News of Friends of Grasslands

supporting native grassy ecosystems

November - December 2000

FOG'S COMING EVENTS

IMPORTANT MESSAGE –

FOG Needs your Support for Cooma: A national workshop with a Monaro flavour

It is important that we get as many members to the Cooma workshop as possible. We realise that for many it will be a work day and/or you may need to travel a distance. If you cannot make it on both days, one day will be rewarding.

Why is it important that we make Cooma a success?

- Cooma is a major activity drawing together the farming community, NSW and ACT government agencies, grassland conservationists from other States and regions, and ACT and SE Australian conservationists. It will provide a major opportunity to move forward.
- Conservation demands we rethink our attitudes and behaviour, question our land use and conservation practices, acquire new learning and skills, understand a whole range of stakeholders and how to communicate with them. This workshop will clarify these demands and how to respond.
- Complacency and conservation don't mix. Grassy ecosystems are disappearing at an alarming rate right now. To redress this, FOG has been very energetic in the ACT, the region and further afield. The Monaro (probably the best temperate native grasslands and grassy woodlands in Australia) has been a key FOG focus. This workshop will demonstrate to people in rural areas the importance of conservation and the tourist dollars this may attract to the region.
- Grassland conservation is entering a new phase. There is now much more insight into what has to be done and how to do it. This workshop will disseminate a lot of new and solid information about conservation.
- Conservation is often fragmented and it is necessary to reintegrate our understanding in the broader environmental context. The workshop will show how grassland conservation fits into the broader environmental picture and rural Australia.
- For a long time conservationists have looked for ways to get all stakeholders to work together. This workshop will illustrate how far this has succeeded.

FOG is staking its reputation on this workshop

However, unless we have good support for the workshop, the cause of grassland conservation will be set back. FOG has much influence but this workshop will help make or break that. So we need your support on this one. We know you will be rewarded in hearing how grassland conservation has come of age, how conservation is being accepted as part of everyday life in a rural setting, and of the exciting developments taking place. You will be able to take away many lessons (conservation policy, information on what is happening elsewhere and how to get resources, how to evaluate sites of interest to you, what works and what doesn't). You will develop your network of contacts and friends. Your personal learning and experience will be a welcome contribution. We know that for many, coming will mean a sacrifice, but conservation comes at a cost. The organisers will do their best to assist you to get there. We have also kept the cost low through asking each contributor to contribute their own time and resources and putting in many unpaid hours.

So please make every effort. Get others to come. You can come to any or all of the three activities: the workshop on the Friday, the dinner on the Friday night, the grassland tour and lunch on the Saturday. For those coming from further afield we would be happy to show you other sites in the ACT and in the region. If you have transport problems or accommodation problems talk to the organisers, Michael Treanor, David Eddy or me. If you can help in any way also let us know quickly. We still have room for poster and other displays but contact us quickly on this.

We had advertised that the cost increases after 1 November. We shall now continue to offer the reduced rate for applications arriving before 16 November. We are enclosing a further brochure for you to use or pass on to someone else. If you want a copy of the proceedings we will send these to you for $10 including postage, if you apply for them now.

Geoff Robertson, President

SPRING / SUMMER

Saturdays 4 AND 18 November 2000 - FOG RAIL EASEMENT SURVEY Our rail easement survey between Williamsdale and Cooma still could use some more eyes and legs (other body parts also welcome!!). Please contact Margaret if you will be joining us for either or both Saturdays, so we can consolidate plans and pass on meeting arrangements. We would also like some help after the survey, to enter the data in preparation for the report that will be written. Please contact Margaret if you can help with this aspect of the survey.

Saturday 11 November, 2pm – Mulligans Flat grassland We'll visit a different area of Mulligan's Flat this year. Drive out Gundaroo Dr, negotiating the current detour near the Gungahlin Town Centre (using Gozzard St). Once you hit the gravel road, travel 2kms until the huge pine trees and the Mulligans Flat sign on the right.

Saturday/Sunday 5/6 January 2001 – Weekend camping visit to Tantawangalo (half an hour south of Nimmitabel) to see the newly-described Wilkinsons' Leek Orchid *(Prasophyllum wilkinsoniorum)* growing in a basalt cap grassland within Tantawangalo National Park. This orchid was discovered by Rainer Rehwinkel last December, and we shall feature it in a future newsletter.

For information about activities (including carpooling details), please contact Margaret Ning on 6241 4065 (home) or 6252 7374 (work).

ALSO OF INTEREST

BROOKS HILL RESERVE PROGRAM, spring/summer 2000

Creatures of the Night - Friday 3 November Meet in the bottom car-park at 7:40 pm for an evening walk and spotlighting session. Bring sturdy footwear, a jumper and a torch. For more information, contact Nicky Webb at webblette_one@yahoo.com or phone 62990727

PTO FOR MORE EXCITING EVENTS

Working Bee -Sunday 3 December
Join us for an attack on the phalaris and other weeds invading the reserve along its northern boundary. Meet in the bottom car-park at 9:30 am. Bring a hat and gardening gloves. More information, contract Hilary Merrit on 62369317.

ENVIRONMENT TOURS
Ian Fraser is a local naturalist and committed conservationist who is also a long-standing FOG member. This year, his tour program has included two grassland tours, one of which has already passed. Details for the second follow. Phone Ian or Margaret McJannett on 6249 1560 for more information.

Discovering the Monaro, Saturday/Sunday 18/19 November
A weekend's exploration concentrating on a series of little-known grassland remnants on the great Monaro plains. Includes a new nature reserve, cemeteries, and unsuspected little treasures. Cost $165, $145 concession, all inclusive (twin share motel accommodation).

Thursday December 14th: Society for Growing Australian Plants, December meeting will be hosting a gathering of artisans who are exhibiting & selling their creations. The speaker at the meeting will be Dr Helen Hewson, on Botanical illustration, but the works on show and sale will also celebrate their creators' feelings for Australian plants and animals. There will be paintings, cards, textile items, pottery and crafted gifts in many forms. Please delay your Christmas shopping & join in a December spend at the Hughes Community Centre, near the shopping centre at 8pm!!

IN THIS ISSUE

NEWS ROUNDUP

Good news on Bedingfield Grassland

In September, the Commissioner for the Environment presented his report, *Environment Values of Conder 4A* to ACT Urban Services Minister, Brendan Smyth. The recommendations were

- to join Templestowe and Tom Roberts Avenues by the nearest possible route (a long standing FOG recommendation),
- to allow some housing at the site but substantially keep the grassy ecosystem (FOG had already accepted housing in Conder 4B and would prefer no or little housing in 4A largely for buffer reasons),
- a ten year moratorium on development with a reassessment after eight years (acceptable to FOG although we would have preferred direct incorporation into Canberra Nature Park), and
- involvement of community groups, including FOG, in management and monitoring of the area (FOG is prepared to make this commitment).

The report contains some interesting observations about the interconnection of economic, social, aesthetic and cultural considerations and argued for the greater use of the precautionary principle. More directly relevant, is the conservation evidence adopted. This included:

- presence of a large number and frequency of native species (FOG plant list)
- presence of Keys Matchstick grasshopper (see Kim Pullen's article on page 4)
- presence of a large number of declining grassland species at the site

These were all arguments made strongly by FOG in its recent submission.

Agreement by Minister

The Minister made a statement on 25 September 2000 agreeing to these recommendations, stating this strikes a reasonable balance between the need for residential development and the environment. FOG essentially agrees.

The following was included in his statement. "Conder 4A has always been proposed for residential development as part of the original planning for Conder, and has been zoned for residential on the Territory Plan since it went through public consultation and was adopted in 1993, under the then Labor government. The original proposal to develop the site at Conder 4A was carefully considered by Planning and Land Management, the Conservator of Flora and Fauna, the Flora and Fauna Committee and the Commissioner for Land and Planning- all of whom endorsed the development proposal. They endorsed it on the grounds that the area was not required to be retained for conservation of the Yellow Box/Red Gum Grassy Woodland ecological community. Although on the Action Plan for this species, their combined expert advice was that the quality of the vegetation at Conder 4A was not considered essential to be preserved." This reflects the Government's position on other grassy ecosystem sites in the ACT – that is there no commitment to conserve all areas identified by the Action Plans and sites will be decided on a case by case basis.

Some concluding observations

The outcome is very satisfactory, especially as it appeared that much of Conder 4A would have been lost without the Commissioner's intervention. In addition the ACT Government decided to save Conder 9 some time ago. The arguments and recommendations that FOG has put forward in its submissions have been accepted in the Commissioner's report. Of considerable benefit has been the advances made in identifying what methodology should be adopted in identifying and conserving grassy ecosystems.

Many people gave their time to this work and they should feel pleased with the outcome. FOG would also like to acknowledge those who gave their professional time voluntarily – the report acknowledges these people. We consider that the Commissioner and his staff have performed an excellent and time consuming task. We thank them for listening, acting honestly, and producing a report - essential reading for grassland issues. We would like to thank the Minister, PALM and Environment ACT for agreeing to the Commissioner's report. Finally Michael Bedingfield should be recognised for his efforts. He single-mindedly saved Conder 4A, which we might now refer to affectionately as Michael Bedingfield Grassland.

Visit to Rob Roy

Saturday 22 September, FOG visited the Rob Roy Reserve for the first time. If you have a little time and want to show friends a good grassy woodland site in the south of Canberra this is a good one to visit. It requires some walking from Conder to get

there but even before the reserve is reached there is some spectacular grassy woodland. FOG is compiling a plant list from this visit. Alan Ford reports on this visit on page 6.

Grassy White Box Woodland

Saturday 7 October FOG visited five sites in the Cowra area. We would encourage members to drop in on these sites if in the area. The following directions might help. The first site is Crowther TSR about two kilometres north of the Crowther Roadhouse (a pleasant place for a coffee). It is on the RHS of the Olympic Highway travelling to Cowra. Later, travelling north along the mid-Western Highway from Cowra, we visited cemeteries at Woodstock (the most widely known site), Lyndhurst, and Carcoar. Sometimes the cemeteries are a little out of town. We also visited a site at Mandurama but it is a little harder to locate. Plant lists are being compiled by FOG for all sites visited. Alan Ford's article on page 7 gives a little more of the flavour of the day and our leader, Donna Windsor, has an article in the next newsletter.

Black Mountain/Aranda Bushland

Some FOG members were privileged to join George Chippendale's annual Black Mountain ramble on a sunny Saturday 14 October. The Mountain was a profusion of flowers, a floral display which covered a range of families and showed off the orchids in particular. Gems like *Glossodia major* and stunners like *Lyperanthus suaveolens* mixed it with *Diuris* and the mysteries of the white *Caladenia*. One of the sources says that some of the white *Caladenia* are often seen together and may be difficult to distinguish. What an understatement!

If you weren't satiated by the brilliance of the Mountain you could go on to Friends of Aranda Bushland's walk in the afternoon: a different area a short distance from the Mountain walk. Again, a profusion of orchids once we got into the walk, but the lower slopes had *Themeda* and *Craspedia* just for a contrast. There was also a little *Poa* to look at in the higher areas. A great day on a great Mountain and surrounds.

Railway survey shaping up

The FOG Rail Easement Survey planned for 4 and 18 November is shaping up with a good number of experts and volunteers taking part. FOG plans to prepare a report on this survey which will identify the nature and composition of the better sites between Williamsdale and Cooma and any sites containing threatened species. Sites for the survey were selected on 23 and 25 October.

Bombala TSR survey

NPWS (Rainer Rehwinkel) and FOG have agreed to undertake a grassland survey of travelling stock reserves (TSRs) in the Bombala area. There are 43 TSRs in the area: 6 over 40ha (the largest being 88ha), 7 between 20ha and 40ha, 14 between 5ha and 20ha and 16 under 5ha. At each site, a site sheet (using Rainer's Rapid Assessment Method) will be completed. This will provide a comprehensive list of plants and their frequency. The survey will identify threatened, uncommon and declining species and produce some other useful data. A report will be prepared to advise on the future management of these sites and the data gained will be added to the 900 NPWS grassland sites database. It will not be possible to visit all sites and advice from Graham Hillyer, from the Bombala Rural Lands Protection Board, has assisted in prioritising the sites to be visited. If you are interested in helping, the survey dates are 21 and 27 November and 5 and 12 December – we also need help in preparing the report.

The beautiful Lyperanthus suaveolens (Brown Beaks) seen on the Black Mountain Ramble
Photo: Jean Geue

Grassy ecosystems applications

Applications for the WWF/NHT Devolved Grants for Grassy Ecosystems closed on 13 October. FOG supported an application for the project *Conservation of TSR grassy ecosystems in SE NSW* by Bombala, Cooma and South Coast Rural Lands Protection Boards. This project aims to conserve 26 grassy ecosystem sites on TSRs in SE NSW. Joint Management Agreements will be negotiated for the sites to ensure long-term protection. Interpretive material (signs and brochures) and safe parking facilities will be provided. Conservation management (strategic fencing and weed control) will be instigated. FOG plans to provide voluntary assistance to NPWS in further surveys of TSRs in the Cooma and Bombala Board districts. The Bombala survey is mentioned in the previous paragraph. The ACT/NSW State Committee on the grant application meets on 9 November in Cowra and the national committee meets in January in Sydney. Geoff Robertson, FOG President, is involved in both bodies and this helps to keep in touch with grassland projects.

WGWG

At its 19 October meeting the Woodland and Grassland Working Group (WGWG) was given a copy of the Urban Services (PALM) draft plan for residential development at East O'Malley. PALM officials gave a presentation. All the 107ha originally designated for development was identified in Action Plan 10 as Yellow Box – Red Gum Grassy Woodland. The Action Plan suggested that 42ha of this area be incorporated into Canberra Nature Park (this has since been agreed to by the Government), 45ha be designated as urban development and another 20ha be reviewed. The latter, we understand, largely consists of very high conservation value woodland. Of the 45ha, the draft plan recommends that 35ha be treated as urban, and of the 20ha about 12.5ha be included in urban development. The 42ha is east of the unnamed creek that runs through the area. Most of the other 17.5ha designated as non-urban would be a strip on the western side of the creek (12.5ha) and a further corridor (5ha) to a nearby hill. PALM would like to see some of the original bush nature of the site preserved (although there are no guarantees about this) and will require a high proportion of older trees be retained. Other conservation issues relate to Aboriginal and

some old European settlements sites. There were many questions but no conclusions drawn. WGWG will be considering its reactions to this in the near future.

Radio Hill update

Six valiant FOG members set off on Saturday 21 October to do battle with the weeds on Radio Hill, our threatened species site for the Monaro Daisy in Cooma. The chain saw was in constant use as we battled Hawthorns and also toppled all of the trees that had been planted on the site long-ago, including natives (with the exception of two Snow Gums). We also lopped away at the Rose briar, another nuisance that could be fatal for the natives unless it is brought under control. There is now largely only mopping up to be done with these nasties.

This is the sixth visit we have made to this site and FOG's contribution is a solid indication of our conservation credentials. The site is within the limits of a significant rural settlement in our region and it will play a longer term role in local conservation outcomes.

Through the efforts of David Eddy, the NSW Government (Richard Amery, Minister for Land and Water Conservation) has agreed to supply funding for fencing and weed management of around $10,000. Hopefully the fencing will be organised during the next month. FOG has received approval from Cooma Council to do this. The money for weed control will be used for contractors to spray St John's Wort, Briars, Hawthorns, Boxthorns and possibly some African Love Grass. FOG's remaining energies will address signs, brochures, and a management plan.

FOG brochure reprinted

The FOG brochure has been reprinted. If you would like some copies for distribution, please contact Margaret.

KEY'S MATCHSTICK GRASSHOPPER

Kim Pullen

Key's Matchstick (*Keyacris scurra*) is an inconspicuous grasshopper that lives in temperate native grasslands over a wide area of inland south-eastern Australia. It probably originally occurred semi-continuously from the Southern Tablelands of NSW and the ACT south and south-west into Victoria. As these grasslands were cleared, grazed and built upon, Key's Matchstick disappeared from many of its former haunts.

We know more about the distribution and biology of this grasshopper than about most other invertebrates because it was the subject of a long-term genetic study by Michael White and his colleagues during the 1950s. Professor White sampled the species intensively within its range, and found that it existed in two chromosome races overlapping geographically in a zone west of Canberra. The grasshoppers seemed to need relatively undisturbed habitat, and many of White's collections were made in cemeteries and railway easements surrounded by habitat now unable to support the grasshopper. Today, some of White's sites no longer have any Key's Matchstick grasshoppers. Mowing and grazing have probably contributed to the demise of these fragmented populations. Once such isolated populations die out, recolonisation of the site is unlikely since the grasshoppers are wingless and there is no nearby source of replacement.

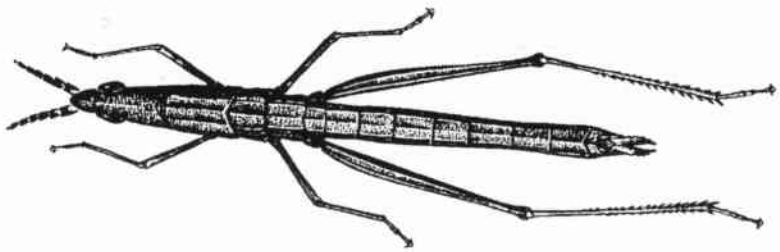
In a recent study, Rowell & Crawford (1995) surveyed 700 hectares of woodland and grassland in the northern ACT for the presence of Key's Matchstick. They found the grasshoppers on five sites within the ACT reserve system — Kambah Pool and New Station Creek in the Bullen Range Nature Reserve, Gibraltar Rocks and Tidbinbilla Valley in Tidbinbilla Nature Reserve, and Mulligans Flat Nature Reserve — and at two other sites — 'Lambrigg' Station and the National Transmission Agency enclosure at Gungahlin. None of the seven sites was large — their combined area was only about 25 hectares. Within nearby NSW, Key's Matchstick was found along the railway easement between 'Tralee' and Williamsdale, and at Captains Flat cemetery.

Since Rowell & Crawford's work, Key's Matchstick has been found abundantly on the lower slopes of Mount Jerrabomberra by Michael Calkovics, and on the southern slopes of Tuggeranong Hill in the Canberra suburb of Conder. Both these sites are threatened by housing developments: the Mount Jerrabomberra population has apparently already been at least partly obliterated, whereas it now appears that the Conder site (4A) will be preserved.

Grasshoppers lay their eggs in pods inserted into the soil. Most species hatch in spring, the immatures (nymphs) passing through several moults to mature in summer. Key's Matchstick is unusual in that the eggs hatch in late summer or autumn. Males mature quickly, becoming adults by May, but females continue through winter as nymphs, maturing in spring. Mating takes place in spring and early summer, followed by egg laying, then the adults die. Thus they avoid the desiccating summer conditions altogether. There is one generation per year.

Researchers earlier thought that Key's Matchstick required Kangaroo Grass (*Themeda triandra*) for shelter and Yellow Buttons (*Chrysocephalum apiculatum*) for food, but now that the grasshopper has been collected in places where one or both of these plants are absent, it is clear that neither is necessary for the grasshopper's development. Captive individuals in the laboratory fed on a range of introduced and native plants, including *Scirpus*, *Acaena ovina*, *Plantago varia*, *Chrysocephalum apiculatum*, *Podolepis acuminata* and *Craspedia uniflora*, as well as the introduced *Acetosella vulgaris*, *Rosa rubiginosa*, *Lavandula stoechas* and *Salvia verbenacea* (Blackith & Blackith, 1966).

There is a lot we don't know about the biology of Key's Matchstick grasshopper. What does it normally eat? What shelter does it need, if any? What are its natural enemies, and how are they affected by



Key's Matchstick grasshopper (left)

habitat changes? If, as we presume, it lays its eggs in the soil, does that soil have to meet any special requirements? To know how best to manage Key's Matchstick, we need to know these things. FOG members can contribute to our meagre knowledge of this interesting insect by learning how to identify it, noting where they see it and observing what it is doing.

References: Blackith, R.E. & Blackith, R.M. (1966). The food of morabine grasshoppers. Australian Journal of Zoology 14: 877-894 and Rowell, A. & Crawford, I. (1995). *A survey of the morabine grasshopper Keyacris scurra (Rehn) in the ACT. Report to the Wildlife Research Unit, ACT Parks and Conservation Service. CSIRO.*

DECLINES IN WOODLAND BIRDS IN NEW SOUTH WALES

Barry Traill

This paper was presented at the Woodland Birds seminar held in Forbes on 11 April. Barry is from Birds Australia; for correspondence: RMB 1207 Chiltern 3683, email woodland@albury.net.au

Changes since European settlement

The ecological effects of European invasion and settlement of the temperate woodlands can be broadly categorised as occurring in three phases. These phases occurred at different times in different districts.

Firstly there was the initial pastoral phase by squatters with the introduction of sheep and cattle, clearing of some small areas in river valleys, hunting of some larger animals such as Bustards and the loss of aboriginal land management such as their hunting and burning patterns. It's not often recognised that some birds declined and disappeared during this phase, long before extensive clearing commenced. The only bird to become extinct on the Australian mainland is the Paradise Parrot, a former inhabitant of the grassy woodlands of northern New South Wales and southern Queensland. Grazing by stock seems to have caused its demise. In the temperate woodlands of what is now the wheatbelt, most affected seem to have been seed-eating species that lived in the better watered, more fertile grassy woodlands favoured by stock. As well as the Paradise Parrot some other seed eaters such as the Star Finch, Squatter Pigeon and Black-throated Finch disappeared or declined greatly with the impact of grazing by introduced stock. Species such as Bustards, Brolgas and others also disappeared or declined greatly at this stage, possibly due to overgrazing. An extension of this phase can be seen still occurring in the semi-arid country of New South Wales where extensive grazing of native vegetation still occurs.

The second phase is one of extensive clearing for cropping and improved pastures. This phase has affected most severely the birds (and other groups of native plants and animals) of the central NSW wheatbelt. With the exception of a few species which specialised in purely coastal vegetation types, the birds of the coastal and mountain areas have been better protected by the large areas of forest unsuitable for clearing for agriculture in the ranges of the Great Dividing Range. Depending on where the boundaries are drawn about 70-80% of the woodlands of the central wheatbelt have been cleared. As a result of that clearing we are now in the midst of a major wave of extinctions in woodland birds. This phase is discussed in greater detail below.

The third phase of change is intensification of agriculture and urbanisation, including increased intensity of cropping, irrigation developments, and subdivision into residential lifestyle blocks. This phase is associated with the continuing degradation and complete loss, or near complete loss, of remaining native vegetation. This phase can be seen most clearly in Britain and Europe where species such as Lapwings and some smaller songbirds are disappearing. These were species which were assumed to be able to readily live in agricultural systems. This trend certainly occurs in Australian cities and there are some early indications in some rural districts that birds such as Australian Pipit and Black-faced Woodswallow are declining. These species were thought to be able to live in agricultural landscapes. However, they may in fact be unable to live in very highly cleared, intensively managed agricultural districts.

Declines in woodland birds

Table 1 lists species found to be declining in New South Wales woodlands but which are not yet listed as threatened in New South Wales. As discussed in Reid (1999) the species are nearly all passerines with wide distributions. In some cases the species are still widespread but there is increasing evidence of rapid declines in these and possibly other species from throughout Australia (Robinson & Traill, 1996; Reid 1999).

Table 1 Some of the woodland birds not yet listed as 'threatened' but which are known to be declining in New South Wales' woodlands. Other species are also likely to be declining.

Emu
Black chinned Honeyeater
Jacky Winter
Crested Shrike-tit
Painted Button-quail
Crested Bellbird
Spotted Nightjar
Red-capped Robin
Rufous Whistler
Brown Treecreeper
Hooded Robin
Restless Flycatcher
White browed Treecreeper
Eastern Yellow Robin
White-browed Woodswallow
Speckled Warbler
Grey-crowned Babbler
Dusky Woodswallow
Chestnut-rumped Thornbill
White-browed Babbler
Diamond Firetail
Southern Whiteface
Varied Sittella

An example of such decline can be seen with the Grey-crowned Babbler which has become extinct in South Australia, most of Victoria and parts of its eastern range in New South Wales in the last 30 years. Although still common in central and northern New South Wales the current trends indicate that the declines are likely to continue into the northern part of its range. Similar trends are now known from a number of species. An advanced case is the Regent Honeyeater. It was formerly a moderately common bird of temperate woodlands. It became extinct in South Australia in the 1970s, and in central and western Victoria in the 1980s. It is now listed as nationally endangered and is extinct through most of its former range, being now largely restricted to three remaining districts in northern Victoria and New South Wales.

The extinction process

There are several points about this process of extinction which are worth highlighting and which are discussed briefly below.

1. Extinctions may occur years after the clearing ceases in a district. One of the most striking points is that the local and regional extinctions of the birds in NSW are occurring in districts many years after broad-scale clearing has ceased. This has been tagged the extinction 'debt'- the debt of extinction is often paid off years after the clearing occurs.

This process seems to result from two related processes. Firstly after clearing most of a district for agriculture there usually remains some small areas of bushland with small surviving populations of birds. These populations may have no trouble breeding successfully and maintaining their populations in most years, but may be easily wiped out by the conditions that occur in a drought or other 'natural' disaster. This may be decades after the clearing ceased. An additional problem for such populations may be their isolation from other areas of native vegetation. This may prevent dispersal of young birds to and from the area, increasing the risk of local extinction.

The related set of problems for these populations is that of continuing degradation of the fragments that remain. Small remnants of native vegetation are prone to weed invasion, increases in soil nutrients, changes in water tables, tree dieback, increases in predators, overgrazing and other degrading impacts. For example a major problem for woodland birds in small remnants is the increase in numbers of a native bird, the Noisy Miner. The Noisy Miner forms colonies which aggressively exclude most smaller native birds. The Miners are rare or absent in large areas of woodland. Such changes in the quality of habitat mean that many birds may eventually disappear from small remnants as the habitat becomes too poor to support some species.

2. Small blocks of woodland don't support some birds. Recent research indicates that many species are generally absent from remnants below 20 hectares in size. There is also an increasing trend in at least some districts for species to be disappearing from woodland remnants in good condition which are two to three hundred hectares in size. A notable example is the Hooded Robin which is in very rapid decline through most or all of NSW. It doesn't seem to survive in remnants smaller than 200 or more hectares. The most extreme example seems to be the Crested Bellbird - it disappeared from Chiltern in north-east Victoria which has approximately 4,500 ha of well protected habitat. This species seems to have disappeared from the Goonoo State Forest in central New South Wales which has some 60-70,000 hectares of apparently suitable habitat.

3. Not all woodlands are the same. Some birds are 'generalists' and will use a wide range of woodland or forest types in their range. Others are more specialised - they depend on particular plant species or particular habitats. Not surprisingly, species which depend on woodland types on flat and fertile soils are usually at greater risk because a greater proportion of such habitats have been cleared and grazed. An example is the extinct Paradise Parrot and the Grey-crowned Babbler mentioned above. Both of these species preferred or prefer grassy open woodland types found on relatively fertile soils. Just because there are some types of woodland left on farms on rocky ridges or in State forests on sandy country in a landscape, doesn't mean that there won't be problems for many species.

4. Some species do survive well in most agricultural landscapes. Not all birds are threatened - some species do well in landscapes that have been largely cleared. Species like Galahs, Pied Currawongs and Noisy Miners are probably more common than they ever were. This in itself can be a problem as these high densities can exclude other species or reduce their populations. It can also create problems of public perception because people still see large numbers of birds in landscapes and assume that everything is fine for birds when in fact many species are disappearing.

References

Reid, 1999. Threatened and declining birds in the NSW sheep and wheat belt: diagnosis, characteristics and management. Unpublished report for NSW National Parks and Wildlife Service.

Robinson & Traill, 1996. Conserving the woodland birds in the wheat and sheep belts of southern Australia. R.A.O.U. (Birds Australia), Melbourne.

NEW SITES VISITED BY FOG

Alan Ford

Rob Roy Reserve

The romantic tones of Walter Scott's novel for Scotland dominate the far southern landscape of the city with vistas west to the mountains. Nine from FOG set out on a sunny Saturday afternoon on 28 September to unlock the floristic mysteries of the lower slopes of Rob Roy.

We seemed to climb up a creek gully forever and kept finding vegetative gems every time we turned a corner or advanced over a ridge. (The afternoon's bad joke was a question as to how far away was the good stuff in the Reserve.) In fact, the afternoon was a lesson in the effect that aspect, soil, micro-climates and grazing regimes have on plant life.

Even Andrew Paget, who identified around 200 native and exotic plants during the afternoon saw three new taxa. You can imagine that the rest of us added a considerably larger number to our never seen before list.

Michael Bedingfield was our guide through the tortuous climb and was also available for advice on the next strange object that was found lurking in the undergrowth. Small, indistinct objects such as orchids or a Plantago were the subject of either wonder or debate, depending on the state of knowledge. As someone noted about these cases, one botanist will identify it as X and the profession will then spend 20 years on the issue.

The visit was timely for another reason. The ACT Commissioner for the Environment had just released his report on Conder and our experience on the slopes of Rob Roy, which is adjacent to the main Conder sites, showed the importance of the area on the grounds of floristic diversity.

I was particularly impressed by Barbed Wire Grass (*Cymbopogon refractus*), and the other Bulbine (*Bulbine glauca*), to say nothing of the yet to come orchids.

Our thanks to Michael Bedingfield for leading the party and to Andrew Paget for his assistance in identifying the latest mystery.

Keyacris Scurra, Superb Parrots and the Grassy Woodlands near Cowra

Six FOG members, ably led by Greening Australia's Donna Windsor and Bob Sly visited five sites in the vicinity of Cowra on a sunny Saturday 7 October. We began with coffee at Crowther Roadhouse (a good place to stop and relax) and then commenced at Crowther Travelling Stock Reserve (TSR), south west of Cowra. We had already noticed the superb creature known as the Superb Parrot flying over us as we travelled west - the first of the big three.

Crowther TSR proved to bea real little gem of a Grey Box (*Eucalyptus microcarpa*) grassy woodland. Superb Parrots flitted overhead, a Tiger Moth lingered in the grassland and a Gecko was revealed nearby. No Kangaroo Grass (*Themeda triandra*), only Wire Grass (*Aristida* sp.) and Corkscrew (*Austrostipa scabra)*, but a Calotis or two, the lovely bluebell (*Wahlenbergia luteola),* a Sun Orchid (*Thelymitra* sp.) and something that was entirely new to me, Small Vanilla Lily (*Arthropodium minus).* Somewhere in the vicinity of 40 native species - with the icing of Waxlip Orchid (*Glossodia major).*

Kim Pullen found Key's Matchstick (*Keyacris scurra)*, the grasshopper and second of the big three, in Woodstock cemetery, the towering White Box (*Eucalyptus albens*) grassy woodland that I'd heard so much about in the last 12 months. Well worth the visit. You have to treat this site with respect, the neighbours actively protect this remnant. This has Kangaroo Grass and among its specials, Native Flax (*Linum marginale)* stood out. In the vicinity of 30 native species were sighted in this quick visit. It's not that different in plant terms from what is here: the Bulbine Lily (*Bulbine bulbosa)* and the Yam Daisy (*Microseris lanceolata)* help to prove that.

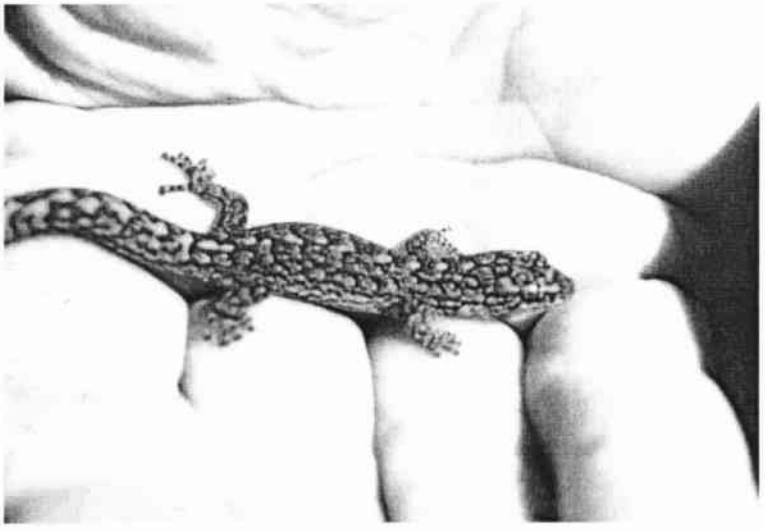
Lyndhurst Cemetery, a Yellow box (*Eucalyptus melliodora*) grassy woodland with over 20 natives sighted, including the little Golden Weather-grass (*Hypoxis hygrometrica)* and Scaly Buttons *Leptorhyncos squamatus.* This suite included something that appeared to be the Yass *Daisy (Ammobium craspedioides*).

A brief wayside stop at the railway line at Mandurama, uncovered 12 species including Hairy Guinea Flower (*Hibbertia riparia)* and a Bossiaea (*Bossiaea buxifolia).*

Then to the final stop for the day: the mixed grassy woodland (my memory is of Broad-leaved Peppermint (*Eucalyptus dives)* and Bundy (*E. goniocalyx*)) that is Carcoar Cemetery. This, like a couple of the others had a Greening Australia fence around part of the land to protect the remnant vegetation. Over 20 natives were recorded here, including Early Nancy (*Wurmbea dioicea)*, Yam Daisy and the little Glycine that had accompanied us throughout the day.

The third of the big three sightings was *Swainsona recta*. Its distribution is a thing of wonder, considering its fragile status. If you want to see it, you'll have to join the next FOG excursion to the south or, maybe, next year to the far north.

Our thanks to Donna Windsor and Bob Sly from Greening Australia and to Geoff and Margaret for organising a very different day in the grassy woodland remnants far to our north.



Geoff Robertson gives a hand to a Marble Gecko at Crowther TSR. **Photo:** Geoff Robertson

NATIVE GRASSES PROVEN VIABLE AT HUNTER MINES

(This article was first published in the Australian Minerals & Energy Environment Foundation's Groundwork Number 4, Volume 1, June 1998. *For further information contact Charles Huxtable at NSW Department of Land and Water Conservation on (02) 6545 1666.)*

Native grasses can be used to revegetate open cut coal mines in the Hunter Valley, according to a five year R&D project funded by the Australian Coal Association Research Program. "During the first three years laboratory, glasshouse and field trails have identified a number of warm and cool season native grasses with attributes suitable for mine rehabilitation. These include drought tolerance, production of self-sown seedlings and, if correctly managed, higher than adequate protein levels", said Principal Researcher Charles Huxtable, of the NSW Department of Land and Water Conservation's Scone research station. "During the next two-year stage we will locate reliable sources of quality seed, preferably from local provenances; and develop machine-sowing techniques."

The project was initiated by the Hunter Coal Environment Group, an association of professionals with environmental interests, mainly from coal mining companies, government agencies and consultancies. It followed industry dissatisfaction with current rehabilitation recommendations, which are based on introduced pasture species and native trees and do not include native grasses. Introduced species such as Rhodes grass produce a rapid and effective ground cover, but have high maintenance costs, form ecologically unsound monocultures and their stock feed value often is low. On the other hand, many native grasses are adapted to poor soils, erratic seasons and grazing. The question was: Could these virtues be transferred to mine sites?

Local check

Charles Huxtable checked just what was growing under the miners' noses in the Hunter. During the first three

years he identified 86 native and introduced grasses, 48 of them common. To help mine staff and others recognise and understand their local grasses, he distributed 40 herbariums around the valley. Each contained preserved specimens of 34 common perennial native and introduced species.

A native grass nursery was set up, so miners could see individual species growing in isolation from one another. The nursery has also allowed comparisons to be made of the protein content of the different species, grown under similar conditions. Seed supply was a major issue. "Because registered seed is available from only three native species - and in small amounts - harvesting wild stands is often a cheaper and more desirable option," Charles Huxtable said. A native grass seed harvester capable of collecting local provenance seed in the quantities needed by the mines was designed and built. It uses a rotating brush to dislodge seed from standing grass and holds it in a chamber. About 500kg has been collected so far.

Donna Windsor led an extremely successful day visiting 5 sites in the vicinity of Cowra. Photo: G. Robertson.

In field trials using small quantities of seed from beyond the Hunter Valley, 18 native grasses were screened for drought tolerance, response to fertiliser, topsoil requirements, herbicide resistance and ability to combat weeds. Some results were predictable - for germination and growth, topsoil generally proved a better medium than overburden. Others were more surprising - most species survived high rates of Grazon herbicide. At the end of the screening, the best performers included Wallaby grasses, Plains grass and Windmill grass. Based on this success, two commercially-available Wallaby grass cultivars, Taranna and Bunderra, were sown in one hectare plots at three mines. "The trial at Ravensworth indicated Taranna had great potential as a cool season species for autumn sowing, producing an average 21 large plants to the square metre after seven months," Charles Huxtable said. "At the other two sites I think the soil characteristics and topography beat us."

For a warm season trial, three locally-harvested native species were sown at three mines in the following spring, with introduced Rhodes grass used as a control. Results at one site were excellent, with Queensland Bluegrass forming a complete ground cover in plots at Howick mine. Again, poorer results at the other two sites were attributed to soils and seasonal conditions. Pot trials and a small field trial also showed that natives could be established in raw overburden, given suitable fertiliser and adequate moisture. Because of its potential economic significance, the team has recommended further study of this means of establishment. "At the end of year three we have quite a bit to learn, particularly about sowing and establishment techniques, overburden features and management of established stands of native grass," Charles Huxtable said. "But already it's clear from this project that, given appropriate conditions, native grasses are suitable for mine rehabilitation in the Hunter Valley.

Major recommendations

- Suitable cool season natives: Wallaby grasses, Plains grass
- Suitable warm season natives: Queensland Bluegrass, Couch, Windmill grass
- Best sowing season for both: Autumn
- Sowing rates: same for exotics if possible, but further work is needed to determine optimum rates
- Best substrate: topsoil
- Weed control: essential in year one

GRASSY ECOSYSTEMS GRANT FOR BEGA

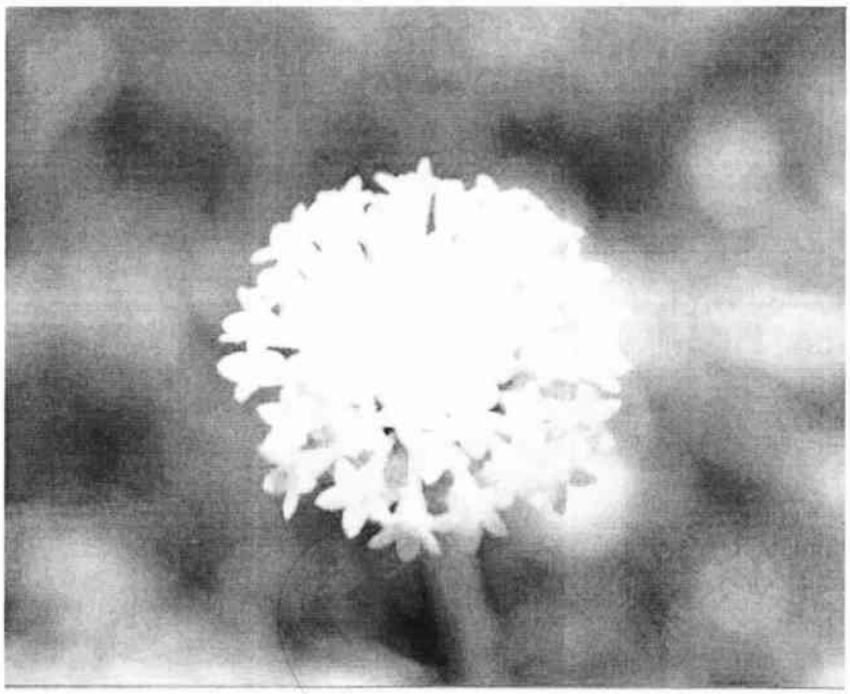
Jackie Miles (Contact details: Hawkshead Road, Brogo 2550, Phone: 6492 7285 Email: jmiles@acr.net.au.)

Hullo FOG. I noticed in the last newsletter, some interest expressed in the Grassy Ecosystems grant recently obtained by Bega Valley Shire Council. I am the person who will be working on this project. Survey work will commence in spring. Below is the background to the project, taken from the grant application:

The Bega Valley on the NSW far south coast has not been widely recognised as supporting significant grassy ecosystems. While much of Bega Valley Shire is forested and in public tenure, there are extensive areas on relatively fertile soils which once carried grassy open forests dominated by forest red gum (*E. tereticornis*) and rough-barked apple (*Angophora floribunda*) similar to the listed Victorian endangered community Gippsland Red Gum Grassy Woodland. These have been cleared for grazing and the original vegetation persists only as relict paddock trees, small patches of regrowth forest and areas of native pasture or secondary grassland. Description and mapping of vegetation types for the Eden Regional Forest Agreement (RFA) recognised the existence of a dry rainshadow valley grassy forest complex comprising four grassy forest types (Keith & Bedward 1999). Three of these are entirely confined to private property in agricultural areas, and small public reserves embedded in these areas such as roadsides and cemeteries. The nomination of 3 of these as Endangered Communities under the Threatened Species Conservation Act is currently being pursued.

Mapping/modelling of these vegetation types for the Eden RFA appears to be an

inadequate guide to their location and condition (J. Miles, unpub. report to BVS Council). A recent rapid targeted survey of some roadsides and cemeteries in agricultural areas revealed the location of about 50 roadside sites carrying regionally significant occurrences of particular grassy ecosystem forbs. Three of 6 surveyed cemeteries were found to contain secondary *Themeda* grassland of a high species diversity, including several forbs not previously recorded from the South Coast botanical division. (Species list below). Species composition in these cemeteries differs somewhat from that recorded on private property in sampling used to define grassy forests for the Eden RFA, suggesting that management practices on private property (grazing, lack of fire) have eliminated some forbs from these grassy ecosystems. Cemeteries/roadsides may therefore be the best remaining guide to the original understorey composition of the grassy ecosystems of the region.



The Yass Daisy (*Ammobium craspedioides*) spotted at Lyndhurst Cemetery . A true visual treat! **Photo:** G. Robertson

Management practices in both these reserve types appear to have changed in recent years. Roadsides are slashed and burned less frequently and extensively than formerly. Cemeteries, once slashed or burned sporadically by council or neighbours, are now largely managed by local committees, and mowing may have intensified as a result. Work is needed to document past management in consultation with Council and the community, so that management regimes can be devised and present practices modified if necessary to maintain the species diversity in these areas. Further targeted survey work is needed to determine what other significant grassy remnants exist. It may be possible to pursue Voluntary Conservation Agreements over some of the cemeteries to help ensure that management practices continue to be appropriate beyond the life of the project.

Bega Valley Shire has been poorly served by extension programs dealing with vegetation in the past. Currently there are two NHT funded programs running as well as the Native Vegetation Initiative, which provide incentives for conservation on private property. However, these concentrate primarily on restoring tree cover and health. Consequently there is almost no recognition in the region of the value of grassy vegetation. This needs to be redressed before remaining high conservation value remnants are inadvertently destroyed.

(New South Coast records of more typically Southern Tablelands species from roadsides, cemeteries and other council land from the last few years are: the shrub *Pomaderris pauciflora*, grasses *Chloris truncata* and *Enneapogon nigricans*, forbs *Lotus australis, Veronica gracilis, Cullen microcephalum, Leptorhynchos squamatus ssp A, Lespedeza juncea ssp sericea, Velleia paradoxa, Leucochrysum albicans ssp albicans var albicans, Bulbine bulbosa.* Species which have been recorded from the South Coast botanical division, but not from Bega Valley Shire before, are the grass *Capillipedium parviflorum*, forbs *Wahlenbergia multicaulis* and *Pterostylis truncata* and the small sedge *Eriocaulon scariosum*.)

ACTION PLANS FOR ENDANGERED AND VULNERABLE SPECIES

Naarilla Hirsch

Action plan for Yellow Box/Red Gum Grassy Woodland: An endangered ecological community

As you can tell from the length of this article, I found this action plan to be particularly interesting. The action plan defines yellow box/red gum grassy woodland as an open woodland community with both tree species usually present and commonly dominant or co-dominant. The trees form an open canopy above a species-rich understorey of native tussock grasses, forbs and scattered shrubs. The combination results in a mosaic of vegetation patches with features that are transitional between forest and grassland.

Other tree species may be associated with the grassy woodland community, including apple box, mealy bundy, candlebark, brittle gum, red stringybark, scribbly gum and she-oak, and are found where conditions are intermediate between those most characteristic of yellow box/red gum grassy woodland and other tree communities. The understorey is usually grass and forb dominated, but a shrub layer, when present, may contain silver wattle, lightwood, hill she-oak, burgan or tea tree, blackthorn species, peach heath, native cherry and *Cassinia* species. The ground layer frequently includes kangaroo grass, red-leg grass, wallaby grasses and, where there isn't grazing, a rich flora of forbs, including common woodruff, bulbine lily, yellow button, glycines, scrambled eggs, stinking pennywort, bluebells and early nancy.

Yellow box/red gum grassy woodland provides habitat for many animals, including birds, bats, reptiles, ground dwelling and

arboreal mammals, and invertebrates. In the ACT, about 50 bird species occur as residents or summer migrants in grassy woodland, which is important breeding habitat for many species including crimson rosellas and kookaburras. In woodland that retains the native grassy understorey, you find species that were once more widespread, such as the jacky winter, diamond firetail, rufous songlark and hooded robin. Other birds found in grassy woodlands include the western gerygone, crested shrike tit, brown falcon, Australian kestrel and wedge-tailed eagle. Some consider that more than a quarter of the landbirds of woodlands are in decline or threatened.

Mammals occurring in grassy woodlands include the eastern grey kangaroo, wallaroo, swamp wallaby, red-necked wallaby, brush-tailed possum and sugar glider. The echidna is also present, sheltering in the soil and feeding on ants and termites. Where hollows have formed in the branches and trunks, yellow box and red gum are potential habitat trees for three species of bat. Many species of reptiles have been recorded in woodland areas and abundance varies widely, examples being the tree dragon, shingleback, three-toed skink, common dwarf skink, common bearded dragon, Rosenberg's monitor, olive legless lizard, red-bellied black snake and eastern brown snake. Frogs such as Peron's tree frog and the smooth toadlet occur in wetter areas within woodlands and may use logs, rocks and thick grass for shelter.

Following European settlement, four principal factors have modified the structure of woodland. The first is ring-barking and selective clearing, combined with the destruction of seedlings by rabbits and livestock. Grazing has also reduced the height, cover and biomass of the grassy stratum. The third is deliberate introduction of exotic pasture plants such as phalaris and cocksfoot. Finally, the response of woodland areas to disturbance has sometimes been dense regrowth with eucalypt saplings and the development of a secondary shrub layer.

Continuing threats to grassy woodland are: clearing for agriculture and grazing; firewood collection (yellow box is high quality firewood); failure of tree regeneration; rural tree die-back; pasture improvement resulting in modification of ground cover; grazing at levels which suppress regeneration of trees and alter the understorey; invasion by weeds and feral animals; and changed fire regimes. Provision of urban services and infrastructure in areas with good terrain for building leads to fragmentation, separation and degradation of remaining viable habitat areas. Most of the remaining yellow box/red gum grassy woodland in the ACT lies in the gently undulating open country in the northern third of the Territory. The land here is easy to access, suitable for urban development, and close to existing towns and urban infrastructure.

Yellow box/red gum grassy woodland was declared an endangered ecological community in the ACT because it is at risk of premature extinction. Causes include severe decline in distribution, marked alteration of composition or structure, the community approaching non-sustainability, loss or decline of species playing a major role in community function, and community processes being altered to the extent that interaction between the community components will be impeded.

Kim Pullen enjoys a quiet cuppa on our Cowra activity. Photo: G. Robertson

Conservation objectives are to conserve the most significant areas of yellow box/red gum grassy woodland, ensuring that coverage of the community in the ACT reserve system is comprehensive, adequate and representative. Conservation of viable woodland remnants in an off-reserve system and within the matrix of urban and other land uses are also objectives, together with promoting awareness of these conservation objectives (and specific management issues and actions) amongst relevant agencies, landholders and the community.

A range of management actions has been identified: including active collaboration with NSW for conservation of these woodlands; flora and fauna surveys in grassy woodland areas; ongoing monitoring in woodland areas following major changes in grazing, fire regimes or urban developments; and establishment of permanent reference areas to get baseline data for later monitoring. Conservation management of grassy woodlands will take into account the known requirements of threatened species that occur within them (see the next article in this series). Relevant management actions from action plan 1 (for native temperate grassland) will be applied to the grassy understorey, including the retention and/or enhancement of ecological community diversity and structure, control of destructive disturbance, fire and weeds.

The quality of some remnant grassy woodlands will be enhanced by appropriate management and regenerative measures such as replanting trees of the characteristic dominant species and, where feasible, understorey species (using a range of significant dominant trees to contribute to a seed bank for replanting). Also, replanting and regeneration will create links between remnant fragments. When assessing development proposals and applications to clear timber, particular consideration will be given to whether trees of the characteristic dominant species are involved and their potential value as habitat for native fauna and corridors between reserved areas.

Environment ACT's role will include provision of advice to individual rural lessees on biodiversity issues, development of management guidelines for land managers consistent with the primary land use purpose, and maintenance of a database containing information on woodland distribution and conservation values.

The action plan gives details of the location of and proposed actions for yellow box/red gum grassy woodland remnants in the ACT. About 21% of the remaining grassy woodlands in the ACT is already within reserves. Another 29% is within areas shown in the Territory Plan as Hills, Ridges and Buffers, Mountain and Bushland, or Murrumbidgee River Corridor, and will be

considered within future planning reviews. 7% is in areas of Territory land shown in the National Capital Plan as Designated Area (Inner Hills). About 19% is found on rural land, and, when existing lease arrangements are reviewed, will be covered by Property Management Agreements that ensure protection of conservation values. Some remnant patches (almost 10% in total) are on land which has been allocated for urban land uses. Such areas will be considered for incorporation, at least in part, into urban open space. Some woodland remnants with significant conservation values will be added to reserves in the area of Mulligan's Flat, Ainslie-Majura and Tuggeranong Hill.

Source: ACT Government, 1999. *Yellow Box/ Red Gum Grassy Woodland: An endangered ecological community*. Action Plan No. 10. Environment ACT, Canberra.

FLORA BANK

Naarilla Hirsch continues her summary of FloraBank guidelines

FloraBank The third FloraBank guideline is *Improving on basic native seed storage* and discusses relatively low cost approaches should you need to store seed into the medium term (5 to 25 years). Much seed (excluding fleshy seeds) can be dried to a very low moisture content (less than 5% of fresh weight) without loss of viability, and kept at low or sub-zero temperatures without damage. For each 1% reduction in seed moisture content, or 5°C reduction in storage temperature, there is a doubling of storage life.

It is probably not necessary to routinely monitor seed moisture content unless long storage times are envisaged. Rather, measurement of seed moisture content should be conducted as needed to refine drying techniques. Such measurement in seed of a particular species during the drying period should tell you when the seed is actually dry and allows you to observe visual clues to dryness that you can use as a guide next time you dry that species. Wider testing of seedlots allows you to observe just how good your drying practices are across the species you handle and to identify any need for improvement.

Artificial drying is a first step in improving on open air or 'natural' drying, especially when weather conditions are less suitable for natural drying. Some low cost approaches are to use a propagation igloo or greenhouse, a solar tumbler (similar to a compost tumbler), or a solar drying box (similar to a food drying cabinet). At slightly higher cost, you might obtain a second-hand clothes drying cabinet or similar, or find contract drying services offered locally by state agency forest seedbanks and commercial seed suppliers using, for example, forced ventilation kilns.

FloraBank recommends drying all seed and sealing in airtight resealable press seal plastic bags as the best low-cost option for packaging seed for storage. This approach is suitable for revegetation purposes, although not necessarily for storage of large quantities of seed for direct seeding or for storage longer than five years. Where there is a need, Flora Bank recommends upgrading to use heat-sealed laminated plastic or aluminum foil bags. Many seedbanks replace the sealed storage container with CO_2 on a routine basis, both as a fumigation measure and in recognition that metabolic activity in the seed is reduced when oxygen is absent. A useful refinement in technique is to use a small vacuum pump to extract all the air or CO_2 possible from the storage container prior to sealing, e.g. by using an inexpensive fish tank air pump.

FloraBank recommends a basic standard for orthodox seed storage at room temperature and humidity. Much orthodox seed that is well-dried, sealed in airtight containers, and kept at room temperature, will remain viable well beyond five years. This standard of storage may be considerably improved by lowering the temperature and humidity of the storage environment using an air-conditioner, refrigerator or freezer. Once seed is placed in storage, it is important that the temperature and moisture content remain constant.

As poor seed handling practices can undo many of the gains in storage life achieved by measures such as those above, FloraBank have may a few suggestions. These include avoiding unnecessary fluctuations in seed temperature and humidity through handling, allowing seed packages from storage to adjust to the temperature of the working area before breaking the airtight seal, keeping drinks, toilets and other moisture sources away from the work space in which seed from storage is handled, and individually labelling every package of seed in storage.

For a copy of this guideline, contact the FloraBank coordinator, Warren Mortlock, on 02-6281 8585 or email greenaus@ozemail.com.au.

NEWSLETTERS RECEIVED

A new newsletter we've started to get is *Grassland Matters* from the Mid North Grasslands Working Group (SA). The first issue includes information about grazing trials the group is starting.

The latest FloraBank newsletter has a list of reports and fact sheets that are available, including germination data sheets for grasses. Their website (www.florabank.org.au) also has a listing of native seed suppliers.

WWF's *Wildlife News* has an article about grants for 26 grassland projects in Vic, SA, NSW and the ACT. These include identifying further significant grassland sites in the Bega valley (NSW), and fencing and weeding at the button wrinklewort site at Trugamina Cemetery (Vic).

ANPCs *Danthonia* has an article on the new *Commonwealth Environment Protection and Biodiversity Conservation Act, 1999*, which replaces a range of existing Commonwealth legislation, including the *Endangered Species Protection Act 1992*. Further information about the Act can be obtained from Environment Australia on 1800 803 772 or at www.environment.gov.au/epbc/index.html. Alternatively, WWF has a series of fact sheets about it; contact Sophie Chapple on 02 6257 4010 or at www.his.org.au/epbcunit.html.

Don't forget that you can contact Margaret if you want to have a look at any of the newsletters discussed in this column.

FLORA OF AUSTRALIA GRASSES VOLUMES UPDATE

The grasses' CD is still on track to be completed by the end of 2000, and the first volume of the grasses (planned to consist of essays, a key to genera and maps of all species) should be out in the first half of next year.

ISOBEL CRAWFORD'S ANU CONTINUING EDUCATION COURSES

Grass identification

7-9pm on 3 Thursdays from 9 November, plus field trips 9-11am on 2 Saturdays 11 and 25 November, $115.

This course is for those who already have a basic knowledge of plant identification. Learn to recognise local grasses in the field, and to distinguish them from sedges and rushes, and in the laboratory learn to use microscopes and botanical keys. (Contact: Isobel 6257 1860)

FRIENDS OF GRASSLANDS INC
Supporting native grassy ecosystems
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Web address: http://www.geocities.com/fog_act

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Membership inquiries: Please contact Margaret Ning whose details appear above.

FRIENDS OF GRASSLANDS NEWSLETTER

You have read this far, so we must have kept your interest. If you are not a member of Friends of Grasslands why not subscribe to the newsletter? It comes out six times a year and contains a lot of information on native grassland issues.

You can get the newsletter by joining Friends of Grasslands. You do not need to be an active member - some who join often have many commitments and only wish to receive the newsletter.

However, if you own or lease a property, are a member of a landcare group, or actively interested in grassland conservation or revegetation, we hope we have something to offer you. We may assist by visiting sites and identifying native species and harmful weeds. We can suggest conservation and revegetation goals as well as management options, help document the site, and sometimes support applications for assistance, etc.

Of course you may wish to increase your own understanding of grasslands, plant identification, etc. and so take a more active interest in our activities. Most activities are free and we also try to arrange transport (or car pool) to activities.

If you are already a member, you might encourage friends to join, or even make a gift of membership to someone else. We will also send one complimentary newsletter to anyone who wants to know more about us.

HOW TO JOIN FRIENDS OF GRASSLANDS

Send us details of your name, address, telephone, fax, and e-mail, etc. You might also indicate your interests in grassland issues. Membership is $20 for an individual or family; $5 for students, unemployed or pensioners; and $50 for corporations or organisations - the latter can request two newsletters be sent. Please make cheques payable to Friends of Grasslands Inc.

If you would like any further information about membership please contact Margaret Ning, or if you would like to discuss FOG issues contact Geoff Robertson. Contact details are given in the box above.

We look forward to hearing from you.

Friends of Grasslands Inc
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