FOG supported a cat registration system and proposed that it be extended to cat containment across the entire ACT. FOG thought that there should be more recognition in the Strategy of the impacts of poor management, pest animals and increasing populations of some native animals on the welfare of endangered and declining animals.

June

3. The NCA released the Acton Peninsula Draft Structure Plan for comment. In its response, FOG congratulated the five institutions in the newly formed Acton Peninsula Partnership for agreeing to cooperate in master planning, particularly if it can lead to positive outcomes in conservation and biodiversity. FOG recommended that the Partners apply planning principles to favour ecology, wildlife and habitat. Other recommendations were to shrink the indicative Development Zone west of Lennox Crossing to conserve all known grassy woodland; and to revive pest and weed control urgently to protect areas of significant natural value.

4. Following on from changes to the *NSW Biodiversity Conservation Act 2016* and *NSW Local Land Services Amendment Act 2016*, the NSW Government released associated regulations, State Environmental Planning Policy (Vegetation) and other key products (including the

Biodiversity Assessment Method) for public comment. FOG made a number of comments on the details of this package. As well, it made several general recommendations. The first was that a guideline for users and the public be developed that sets out the process clearly, identifies what the legislation is aiming to achieve, what outcomes on the ground are expected and what will be the result if the legislation is not complied with. Another was that adequate resources be provided for training of staff (both relevant NSW Government staff and shire council staff) who will be undertaking the different roles required by the legislation. As well, adequate resources and support are needed to assess compliance and follow up non-compliance effectively. Finally, continued support is needed to regularly update mapping based on on-going surveys, to ensure that data which underpins the effectiveness of this legislation is accurate.

The full text of FOG submissions appears on our website.

Kangaroo Grass fact sheet

The Native Grass Resources Group has just published the 2nd edition of their **Kangaroo Grass fact sheet** (4 pp). It gives information about propagation, seed collection, site preparation, establishment technique and management of *Themeda triandra*. To download a free copy, visit <https://nativegrassresourcesgroup.wordpress.com/welcome/publications/>.

Still time to comment on NSW TSRs

You now have till **5 pm Friday 7 July** to comment on the NSW Travelling Stock Reserve network. The NSW Government wants to map the 6500 TSRs in NSW, and to know who uses them, what for and how often. For the consultation paper and an online mapping tool to find TSRs in your area, and make a submission, see: <http://www.ils.nsw.gov.au/livestock/stock-routes/nsw-travelling-stock-reserves-review>

Close-up: St John's Wort

John Fitz Gerald

The formal name for the species commonly called St John's Wort is *Hypericum perforatum*. I only looked recently into where the plant is perforated and was interested to find that perforation seems only to be a look-alike feature. Photo 1 presents a microphoto of two Wort leaves showing tiny translucent patches dotted about. These patches are called 'glands' in websites such as Weeds of Australia, and 'oil dots' in other resources, but are not true perforations. Nevertheless, next time you pass a green plant, pluck a few leaves and hold them up to the light to see the apparent pinpricks. After that, make sure the plant gets what it deserves; this is one of our most invasive weeds, listed as noxious in NSW, and as a pest in ACT, and it must be controlled.

At Yarramundi Grassland, the National Capital Authority and FOG have been battling St John's Wort with some success but it is hard to defeat this invader. Contractors spot-sprayed some large areas of flowering Wort on 29 November 2016 using a recommended agent, Fluroxypyr, which is specific to broad-leaved plants. As expected, the St John's Wort leaves slowly withered and browned, but seed capsules on the same plants remained plump and green: see photo 2 (below) taken in early January 2017. I picked stems on 18 January and have now opened some capsules and imaged the contents (photo 3). I'm relieved to find that no seeds developed, so the herbicide has been effective. Just for comparison, photo 4 shows that mature seeds of St John's Wort (from elsewhere) are dark and about 1 mm long.

At another site in the ACT, spraying of St John's Wort by a different land manager did not occur until 23 December. I did not follow capsule and browning development here, but I did pick some stems on 30 March for imaging. Unfortunately, spraying has been only partly effective: see the mix of mature and undeveloped seeds in photo 5. Note I have not tried to germinate any of my collections.

So, I'd say the message about St John's Wort is that treatment by spray should be early to beat seed development. I doubt I'll get much flak if I recommend that control designed to avoid seeds is the best plan for any weed.



All microphotos (photos 1, 3, 4, 5) were taken by John Fitz Gerald, courtesy of the Seed Bank at the Australian National Botanic Gardens and are ©ANBG. Scale bars represent 1 mm in photos 1, 3 & 5; and 0.5 mm in photo 4.



Canberra Nature Map – explaining a few things (part 2 of a 2-part series)

Michael Bedingfield

In the previous issue of the newsletter I introduced the Canberra Nature Map website (1), and gave a simple description of its history. In this article I will go into more detail about it and explain a few things that may not be obvious to a casual visitor.

Reporting

This is the most important aspect of the website, and we try to make it as easy and self-explanatory as possible so that anyone can do it without instruction. All you need to report a sighting is a photograph from a GPS-enabled camera or mobile phone (iPhone or Android). If you don't have GPS available to you, then you can request an upgrade to your membership so that you can set the location manually. Combining with other features of Canberra Nature Map (CNM), we aim to have reporting of sightings as easy and enjoyable as possible.

Maps and GPS

GPS (Global Positioning System) uses interaction with satellites to give accurate location data. Cameras and mobile phones embed the location data in digital photos and allow us to position any photo we receive at CNM. My camera tells me how many satellites are linked in for each photo. The more satellites that are involved the greater the accuracy. If there are only a few then the location may be out by several hundred metres or more, but if there are about 10 linked in then it can be as accurate as only a few metres.

One of the great features of CNM is the provision of **location maps** for our nature reserves. These maps are created by getting the GPS points along the reserve boundaries and joining the dots to create giant many-sided polygons. We have also included areas other than nature reserves, such as Commonwealth land, urban lakes or wetlands and other natural open spaces. These are all placed in the grouping called **Nature Parks**. As people put in sightings for a defined location, CNM builds up a visual gallery of the flora and fauna represented on it and also automatically adds to the species list for that location. I've made a special effort to do this with Tuggeranong Hill, which you can see at reference (2). Effectively what happens is that a small database is built up for that location, contained within the much larger database of CNM.

At the beginning, nature reserves were our main focus because we were mainly interested in rare plants. Any sightings that fell outside the reserves were given the place description 'Undefined'. As time went on this became a major shortcoming because people were adding sightings from the suburbs or farmland, etc. So IT specialist Aaron Clausen worked out a way to use Google Maps to create a new layer of maps that cover all areas that we have not defined ourselves. These we call **Other Districts**. They are automatically generated by Google Maps whenever a sighting falls outside of any pre-existing map. This has been a great addition and these maps act as a sort of background layer behind our own defined maps. Because they are automatically generated we don't have much control over them, but they do allow us to do a location report and species list for suburbs and country districts, such as O'Connor and Gundaroo.



Common Brushtail Possum, *Trichosurus vulpecula*.
Photo: Michael Mulvaney.

Boundaries of CNM

The boundaries of CNM were not defined at the time I joined. This was ok until we started receiving sightings from other continents! So we made a simple adjustment to restrict our sightings to a circle within a radius of 300 km from Canberra's Parliament House in order to cover the Canberra region in general. After a while the radius was reduced to 200 km. During Michael Mulvaney's negotiations about the Atlas of Life Coastal Wilderness website (ALCW) the boundaries finally solidified.

The two websites now share a common boundary along the coastal escarpment. The area covered by CNM is roughly ACT and the Southern Tablelands but also includes the alpine areas and some of the South Western Slopes. (3)

Tools from GPS & Google maps

The GPS technology lends itself to a variety of tools that are used on CNM. The first is the **Nearby Sightings utility**. For any sighting we receive we show all sightings that occur within 100 m of its location. It is quite valuable for getting a picture of the flora and fauna near where the sighting was made and is actually quite precise.

One of the things I have done while helping develop this website is to test Aaron's work. To test the Nearby Sightings utility I temporarily placed a sighting at the start of the 100 m athletics track at the Australian Institute of Sport. Then I placed another at the other end. At 99 m the second sighting was shown in the 'Nearby' list, but at 101 m it was not! So you can be sure about the accuracy of this tool (and others).

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Canberra Nature Map – explaining a few things (part 2 of a 2-part series) – continued from page 7

Another feature we have is the **TimeLine**. If a species is reported at the same location at different times then the system sets up a time link for the two or more records. A tiny clock icon is displayed next to the species name on the sighting. If you click on the clock icon then you see the history of all observations of the species at that location. See reference (4). Just by submitting a series of photo reports you can create a historical record of a species over time. This is valuable for those managing or monitoring a nature reserve or other land and following the progress of rare species, new plantings or weed removal.

Distribution maps are also provided from several viewpoints. For example you can see the distribution of a particular species across our region. Or you can see the spread of your own sightings across our region. You can also look at the distribution of all sightings in a given Nature Park or Other District. But you can also break this down into categories, such as mammals or moths, or particular years, or one or more species. It is a very powerful tool. See reference (5).

We also have the **Radar Search** tool that is excellent value. You choose the particular spot that is of interest to you and a report is generated about the sightings that occur within a certain radius of that point. Security arrangements are in place to protect sensitive species such as orchids. This tool is valuable for survey work but you need to be logged in to see it.

In the spring of 2016 we began an experiment using a **remote automatic camera** set up in the Mulligans Flat Woodland Sanctuary. It had a movement sensor and took colour photos in daylight and infrared ones at night. If anything moved within its field of vision it would take a photo and immediately upload it onto CNM as a sighting. It was largely successful. But we found that to properly handle that form of data would require major organisation and software changes, and too much work would be required at this stage. It was decided not to continue beyond the experiment, but it is another option that we may pursue in the future.



Black Rock Scorpion *Urodacus manicatus*.
Photo: Aaron Clausen



Hemarthria uncinata Mat Grass. Photo: Michael Bedingfield.

Community

CNM is run almost entirely by volunteers who love nature and want to help. So there is naturally a good feeling among the people involved. To foster the feeling of friendly participation Aaron has created a string of tools to enhance this.

The first was **Comments on sightings**. This is very valuable for moderators, allowing us to talk directly to a person who has put in a sighting. Comments create a small but public conversation on the Sighting page. The people linked into the conversation are the reporter, anyone suggesting a species ID, the moderator confirming the ID, and anyone else who adds a comment to the sighting. All these members are notified by email if someone adds another comment.

Later Aaron added an **internal mail service** within the website, so you can write a personal note to anyone who is a member. This is extremely useful (since members' email addresses are kept secret), and can be done through the member's profile page.

We have the **'Featured'** section on the front page, and when someone puts in a particularly good photo the sighting may be placed in there. There is also the concept of **'Favourite'**. When you click on a tiny star on a sighting it is added to your personal list of favourites and the person who put in the sighting is notified.

You can also use the **'Follow'** option and if you're interested in another person's contributions you will receive a report on his/her sightings. Most recently Aaron added the **'Like'** option. Instead of commenting on a sighting when you think highly of it, you can click on the Like icon and the author is notified.

The Community page gives a list of all the Local Moderators, who take responsibility for the website content of the various Nature Parks, and the Category Moderators, who

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Canberra Nature Map – explaining a few things (part 2 of a 2-part series) – continued from page 8

look after the accuracy of data for certain flora or fauna groups. For example, Waltraud Pix is a Local Moderator for Mount Majura, and Chris Davey from Canberra Ornithologists Group is one of our two Category Moderators for birds. At the time of writing we have 25 Local Moderators and 35 Category Moderators.

We like to have good communication with members and the general public. So if anyone chooses to contact CNM the resulting email query is sent to Michael Mulvaney, Aaron and myself.

Education and information

An important part of this project is to provide information and education on the flora and fauna of our region, as well as promote their value. To this end we provide **species lists** for all categories of flora and fauna (e.g. (6)). These lists include photos of each species, and the ability to look at all sightings of any particular species. Species notes and Internet references are also given for more information. There are also species lists for our nature reserves and other defined locations. All of the species lists mentioned can be downloaded in PDF format for your convenience.

If you are interested in learning about a particular species or group of species, or a particular location, you can use the 'Follow' option, and receive reports on all relevant sightings. The Distribution maps are also very useful for studying particular species or locations.

The design of CNM is very flexible. You can click on many things and they will open other pages. For example, if you click on someone's username anywhere it will open the person's profile page. Similarly, if you see a species name anywhere and click on that, you will see either the relevant sighting or the Species page. There are also a number of small icons which you can click on to open the associated page.

There is much more to this website than can be explained in a few pages, and some features have not been mentioned. It is worth experimenting and exploring in this way.

Conclusion

The technology used by CNM has been adopted by other people with similar intentions, and more will follow. It is worthwhile looking at *BowerBird* (7) which is based in Melbourne and run by Museums Victoria, and *iNaturalist* (8) which is an international website belonging to the California Academy of Sciences. The *Atlas of Living Australia* (9) is owned and run by the CSIRO and has been around for some time. By comparison you will be pleasantly surprised at what CNM offers.

The building of CNM is a remarkable feat of cooperative effort, given the number of people involved, the volume of photos and other data, and the number of species it caters for.

As citizen science in action, it shows the value of a volunteer local website run by local people with local knowledge as part of a strong interactive community.



Dianella longifolia Smooth Flax-lily. Photo: Michael Bedingfield

References:

- (1) <http://canberra.naturemapr.org/>
- (2) Tuggeranong Hill Nature Reserve
<http://canberra.naturemapr.org/Community/Location/74>
<http://canberra.naturemapr.org/Community/LocationGuide/74>
- (3) CNM boundaries
<http://canberra.naturemapr.org/Community/Boundary>
- (4) TimeLine – *Bulbine bulbosa*
<http://canberra.naturemapr.org/Community/Timeline/20674>
- (5) Distribution map – *Bulbine bulbosa*
<http://canberra.naturemapr.org/Community/Map?Species=4609>
- (6) Species list for Lilies and Irises
<http://canberra.naturemapr.org/Community/CategoryGuide/49>
- (7) BowerBird
<http://www.bowerbird.org.au/>
- (8) iNaturalist
<https://www.inaturalist.org/>
- (9) Atlas of Living Australia
<http://www.ala.org.au/>

FOG's ACT Tree Week walk at Hall, 6 May

At the tail-end of ACT Tree Week on Saturday 6 May, nineteen of us gathered on land off Victoria Street, Hall, that had been used as horse paddocks for many decades. The rich dark soil on which we met grew masses of vibrant green weeds. We were there in Hall to learn more about Canberra trees. Sue McIntyre, FOG member and plant ecologist (*far left in top photo below*) led the group and gave us an initial briefing before we began exploring (*top 3 photos below, by Paul Archer*).



Our walk took us over a gentle 20 m rise to the highest point at 590 m, and we gradually left the weedy ground behind. The lower part of the paddock contained Yellow Box *Eucalyptus melliodora* and Blakely's Red Gum *Eucalyptus blakelyi*. There was also a large regeneration area of the latter which is typical of the species.

Sue explained the distinguishing features of all the *Eucalyptus* species we saw, plus the features of other local species that could be confused with the ones we were looking at. Some of us were beginning to wonder if there are any Apple Box *Eucalyptus bridgesiana* in our area, as we can only ever find *Eucalyptus nortonii*, which is a similar-looking species. The eucalypt species were few, which is always very helpful. In the woodland area they included Bundy *Eucalyptus nortonii*, Scribbly Gum *Eucalyptus rossii* and Red Stringybark *Eucalyptus macrorhyncha* (its bark and buds are shown below in Janet's photos).

While there were many *Acacia* species in the paddock, including a couple of garden escapees, we singled out two of them for extended discussions on our walk. The first was Blackwood *Acacia melanoxylon* distinguished by its blunt leaf tips. Considering that it can grow to 25 m it was still quite small being no more than 2 m tall. The other *Acacia* we saw

was Black Wattle *Acacia mearnsii*, one of several attractive acacias with bi-pinnate leaves (*photo below by Janet Russell*). Identifying the various bi-pinnate species can be a bit of challenge particularly when there are species not native to the ACT that may have been planted there as well.

There were plenty of other distractions for the field naturalist; birds for instance. During the walk Richard Beggs observed 1 Golden Whistler, 1 White-throated Treecreeper, 3 Striated Thornbills, 5 Buff-rumped Thornbills, 1 Scarlet Robin and 2 Varied Sittellas. It would be an interesting spot to explore further.

Margaret Ning & Janet Russell



FOG visit to Yass River Gorge by Margaret Ning & Rainer Rehwinkel

Brief overview

Twenty-two people converged on the roadside grass leading to the southern side of Yass Gorge on Saturday morning 10 June. We came from FOG, and from the Friends of Yass Gorge (FOYG), and from Murrumbateman Landcare Group and from Kosciuszko to Coast, all keen to see the gorge landscape, riverscape, rocks and vegetation. Our party included FOG members Rainer Rehwinkel and Dennis Dyer (who is a geologist), both of whom gave short talks and fielded follow-up questions throughout the morning. The group split into those who were making detailed observations of the vegetation (see main article), and those who were happy to walk on to the Yass Dam wall, where we were able to cross the river, scramble up the bank on the north side and follow the concrete path back to the cars. There is Kangaroo Grass this side, although FOYG's image/map below left shows the Natural Temperate Grassland (NTG, green) all on the south side of the river. In spring FOG may revisit this lovely gorge to make a detailed plant study, and perhaps again as a walk to admire its spring beauty.



Margaret spotting a Bristly Cloak Fern on the rocky gorge wall (and perhaps being inspected herself by an alien's feeler?). Photos: Paul Archer. Photo below right: Kat Ng.

An intriguing site indeed! This scenic site in the heart of the Yass township is marked by steep cliffs of ancient volcanic origin and occupied by two vegetation communities of note.

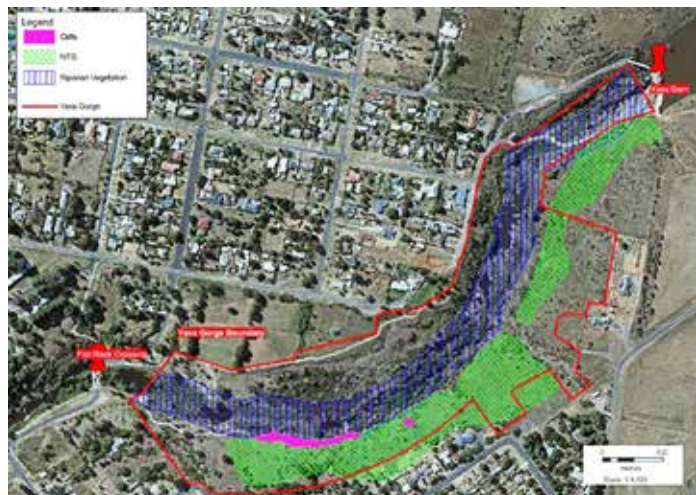
The first community encountered, via the Flat Rock carpark, is the riparian River Red Gum community, with an understorey of shrubs, principally Burgan (*Kunzea ericoides*), and River Bottlebrush (*Callistemon sieberi*) and with Spiny-headed Mat-rush (*Lomandra longifolia*) and a diversity of aquatic grasses, sedges and rushes. The River Red Gums (*Eucalyptus camaldulensis*) here are amongst the closest to Canberra, apart from the specimens at Tharwa.

Above the riparian zone, and running up the gorge's eastern side and onto a plateau above is a sample of a particular community of Natural Temperate Grassland (r8: *Themeda australis* – *Lomandra filiformis* – *Aristida ramosa* Dry Tussock Grassland in the South Eastern Highlands Bioregion; see Armstrong *et al.* 2013). This grassland type is found on steep rocky sites, including river gorges in the ACT. Associated with this community are a number of species either not commonly recorded in the region (being more common to the west), or if found in our region, confined to hot dry sites.

A few species have been recorded at this site that Margaret has not seen before, viz.

Cobber-plant (*Sigesbeckia australiensis* – photo at right by Rainer Rehwinkel); Pinkwood (*Beyeria viscosa*); Poverty Wattle (*Acacia dawsonii*) and Fern-leaved Hopbush (*Dodonaea boroniifolia*).

Some of this site's plants are seldom seen in the Canberra region; some of them are at the edge of their range: Yellow Burr-daisy (*Calotis lappulacea*), Corrugated Sida (*Sida corrugata*) and Tarvine (*Boerhavia dominii*). Others that Margaret does not see very often included Tick Indigo (*Indigofera adesmiifolia*) and a joyweed (*Alternanthera* sp. A). There was also a Bristly Cloak Fern (*Pleurosorus rutifolius*) very high up a north-facing rock face, rather than in its more normal, sheltered position.



...continued next page

FOG visit to Yass River Gorge continued from page 11

Records show the usual grassland forb species at this site: Common Everlasting (*Chrysocephalum apiculatum*), Native Bindweed (*Convolvulus angustissimus*), Variable Tick-trefoil (*Desmodium varians*), Vanilla Glycine (*Glycine tabacina*), Scrambled Eggs (*Goodenia pinnatifida*), Scaly Buttons (*Leptorhyncos squamatus*), Wiry Dock (*Rumex dumosus*), Smooth Solenogyne (*Solenogyne dominii*), Austral Sunray (*Triptilodiscus pygmaeus*), Fuzzy New Holland Daisy (*Vittadinia muelleri*), and a handful of lilies: Rock Lily (*Bulbine glauca*), *Tricoryne elatior* and *Wurmbea dioica*.

At least 21 species of native grasses are recorded at the gorge, the most interesting of which are Barbed-wire grass (*Cymbopogon refractus*), Queensland Silky Blue-grass (*Dicanthium sericeum*), Nine-awn Grass (*Enneapogon nigricans*; 2 photos below), Wild Sorghum (*Sorghum leiocladum*), Slender Rat's-tail Grass (*Sporobolus creber*) and Kangaroo Grass (*Themeda triandra*).

Ross Webster, president of Friends of Yass Gorge (FOYG) pointed out the results of the restoration and weed removal program that has been carried out by FOYG, Yass Landcare Group, Kosciuszko to Coast and Green Army teams. These groups have established walking tracks and explanatory signs through the gorge. They have also removed or killed many woody weeds, including willows, privets, blackberries, and others, and most recently, Prickly Pear (*Opuntia* sp.). FOYG has produced a neat pamphlet with a map and brief text on the native fauna that use the gorge, the threats to the gorge ecology, and what readers can do to help.



Rainer telling the group about the plant species. Photo: Kat Ng.



Reference

Armstrong R.C., Turner K.D., McDougall K.L., Rehwinkel R. & Crooks J.I. (2013). Plant communities of the upper Murrumbidgee catchment in New South Wales and the Australian Capital Territory. *Cunninghamia* **13**(1): 125–265.



Enneapogon nigricans plant (left, by AM) and close up (above, by AZ)

Above left: *Indigofera adesmiifolia*. (Photo: Andrew Zelnik)
Above right: *Dichondra repens*. (Photo: Andrew Zelnik (AZ))
Below right: One of FOYG's explanatory signs (Photo: AM)



Book review by Kim Pullen

Field Guide to the Butterflies of the Australian Capital Territory

Field guides are frequent best sellers among natural history books, even with recent competition from online 'citizen science' sites. Have you seen a new or interesting bird or flower or lizard or dragonfly or tree in your neighbourhood or on your travels? Chances are there is a field guide that will help you find out what it is. With luck you will even find a regional guide, where a diligent author has already narrowed down the daunting full Australian fauna or flora to something more manageable.

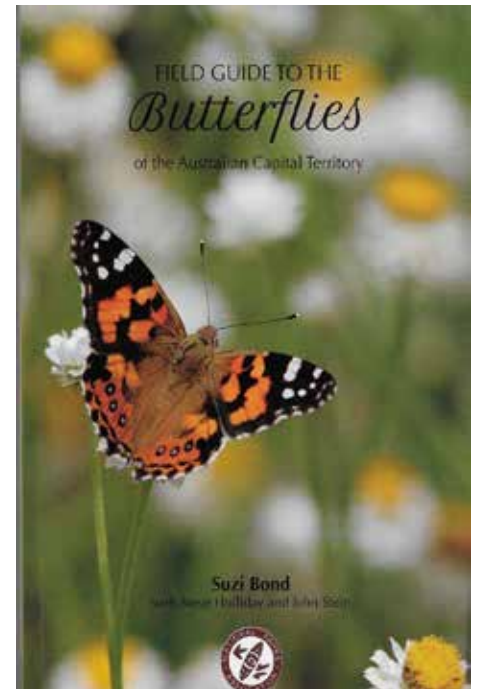
Suzi Bond, Steve Holliday and John Stein have now produced a guide to the 87 species of butterflies known from the ACT, representing 20% of the Australian total. Their *Field Guide to the Butterflies of the ACT* opens with a 20-page introductory section covering the relationships of butterflies to other insects, their structure, life cycle, behaviour and host (food) plants. The varied environment of the ACT, an area of 2360 km² ranging in elevation from a riverine corridor at 430 m, through grassy plains and urban gardens to the crest of the Brindabella Range at over 1900 m, is discussed in terms of butterfly habitats and conservation. We are then shown how to attract butterflies to our own gardens by providing them with nectar-producing plants to feed from, and caterpillar host plants that female butterflies can be enticed to lay eggs on.

The bulk of the book is devoted to individual species treatments, each being given a two-page spread with text on the left, illustrations and distribution map (ACT only) on the right. This section of the book is organised and colour-coded by taxonomic family, of which there are five represented in the ACT: swallowtails, skippers, pierids, nymphs and blues. Each family is introduced with a summary of its members' distinguishing features, life cycle, breeding and behaviour, and a list of the local representatives. These are quite unevenly represented in the ACT, with a total of 29 blues but only six swallowtails. For the beginner, getting to know the families is an important step towards getting better acquainted with butterflies in general.

The text on each species covers its physical features; behaviour; abundance, distribution and 'status' (whether resident, migrant or vagrant) in the ACT; preferred habitat; and larval host plants. Recorded ACT localities are listed, except in the case of ubiquitous species. To help with identification, other similar species are listed; these can then be looked up in case of uncertainty. The life cycle is described, and phenology illustrated diagrammatically by a calendar. A lot of work has gone into the coloured ACT distribution maps, which show not only the localities at which each resident species has been recorded, but its modelled distribution as core, intermediate or marginal 'inferred habitat'. I was disappointed to find no explanation of the criteria used to carry out this modelling, but this is a minor criticism. The myriad colour photographs of adult butterflies, and in many cases eggs, caterpillars, pupae and host plants, produce a visual feast. Over 40 people have contributed these images, and the achievement of getting such a gallery together is admirable in itself.

The book finishes with an interesting six-page section titled 'Selected moths of the ACT', illustrating 20 moth species or families chosen 'because they are either mistaken for butterflies, are commonly encountered, are iconic species or have an interesting story to tell', followed by a glossary, a reference list and a 3-part index.

Good field guides are not just efficient and practical tools to identify plants and animals. They are a joy to simply browse, to wonder at the infinite variety of life around us. For many budding naturalists – and I think back to my own early days observing insects around me – field guides have been an entry to a world that at first seemed impenetrable. The massive diversity of insects will always be a challenge for identification in the field, but with their *Field Guide to the Butterflies of the ACT*, the authors have delivered an outstanding tool that will not only help us identify a butterfly, but will also enlighten and stimulate many casual observers of the insect world in general. And the Publication Working Group of the National Parks Association of the ACT have produced a worthy addition to their already fine portfolio of local field guides.



Top: Book cover; Above: a typical page.
Photos: Kim Pullen.

Field Guide to the Butterflies of the Australian Capital Territory,
by Suzi Bond, Steve Holliday & John Stein. Canberra, National Parks Association of the ACT Inc., 2016.
ii+229 pp, illustrated.

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FOG dates ahead

Saturday **15 July, 2–5 pm:** Mid-winter gathering, Mugga Mugga ACT.
Register with paul.archer@fog.org.au

Saturday **15 July, mid-afternoon:** Special General Meeting of FOG,
Mugga Mugga ACT to elect two Honorary Life
Members. Register with paul.archer@fog.org.au

Sunday **27 August, morning:** Stirling Park workparty.

Sunday **24 September, morning:** Yarramundi Grassland workparty.

Saturday **7 October, morning:** Hall Cemetery woodland workparty.

Sunday **29 October, morning:** Stirling Park workparty.

Saturday **11 November, morning:** Hall Cemetery woodland workparty.

Sunday **12 November, afternoon:** Annual wildflower walk, Stirling Park.

Sunday **26 November, morning:** Stirling Park workparty.

Sunday **26 November, morning:** Yarramundi Grassland workparty.

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