

News of Friends of Grasslands

supporting native grassy ecosystems

May - June 2000



FOG'S COMING EVENTS

AUTUMN/WINTER 2000

Saturday 29 April, 9am - Radio Hill, Cooma, Briar removal (part IV) We are hoping that some volunteers from WWF will also help on this day, so it would be wonderful to have a good turn out of FOG volunteers as well. If you can join us for the next skirmish in this worthwhile campaign please contact Margaret.

Future Radio Hill weeding dates:

20 May, 9am - part V
24 June, 9am - part VI
22 July, 9am - part VII
26 August, 9am - part VIII
30 September (??) - part IX

Saturday/Sunday 13/14 May - Souths TSR camping weekend, Bungonia Rd Isobel Crawford will lead us on this activity, east of Goulburn. We shall camp at the TSR on the Saturday night and there will be a large tent with accommodation for those who don't have their own. Contact Margaret if you'd like to join us for this activity, or even join us for only one of these days if that suits you. Maps will be sent out to people once they contact us about going.

(Isobel writes: The vegetation at Souths TSR is grassy woodland dominated by Argyle Apple (*Eucalyptus cinerea*), Cabbage Gum (*E. amplifolia*), Yellow Box (*E. melliodora*), with a well-developed ground layer of Kangaroo Grass (*Themeda triandra*) and many herbs and small shrubs. Many of these are rarely recorded outside TSRs, including my favourite, *Zornia dyctiocarpa*, a tiny and apparently highly palatable perennial native herb. The bird life is similarly rich. Little survey work has been done here, so we should be able to add a few species to the plant and bird lists. Nocturnal birds of prey, i.e. owls and nightjars, are likely to be there and audible as they breed in winter.)

Saturday 17 June, 9.30am - Inner Canberra grassland sites visit As we did last June, we shall seek out some more sites mentioned in Action Plan No. 1 on Natural Temperate Grassland. This is a good way to get an understanding of the structure and diversity of ACT lowland grasslands (even in winter!) and management arrangements. We'll meet at 9.30am near CSIRO headquarters on Lime-stone Ave near the War Memorial.

Saturday 8 July, 2pm - Slide afternoon, Alpine grassland flora at Mugga-Mugga A couple of members (David Eddy and Michael Treanor) and a guest alpine enthusiast (Ian Haynes) will share their favourites with us.

Thursday 7 September - Threatened Species Day Unveiling of grassland signs at Radio Hill. This will be a signing off of FOG's Monaro Golden Daisy Project at Radio Hill and will mark the finishing of fencing, major progress with weeding, a management plan, a brochure, and signage. Last year we managed to get a good turn out for this, and, as this will be a major FOG achievement, please put this date in your calendar.

Important notes on coming events:

- *Please put firm dates in your calendar.*
- *For outdoor activities, don't forget your hat, sunblock and drinking water.*
- *For insurance purposes, sign in/out at activities.*

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

Saturday 7 October - White Box Woodlands at Cowra Dr Donna Windsor (Greening Australia) will take us to several Grassy Box Woodland remnants in central-western NSW. We plan to meet Donna in Cowra at 10am. Donna was a speaker at the recent Stipa conference and her topic was 'the Importance of grassy understorey: a conservation perspective'.

Saturday 28 October - Northern cemeteries with Rainer Rehwinkel, Braidwood area

November - Mulligans Flat grassland Mulligans Flat contains large areas of open forest, grassy woodlands and grassland areas. We'll visit the grassland this year.

1-2 December - Workshop on 'off-reserve temperate grassy ecosystem conservation' and Monaro grasslands visit Planning is in its infancy but 1-2 December is the tentative

date. Friday 1 December will be a workshop on off-reserve grassy ecosystems conservation. The morning will focus on Southern Tablelands, Monaro and ACT experience. Afternoon will focus on other regions' experience. The workshop may be held at Cooma or Queanbeyan and we shall keep costs to a minimum. We hope to get many visitors from outside our immediate region. Saturday will be devoted to visiting quality grassland sites in the Monaro i.e. our traditional Southern Cemeteries Tour. The linking of the two activities will enable visitors from other regions to participate in the workshop and visit some of our special sites. However, each day can be treated as a separate activity. There will also be a Saturday night stayover at Garuwanga near Nimmitabel, with a leisurely wander there on the Sunday morning.

ALSO OF INTEREST

8-15 October - Weed Buster Week



ARE YOU LOOKING FOR HAND LENSES, FORCEPS AND NEEDLES.....??

I've had a few queries on where to buy instruments to use with a microscope (e.g. forceps and dissecting needles) and hand lenses for use in the field. I've listed some prices below for these items, and if you'd like to order some, please contact me and I'll arrange it. Margaret.

Hand lenses	\$5
Forceps	\$3.50
Forceps protectors	\$0.05
Dissecting needles	\$0.60



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NEWS ROUNDUP

Monaro Golden Daisy Habitat

This is the title of FOG's Threatened Species Network Project (funded under the Community Grants Program under the Natural Heritage Trust). Initially we were over optimistic and thought that work on these projects would be well advanced by April this year. Unfortunately this has not occurred and we have had to seek an extension. In the case of Radio Hill, Cooma Council has been working with FOG in eradicating St John's Wort and Vipers Bugloss. As reported earlier, FOG has now had three days removing Hawthorn and other woody weeds. We are hopeful that the fencing component will be completed in the next month or two and we are arranging a separate grant for this. We are still to prepare a management plan, brochure and signage. Currently we are aiming to have the Radio Hill component completed in time for this year's Threatened Species Day on 7 September. Threatened Species Day commemorates the date of the death of the last Tasmanian Tiger. This should be a big event so put it in your diary now.

Things at the Adaminaby Golf Course have gone much more slowly. There has been some local opposition to FOG's involvement at this site but the main hold-up has been the uncertainty over the status of the site. As mentioned in our September 1999 Newsletter (p2) the NSW Department of Land and Water Conservation (DLWC) prepared a *Draft Assessment of Crown Land at Adaminaby* on which FOG made a submission. The report produced by DLWC recommended the site be used for recreation and conservation purposes. A meeting was held on 14 April in Cooma attended by the mayor of Cooma, and Adaminaby resident (Peter Cochran), and members of Adaminaby Landcare,

Adaminaby Golf Course Trust, DLWC, Threatened Species Network, the Monaro Grassland Project, and FOG to take stock and plan ahead. DLWC representative (Noel Perrin) said it had been decided to set up a reserve and advertise for applications for local residents (including persons from the region) to form a trust. After consideration, the Government would appoint the trustees. The Trust would then need to draw up a management plan to be agreed to by DLWC. This could take several months. The meeting agreed that it would not be possible to use any of the grant monies until that process was completed.

How does the Monaro Golden Daisy fit into all this? It is an endangered species found on Radio Hill. The project, as initially conceived, may also introduce some planting of the daisy at the Golf Course. The third component of the project was funding for research on the Monaro Golden Daisy. Apart from the daisy, both sites are high quality grassland sites, which eventually will underscore the importance of grassland conservation in the Monaro region.

St George and the Dragon

Geoff Robertson

Peter Clack (Canberra Times (CT) 6 March) headlined his article: *She may be Queen but the Lizard is King*. "The discovery of an endangered species of earless dragon has derailed plans for the Queen's jet to land at Canberra International Airport." So broke the news in the public arena that the airport was considering developing a turning circle at the end of a runway to allow larger planes to turn. FOG had wind of this sometime earlier and had learnt that an initial application by the airport had been turned down. However, there is likely to be a second attempt, which would require public comment. Unfortunately such a development could impact strongly on the Grassland Earless Dragon.

When I read this, all my childhood images of Saint George and the Dragon arose. I pictured the embodiment of St George (the Queen of England) in silver armour sitting astride her silver jumbo jet, lance in hand pointed at the throat of the (Grassland Earless) Dragon. Let's hope that there is enough fire in the people of Canberra to ensure that whatever happens at the airport the dragon's lair is left undisturbed. Unlike medieval Europe we do not want to see the dragon extinguished by knights of industry in silver armour.

Dragon Defender, Art Langston (and former FOG President) wearing his dragon mask, fired back in the CT on 11 March. Art's article and masked face appear on page 11 of this newsletter. Another picture of a Dragon appeared in a CT associated article on 14 March. Behind it a smiling Ian Fraser. Please pay attention to this issue.

Conder update

Our November 1999 newsletter (p2) mentioned that the Commissioner for the Environment had entered the Conder issue. Since then the Commissioner engaged Environment ACT to undertake a survey of Conder 4a and nearby areas. That survey has now been completed and FOG was asked to comment on the findings. The survey compared 25 sites across 15 areas of "grassy woodland margins" in the ACT. The survey provides another tool for comparing quality grassy ecosystems. Conder 4a measured up well against the other sites chosen. FOG put in comments on the survey methods and findings. It also used the opportunity to raise some other issues concerning the large number of "uncommon and declining grassland species" at Conder 4a and the presence of Key's Matchstick grasshopper. It is expected that the Commissioner will prepare his report and make recommendations to the Minister in May. It is difficult to predict what his recommendation will be and whether the Minister will accept it. In all likelihood the matter will then go to the Administrative Appeals Tribunal in June to hear Michael Beddingfield's original appeal against the proposed road development.

Radio Hill-Parts 2 and 3

Nine valiant members set out on Saturday 26 February to do battle with Radio Hill's woody weeds in the on-going saga of Radio Hill, Cooma. For this occasion, we had the assistance of a chain saw and Geoff and Ian achieved a lot with it. The group worked on the eastern slopes of Radio Hill and almost cleared it of all its Hawthorn.

On Saturday 4 April eight members of FOG attended the third Radio Hill working bee to continue the battle to eradicate (control?) the exotic 'woody weeds' that infest the hill and make life difficult for the native flora at the site. The group made extensive use of the 2 mechanical devices that ate their way through the Hawthorn that was the main target. The eastern side of the hill is now be-

ginning to look like a 'woody weed' wasteland that indicates a battle is in progress. One of the nicer things about the day was to consistently find the Australian Anchor plant (*Discaria pubescens*) amid the rubble of targets. It made it all worthwhile.

The Cooma Monaro Express (30 March) publicised this work and David Eddy's project on Monaro Grasslands.

ACT prison submission

FOG has written to Gary Humphries, Deputy Chief Minister and Attorney General, concerning planning for the ACT Prison. The minister had announced the appointment of Jim Leedman to Chair the Community Panel being established to oversight the development and operations of the ACT prison. The panel will consist of community and stakeholder groups. Our submission stressed that planning for the Prison should have direct access to environmental expertise and that there should be a separate committee, which advises on environmental aspects of planning for the facility. It outlined many of the complex environmental issues to be addressed which should not get swamped by social justice issues, prison conditions and rehabilitation opportunities, etc. for inmates. It is very likely that environmental issues would be swamped by these and other issues, hence the importance of a separate committee. The submission argued that an expert environmental committee should include representatives from the Parks and Conservation Service, local community conservation groups and local universities with good secretariat support provided by Government and an independent chair. To date we have not received a reply.

Bye Tim/Hello Helen

Tim Barlow has resigned from the position of Bushcare Grassy Ecosystems Networker. FOG wants to thank Tim for all the great work he did, and his support for FOG – he'll be missed. Tim is still very active in the field though, so expect to see him about. Helen Ryan, previously employed by the Victorian Department of National Resources and Environment (NRE) for 2 years as a TOPCROP extension officer, has replaced Tim. She has completed a BSc. with Honours in Botany at the University of Queensland, investigating Mitchell grassland restoration.



Woodland and Grassland Working Group (WGWG)

The WGWG was established by the Conservation Council to develop a strategy for the conservation of important areas, and a long-term plan. It focuses on the habitats in Action Plans 1 and 10, the grasslands and Yellow Box/Red Gum grassy woodlands. On Saturday 8 April the Group visited East O'Malley, a site which is currently a Canberra Ornithologists Group woodlands survey site and a potential buffer zone for the Mt Mugga element of Canberra Nature Park. The Group saw over 25 bird species and approximately 50 native plant species during the visit. This is an important site which is being considered for preservation. The party came to the conclusion that it needed serious consideration on the basis of what was observed during the afternoon.

Woodland seminar

Our woodland birds are disappearing was the theme of this seminar held at Forbes on the afternoon of 11 April and repeated at Gunnedah the following day. Alan Ford and Margaret Ning were able to attend the workshop, which they reported as excellent. They also saw a few interesting remnants on the way there and also briefly visited the nearby birding spot of Gum Swamp.

The keynote speaker (known to many of you) was Denis Saunders, CSIRO Wildlife and Ecology, a leading ecological researcher. He has spent his working life researching the causes and consequences of wildlife loss and decline in the agricultural systems of the Australian woodlands and is a passionate advocate of the need for improved land management that is sustainable both for agriculture and for wildlife. The decline of certain bird species in central and western New South Wales is now recognised as a major environmental problem.

Other people to speak at the seminar at Forbes included Judie Peet, Sue Briggs, Barry Traill and Sue Wakefield. Judie is a well-known local naturalist and bird enthusiast and the Project Co-ordinator of the Woodland Birds Project. She introduced the project. Sue (Research Unit, National Parks and Wildlife Service) spoke of her recent research into the size of remnants required to retain woodland birds. Barry is a woodland ecologist from Birds Australia who discussed current information on which woodland birds are declining, and where those declines are occurring in New South Wales. Sue, a Greening Australia extension worker, one of the authors of the 'Save The Bush' kit and a landowner, outlined her

thoughts on what works and what doesn't in managing and rehabilitating remnants of woodland.

The papers presented by Denis Saunders, Barry Traill and Sue Briggs will be reproduced in full in the next couple of FOG newsletters. See Alan Ford's report on the seminar on page 8.

Is a fence enough? A workshop on managing your grassy woodlands.

Unfortunately we were not able to get to this workshop held in Orange and Cummock on 23 and 24 March.

Grassy Ecosystems Grants

The Grassy Ecosystems Grants Partnership is an initiative of the World Wide Fund for Nature, Australia and the Natural Heritage Trust Bushcare Program, funded by Environment Australia. It focuses solely on the conservation and management of grassy ecosystems in SE Australia.

This grant scheme aims to distribute targeted funding to:

- increase the area of grassy ecosystems on private land protected by covenants or long term management agreements,
- increase the number of cooperative land management agreements with public authorities,
- improve the understanding and application of best practice management across a range of sites and tenures,
- increase community involvement in the management of grassy ecosystems across their range, and
- generate knowledge of the distribution and conservation status of grassy ecosystem remnants, particularly those on private land.

In this round up to \$300,000 will be distributed to a range of projects. Applications closed in December 1999, and of the 62 applications received, five were submitted from this area (ACT, Queanbeyan, Bombala, Middlingbank Peninsula near Cooma and Bega). The National Assessment Panel, comprising one government and one non-government representative from each State, met in March to assess applications. ACT representatives on this panel were Sarah Sharp (ACT Government) and Geoff Robertson (non-government). Announcement of the successful applicants is expected shortly. The next call for applications is likely to be

in August 2000. For further information on the grants scheme contact Vanessa Craigie, or Pip Walsh at WWF (02) 9281 5515.

Results of Cooma Survey

Our November 1999 Newsletter (p2) mentioned FOG’s participation in a survey for the Grassland Earless Dragon and the Striped Legless Lizard at the Cooma Tip. We have now received a copy of James Dawson’s report and wish to reaffirm that the site is likely to be reserved.

Native display garden

On 2 April, Andrew Paget’s planting bee at the University of Canberra faced the threat of rain from the outset. In spite of this, a handful of hardy souls responded to the call and several hundred plants were planted by the end of the day. Follow up rain a few days later was a very fortuitous development.

Gudgenby Breakfast in the Bush

On 6 April, a large crowd turned out to celebrate the completion of Stage 1 of the Gudgenby Bush Revegetation Project in Namadgi National Park. This was a Parkcare promotional event. Stage 1 involved the planting of native plants at a part of an area that had previously contained a badly-located pine plantation. Everyone wandered around the site noting special features such as the experimental ‘exclosure’ designed specifically to exclude damaging grazing from a part of the area. Following brief speeches by the Minister for Urban Services, Brendan Smyth (who had personally contributed to an earlier stage of the project), and Eleanor Stodart, of the National Parks Association, a celebratory breakfast was prepared for everyone by ACT Parks and Conservation Service employees.

Conder 9/Banks 3 Estate

FOG put in a submission to the Department of Urban Services on the proposed Conder

9/Banks 3 Estate, Draft Development Control Plan. The main tenor of the submission was to stress the importance of the Conder 9 grassland reserve adjacent to the development, the importance of not disturbing the site during development, and the need for a 6-10 meter buffer zone between any

to do something about it, they talk about being allowed to manage their land however they choose. However, I suspect that this response is a certain amount of bravado. The real problem is that these people are not familiar with methods of control and feel they cannot ask for help

or pay someone to assist. I also know from anecdotal evidence that the authorities feel they cannot push the issue too much. The Australian community should try some new carrot and stick approaches. For example, I think that penalties could be introduced for offenders and the punishment could be a mixture of training in the use of poisons, drawing up management plans, and community service in spray-



The Master at work.
Photo: Rosemary Blemmings

development and the grassland reserve.

National Strategy for ST

During March, FOG made a submission on the Draft National Strategy for Serrated Tussock (ST). The submission mentioned the experience of FOG members with ST and its broad support for the draft paper, which provided a useful description of the problem and issues involved. Nevertheless we expressed concern that some land managers are negligent and there is an urgent need to encourage relevant local authorities and community groups to take stronger action against recalcitrant offenders. It supported the views expressed in a private submission by Geoff Robertson. Geoff’s submission outlined his experience with ST at his property and the need for vigilance. His comments on other landowners are of interest.

“Some of the other landowners, particularly traditional farmers, are equally conscientious when it comes to ST. However a few (often not traditional farmers) are not, and are a source of constant seed. When asked

ing. Both officials and community groups should be encouraged to police outbreaks of ST.”

Brooks Hill Stroll

Sunday 9 April was a sunny morning for the approximately 25 people who turned up to visit Brooks Hill (BH) Reserve. A description of this 71 hectare remnant, which covers a number of vegetation sites (including a grassland community) appeared in the last newsletter and won’t be repeated here. Both bird and plant enthusiasts were well rewarded. Apart from the sheer enjoyment of a pleasant stroll in such a wonderful environment with people with a diverse interest in cultural and natural history, we were impressed with the documentation provided to us. The BH Trust has produced a wonderful pamphlet which explains the many points of interest (which are physically signposted at the site) and a very informative management plan. Both provide excellent models for those responsible for grassland sites.

SALT DESTROYING OUR FOOD BOWL

Sam Leone

(This article was first published in the Canberra Times' Panorama section on 30 October 1999. We intend it to be the first of many articles on the subject of salinity, as this serious issue has many implications for the future of our grassy ecosystems.)

In his 1982 book "Australia's Greatest River" Sydney author John Larkins quotes a Murray local on the theory that, from the earliest of times, inevitable salting has doomed all irrigation schemes to self-destruction.

He mentions examples such as Mesopotamia in the 13th Century BC and the Punjab in the 1960s.

How valid the theory is might be debatable, but a major audit of salinity published last week confirms that Australia's food bowl, the Murray-Darling Basin, is clearly heading for such self-destruction. And not just in its irrigation areas.

In fact, most of the threat now is coming from dryland areas - which make up more than 90 per cent of the Basin.

The Murray-Darling Basin Commission report warns that unless we make major changes to the way we use land and water in the area, we face dire consequences.

We've known this in a general way for more than 30 years and in a more detailed way for at least 10.

The new stark information is that the trends for the future actually are worse than we thought.

The main source of the problem, salt, is rapidly spreading from irrigation areas to dryland areas and most of it will not get flushed out through rivers and streams. It will stay in the land.

And if you think you're safe in the city, think again. The salt problem, like the country mouse, is moving to town.

There are even signs that the problem, transformed into acidic soil, has inched right up to Sydney's doorstep western suburbs.

It is now well known that rising saline water tables under roads, buildings and other concrete structures cause extensive damage. One of the earliest recorded impacts of dryland salinity was the loss of local water supplies for steam trains.

The average life of a road on well drained soil is four times that of one whose base is waterlogged and salinised. The sulphates in sa-

line groundwater quickly destroy the strength of older concrete structures, especially those without adequate damp-coursing, mortar and bricks are eroded.

There are many towns and cities across the Murray-Darling Basin where house foundations are decaying and it is no longer possible to grow fruit trees and maintain lawns and gardens.

Older plumbing is corroding, septic systems are becoming ineffective, cellars need regular pumping, and even cemeteries may have to be moved.

Water tables near the surface can increase the risk of flooding as the landscape loses its ability to absorb more water.

The cost to ecosystems is also high. The Murray-Darling Basin's significant biodiversity of plants and animals (freshwater and terrestrial) and ecosystems is generally unable to cope with the increases in salt. The effects are compounded by the highly fragmented natural environment in the Basin.

At the audit launch, federal Environment Minister Robert Hill, agreed it was Australia's "most serious environmental problem".

His colleague Warren Truss, chairman of the Murray-Darling Basin Commission and federal Minister for Agriculture, Fisheries and Forestry, emphasised the national importance of the Basin.

"The Basin represents one-seventh of our continent, most of it comparatively low-lying where drainage issues are naturally going to be a matter of concern," he said. "Its gross production amounts to \$20 billion and it produces 40 per cent of Australia's entire agricultural wealth."

Nearly the whole of inland south-eastern Australia is part of the Murray-Darling Basin. It is an area 1,450 kilometres long and 1,000 kilometres wide stretching from Victoria and South Australia in the south through New South Wales and the ACT to Queensland in the north.

It's home to 1.9 million people, over half of whom live in small country towns and on farms.

The salt problem goes back to the 1870s when Europeans began clearing the bush, removing (since then) millions of native trees and replacing them with imported crops which needed large-scale irrigation to survive.

Since the deep-rooted native trees and plants were cleared, more rain water has seeped into the ground and down into the natural reservoirs or "aquifers". This has caused the underground watertables to rise, bringing with them naturally occurring salts which have built up over geological time.

Irrigation water, often much more than crops can use, also seeps down making the situation worse. Crops and pastures are badly affected when the watertables are within two metres of the surface.

This change to the landscape, along with over-watering of town gardens and lawns has, in the words of the audit authors, "unleashed a hydrological disequilibrium that brings this vast salt store to the land surface and increases its seepage to river systems."

As people divert water for irrigation, urban and industrial uses, the flow of rivers and streams slows down and the concentration of salt rises.

As information for the audit was collected from differing state systems (and with little data from some areas), the Commission asked the CSIRO Cooperative Research Centre for Catchment Hydrology to independently assess the methodology and findings.

In addition, the Basin's four State governments commissioned salt loads studies to bring together field data and other information for their jurisdictions. CSIRO Land and Water produced a companion report to the audit on the "Effectiveness of Current Farming Systems in the control of Dryland Salinity" launched with the audit.

So what exactly did all this reviewing and investigating uncover? Much of the information is very technical, but points to the inescapable fact that "business as usual" is out of the question - in fact a suicide option.

For example, average salinity at Morgan in

South Australia will exceed the World Health Organization recommended maximum drinking water salt concentration of 800 EC in 50 years' time.

A feature of the audit is the amount of information it produced for each area of the Basin. Again, much of it is technical but overall, it paints a stark picture of what is happening in the Basin and what could happen in the future.

The dryland part of the Basin, particularly the Mallee region of South Australia and Victoria, will be a dominant source of extra salt. In zone from Swan Hill to the South Australian border (taking in parts of South Australia, Victoria and New South Wales), the current estimates are that Victoria contributes an estimated 190,000 tonnes of salt a year, while 90,000 tonnes a year comes from New South Wales. Victorian's contribution could increase by another 110,000 tonnes a year by 2050.

The Avoca and Loddon Rivers of Victoria already have high salinities. Some tertiary streams (not included in the audit) feeding these rivers are experiencing even higher salinities.

The Murrumbidgee has very high salt loads (around 400,000 tonnes per year at Wagga Wagga), but the river's strong flow moderates its salinity. The prediction is that the Murrumbidgee's salinity at its junction with the River Murray will increase from 250 EC currently to an average of 315 EC in 2020 and 403 EC in 2100.

"Quite large populations, including Canberra and Wagga Wagga, rely on river supplies and aquifers in close connection to the river. However, as the 800 EC threshold will not be exceeded in any but some smaller tributaries, urban water supplies can be regarded as safe into the future," the report says.

In NSW's Lachlan River catchment area, the study predicts salt will more than double in 100 years, generating increases which could seriously affect drinking water, the environment, agriculture and urban infrastructure.

In the Macquarie River valley, which includes the Bogan River, groundwater-driven rates of salt load are high, with loads in the rivers expected to double in 20 years and increase by more than three times by 2100.

The study estimates the end-of-valley salinity for the Macquarie to rise from the current 620 EC to salinity loads which will see water quality deteriorate below safe levels for town water supply, irrigation and wetland ecosystem health.

Twelve urban centres with a combined population of 65,000 use water from rivers and creeks within the valley. This includes Dubbo, with a population of 34,500.

In NSW's Castlereagh River area, groundwater trends indicate moderate rates of change with dryland salinity not yet widespread. But the area will experience a doubling of salt in the landscape (some of it exported to the river) over the next 100 years.

Levels at the end of the valley will rise to 760 EC in 2020, and to the destructive levels of 1,100 EC in 2050 and 1,220 EC in 2100.

Current average salinities for the Namoi River are 680 EC at the end of the system and 630 EC at Boggabri.

Estimates show a more than doubling of the salt export from the valley over the coming 100 years. River salinity at the end of the valley will rise from 680 EC now to 1,050 EC in 20 years, 1,280 EC in 50 years and 1,550 EC by 2100.

Five towns with a total population of 49,900, including Tamworth with a population of more than 35,000, draw their water supply from the river and tributaries. Another six towns draw their water from alluvial bores potentially influenced by the groundwater changes which are now occurring.

In Queensland, there are indications of a steady rise in groundwater levels. When they eventually intersect with stream beds, they will cause rapid rises in water salinity. But salinity levels should then stabilise.

Three river valleys in the Queensland section of the Basin were assessed in the audit. The current average river salinity for the Warrego River is 210 EC units. Salinity levels are predicted to rise to 1260 EC units by the year 2020.

The estimated current average salinity for the Condamine–Balonne rivers is 210 EC with an estimated sharp rise in salinity by the year 2020. End-of-valley river salinity is predicted to rise to 1040 EC by 2020 and remain at this level over the next 70 years.

The Border Rivers catchment, which includes the Severn, Dumaresq, Macintyre and Barwon rivers downstream to Mungindi, indicative predictions are that salinity levels will rise to 1010 EC by the year 2020.

Currently, of the 5.1 million tonnes of salt now mobilised annually as a result of becoming dissolved and carried by rising groundwater, about 3 million tonnes is dumped in the landscape.

The other two million tonnes enters streams and eventually leaves the Basin via the river Murray. By 2050 the salt mobilised will reach 8.3 million tonnes with 3.3 million tonnes of that figure being exported to the rivers.

This will rise to 3.8 million tonnes per year by 2100. The other 5 million tonnes of salt mobilised per year will be redeposited elsewhere in the landscape.

The problem is stark. So, where do we go from here and are there any solutions?

The history of cleaning up the Basin has really been a story of trying to find a consensus between widely differing groups with often different interests at stake. While some of these differences still exist, there is no doubt that an awareness of common concern has emerged over the past few years. Even Queensland is taking the issues seriously.

The Commission makes no secret of the fact that, rather than go outright to a full strategy and action plan, this audit was necessary to pave the way for widespread public consultation and consensus.

A Basin Salinity Management Strategy will be delivered by June next year. But it will be a document that the commission is determined will be the result of a public "knowledge driven" process.

It will need to be because all parties agree that tough action will be called for. Farmers and their organisations are anxious not to be seen as the main culprits and point to the huge amount of cooperation they have made over the past few years. They are calling for an end to recriminations.

Others point to the success of capping the amount of water taken from the rivers and more than a decade of the Landcare movement. Millions of trees are being planted, but some say we could do with many more millions.

However, the audit says "there is no indication yet that Landcare and other natural resource management programs have altered the 'business as usual' trend lines for rising salinity across the Basin predicted by the audit."

The audit says the Salinity and Drainage Scheme (introduced in 1988) has gained us a 20-year reprieve against rising salinity in the lower Murray and will be extended over the whole Basin.

"The key current feature of the Strategy is that States are accountable for actions that impact on salinity and there are incentives

to take measures to achieve a common, agreed target,” the audit says.

“This approach could be applied to river valleys, beyond the River Murray ‘main-stem’, where ‘end-of-valley’ targets would be established. Integration of river valley and Basin salinity outcomes would be essential.

“Clearly, broad-scale land use change has to be considered if there is to be salinity control that reduces the predicted deterioration.”

The audit clearly identifies the severity and scale of the threat, but we’ll need to wait for the draft Basin Salinity Management Strategy in June next year for solution details.

How much will it cost? We won’t know for sure until the final strategy is settled, but the cost of not doing more could rise could rise to as much as \$1 billion a year in 100 years.

The audit says current planning suggests a total investment of \$2.5 billion over the next three years is needed to tackle natural resource management, including salinity.

The federal Government’s Bushcare program has put in \$375 million from the Natural Heritage fund and environment Minister Robert Hill suggested at the audit launch that the latest sell-off of Telstra was significant and beyond that he suggested we “watch this space.”

Whatever the cost, success will hinge on the level of cooperation between the usual collection of suspects on a wide range of solution ideas - better application of planning principles, new principles of natural resources management, new drainage works, new water pricing policies, stricter environmental guidelines, changes to broad-scale land use, forestry and re-vegetation, developing new sustainable industries, help with rural adjustment and many, many more.

“We have the facts now. There are no excuses,” says Tony Stacy, a member of the Murray-Darling Basin Community Advisory Committee and Chair of the Murrumbidgee Catchment Management Committee.

“Everybody can point to the audit and say ‘there are the problems, we need to work together’. It is a powerfully unifying document.”



SUCCESSFUL STIPA CONFERENCE

Alan Ford

“Better pastures naturally” was the title of the Stipa Native Grasses Association Conference held over two days (March 16-17) in Mudgee. The first day was devoted to papers concerning the use of native grasses in Australian agricultural production and the second was devoted to a site visit to a property north of Gulgong to look at the practical issues facing the reform of agriculture and how they were being approached on one station.

There were 15 papers on the first day, based on the themes; ‘Our Versatile Native Pastures’, ‘Better Pastures Naturally’ and ‘Native Grasses in Practice’. Looming over this conference was the problem of salinity and possible solutions.

Wal Whalley from the University of New England started proceedings with an historical overview of native pasture research (and practice) on the slopes and tablelands of Australia. Whalley made the point at the outset that agricultural research did not really begin in Australia until the end of the 19th century and that pastoral industries were well established by that time and were almost completely based on the native herbaceous flora. He divided recent times into four periods. He pointed out that 1951-75, the third period, was the heyday of pasture improvement and that it finished with this system being questioned in many quarters. He indicated that knowledge of species and ecology expanded in the last period, 1976-2000, and has ended with increasing numbers of producers coming to realise that they are dealing with grassy ecosystems, of which grazing animals and managers are a part.

Our Versatile Native Pastures

This session commenced with the use of native grasses in mine rehabilitation and their role in salinity control. Peter Weston then spoke on his attempts on his property to encourage desirable native grasses back into areas where they have declined. Weston made the point that exotic species need regular maintenance, particularly the application of superphosphate. On the other hand, native species only require appropriate grazing management to maintain production. He indicated that the savings on inputs coupled with their value in grazing production has enhanced the importance of native grasses in his enterprise.

Donna Windsor concluded this session by stressing the importance of grassy box wood-

lands. She noted that these woodlands of the wheat sheep belt had been extensively cleared and modified by European farming practices. As a result, eucalypt dieback, dryland salinity and other forms of land degradation have become prevalent in many areas. In the Central Western region of NSW it has been estimated that hundreds of millions of trees will die within the next few decades if management practices are not changed. In recent years it has been recognised that native vegetation is crucial to the long term sustainability of the landscape. Donna concluded by arguing that appropriate management of native pastures will not only assist farm production and landscape revegetation but will assist in conserving other grassland species.

Better Pastures Naturally

This began with a paper on rehabilitation strategies, assisted regeneration and reconstruction and then turned to Nigel White’s view of “as clean as we can make it” - a management regime that cuts out inputs, superphosphate and herbicide.

Christine Jones then spoke on grazing management for healthy soils. She pointed out that the roots of grasses form a mirror image of the tops. In general terms, the removal of leaf area through grazing results in root pruning, while resting from grazing enables root strengthening. Continuous root pruning reduces root biomass, slows nutrient recycling, exhausts plant reserves and ultimately causes plant death. The grazing process therefore needs to be carefully managed to stimulate the growth of new leaves and to provide sloughed roots as food for soil biota. She called for the introduction of biodiversity credits to help.

Peter Simpson then provided a stimulating talk on options for pastures on the steeper country of the Central and Southern tablelands before Darryl Cluff and Col Seis talked on growing annual crops with native pastures. Pasture cropping is a new farming concept that allows grazing and cropping enterprises to be combined in such a way as to optimise agricultural productivity from the available rainfall.

Native Grasses in Practice

Tim Wright began this session by talking about the effect of the introduction of what he calls planned cell grazing on his property, “Lana”. He attributed increased productivity in the grazing cells to enhanced soil, plant and animal nutrition as a result of

greater effectiveness of the water and mineral cycles, which in turn have improved biodiversity and plant community dynamics. He said that the diversity of native grasses and legumes on "Lana" enable year-round live-stock production. The native grasses have proved particularly important during dry seasons.

The session then covered the Native Vegetation Conservation Act and the harvesting and production of native grass seed.

Winona

On the second day the conference proceeded to the Seis property, "Winona", north of Gulgong, to look at the methods one family is using to maintain productive capacity. What Col Seis calls pulse grazing is used to manage both the livestock and vegetation in 15 paddocks on the northern half of "Winona". The plan takes account of paddock size, species composition, seedset, cropping plans, animal requirements and other issues as they arise. We were also shown the salinity-affected areas of the property and the efforts being made to encourage the use of native pastures in salinity management.

We had to leave at this point and were not able to participate in the afternoon program.

WOODLAND BIRDS SEMINAR - FORBES

Alan Ford

Two FOG members attended this seminar in Forbes on Tuesday 11 April, which was organised as part of the Birds Australia/NSW NPWS Woodland Birds Project.

The situation being addressed is the decline of a group of woodland birds and the loss of most of the original woodlands from the sheep/wheat belt of NSW. Speakers discussed the loss of habitat and its effect on birds and other wildlife, land management practices, rehabilitation, and the ecology of woodlands.

The local director of the NSW NPWS, Terry Korn, began proceedings by pointing out that

changes in the hydrological cycle. These factors lead to the disappearance of species or to a change in species pattern as well as having a potential effect on ecological processes such as nutrient cycling. He sought integrated landscape management on an ecological basis with knowledge of what each remnant contributes to the ecological whole. He concluded by referring to "designer landscapes".

He was followed by Barry Traill from Birds Australia, who commenced by outlining the changes in the landscape since European settlement through three phases: initial pastoral settlement; agricultural development; and intensification. He then proceeded to speak about the extinction process for birds, listing species found to be declining in NSW woodlands. He pointed out that in some



Another great FOG display at ACT ALIVE!
Photo: Jane Horniblow ACT Parks and Conservation Service

vegetation clearance was still going on and that we are still in tree deficit as a result of clearing.

Denis Saunders from CSIRO, a major speaker at the seminar, began with biological diversity as the variety of all life forms, pointing out that its importance was the provision of critical ecosystem services. He stressed the need to protect what we have left. Dr Saunders argued that the removal of native vegetation on a broad scale leads to a collection of fragmented vegetation patches in a matrix of different vegetation and/or land uses. He examined the ecological consequences of this reduction and fragmentation of native vegetation. He referred to higher temperatures resulting from increases in solar radiation, changes in the pattern of wind flow and major

cases the species are still widespread but there is increasing evidence of rapid declines in these and possibly other species. Some have gone or are now extinct in part of their former range. He spoke in terms of extinctions occurring years after clearing ceases in the district, small blocks of woodland not supporting some birds, woodlands are not the same and he mentioned the well known fact that some species do survive well in most agricultural landscapes, giving the Galah as one example.

Sue Briggs then spoke on the development of guidelines for vegetation management in the Central Lachlan Catchment. The guidelines are being prepared to assist Landcare groups and others to revegetate and manage remnants of woodland vegetation for

wildlife, to answer how big should a patch of revegetation be, what characteristics of remnants determine their value as habitat for wildlife and how should revegetated areas and woodland remnants be managed to conserve biodiversity. The guidelines will address issues such as remnant area, the importance of the understorey - she indicated that except where the understorey was naturally grass (eg, most whitebox woodlands), all revegetated areas should include shrubs, and connectivity of vegetation.

The seminar concluded with Sue Wakefield talking on keeping the farm, the woodland and the bush. She wanted people to hang on to what they've got, to manage native pastures on a rotational basis and consider their potential as a seed source and look after the watercourses. The management of a landscape requires the preparation of a whole farm plan - a vegetation management plan, the integration of roadside vegetation and Traveling Stock Reserves into farm plans, the use of local species, the incorporation of all layers of original vegetation into planning and the constant monitoring of all that is done in implementing a plan.

WEB SITE DEVELOPMENT

Geoff Robertson

FOG has changed its web site address. Why don't you check it out <http://www.geocities.com/fog_act>? If you don't know how to get into a site or don't have access ask a friend to show you. This change is a simpler address as recommended at our last AGM and it is better structured than previously, thanks to Paul Hodgkinson (FOG Web Master). What do you think of the LOGO? However, you will see that we have the shell and not the content. WE NEED HELP. If you have any suggestions please contact Paul at able@aucom.com.au or me (address details back page).

We are thinking of establishing a group to manage the site. If interested contact Paul or me. There is a lot to do, e.g. contributing to the content, but you can do this from home. We are thinking of the following for content: COVER PAGE - this will introduce FOG and be a gateway for the site.

PROGRAM - this would show all program activities for 2000, and give a good picture of what we do.

NEWSLETTER: this would say how people can subscribe to the newsletter, and would contain a copy of the latest newsletter.

IMPORTANT MESSAGES: things we are promoting.

GRASSLAND OF THE MONTH: this would be a photo of a grassland site and some text.

PLANT OF THE MONTH: this would be a picture and some text.

INSECT OF THE MONTH: picture and text

REPTILE OF THE MONTH: picture and text

HOW TO CONTACT US: this needs some further thought.

BOOKS: Book cover (e.g. Grassland Flora) and text.

THE ISLANDS IN THE PLAINS

(with apologies to Ian Fraser)

Alan Ford

On 24-26 March three FOG members travelled to Bright in Victoria, where one of our committee members, Michael Treanor, had organised a program which took us from the Victorian Alps to two remnant forest areas on the plains (Killawarra State Forest and Chiltern National Park).

The alpine areas were a combination of dry foothill forests, tall wet mountain forests, snow gum woodlands, alpine heathlands and sphagnum bogs. Some of the plants, like the Buffalo Sallow Wattle, which we saw, are found nowhere else.

Being FOG, we headed for the isolated granite plateau that is the Mt Buffalo National Park as the first stop. We attempted two of the short walks, the Horn Track, which takes you to the highest point of Mt Buffalo, at 1723m, and Dicksons Falls Nature Walk. I say 'attempted' as two members of the party became intrigued by the plants before they got very far. The result was an impressive tally of species on the two walks, including masses of Alpine Gentians (*Chionogentias muelleriana*), numerous Yam Daisies (*Microseris lanceolata*), *Bracteantha* sp, Alpine Podolepis (*Podolepis robusta*), Alpine Hovea (*Hovea montana*) and the usual set of 'impossibles', Snow Daisies (*Celmisia*), *Craspedia* and Woodrush (*Luzula* sp.).

On the Saturday afternoon we headed for the Bogong High Plains in the Alpine National Park. We quickly found over 40 species in these high plains including Native Carraways (*Oreomyrrhis pulvinifera*, *O. eriopoda*), Tree Violet (*Hymenanthera dentata*), Twin-flowered Knawl (*Scleranthus biflorus*), Mountain Celery (*Aciphylla glacialis*), Daisy Bush (*Olearia* sp.), Yellow Kunzea (*Kunzea muelleri*) and Candle Heath (*Richea continentis*). There were some differences in the flora of the two areas, but perhaps we were just looking in the wrong places. However, you need to take into account that part of the Plains is still subject to grazing. They were

actually moving cattle around in one area while we were there. A stunning visual example of the effect that grazing has had over the years is available from the contrast provided by the 'exclusion plots' put in place by Maisie Fawcett in the 1940s.

Sunday was quite a contrast. We first visited a small remnant woodland roadside site at Gapsted, which contained about 15 species, including Kangaroo Grass (*Themeda triandra*), Redanther Wallaby Grass (*Joycea pallida*) and a *Platylobium*. From there we travelled to Killawarra State Forest, which is outside Wangaratta. This magnificent ironbark forest has a reasonable understorey and a wildflower walk which must be a real treat in spring, with a wide range of orchids among the other flora. This was followed by another roadside remnant near Beechworth; about 15 species, Yellow Rush Lily (*Tricoryne elatior*) and Purple Wiregrass (*Aristida ramosa*) being notable. The weekend concluded with a brief visit to Chiltern National Park. This little box remnant is well worth a visit. Thanks to Michael for organising a superb weekend.

MOUNT PAINTER VEGETATION PLAN

Margaret Ning

The Mount Painter Vegetation Plan: The Application of Environmental Planning to Parkcare Projects was the title of a seminar I attended on 15 March. Sponsored by the Environment Institute of Australia, the seminar was presented by David Hogg, an Environmental Consultant who coordinated the plan.

Mount Painter is the bare hill behind Black Mountain near Cook, and Canberra Nature Park (CNP) would like natural vegetation to be established there. A Natural Heritage Trust grant was secured to achieve this.

David outlined the three questions relating to such planning: where are we now; where do we want to be; and how do we get there?

Where are we now? David conceded it is difficult to know what Mount Painter was like originally as there are no old photos, but he speculated it was possibly open woodland which was cleared in the 1870s.

Where do we want to be? The main issues to consider in such an exercise are: species composition, tree density and distribution, fire protection, weed control and habitat continuity.

After considering the issues, a decision was made to keep the top of the hill open for the views; similarly the backs of the houses were to be kept clear for fire control; habitat considerations included provision for pockets of birds in a wildflower triangle that exists there (Greening Australia's Vegetation Investment Project, written up in FOG's Jan-Feb 2000 newsletter, influenced this); and the tree species to be tried would include *Eucalyptus rossii*, *E. mannifera* and *E. polyanthemos*.

How do we get there? The elements of a plan include the physical dimension, the time dimension, the financial component, and the human component.

A couple of the issues arising included the preference for local seed, but with the consideration that the Eucs may be uncooperative as it may be years before some species seed, and whether to plant in spring or autumn.

Question time included a question on the managing of existing grasses with fire. David believes native grasses will find their way back where they already existed, though there may be some basis for the use of fire where no natives exist. He stressed that as fire is labour intensive, it requires certain skills, and is quite a demand on CNP's resources. Another question was concerned with the proposed density of the tree planting, and David believes that even if every tree planted on Mt Painter survived it would still only be one-fifth of the density of replanting on the nearby Pinnacle.

NEWSLETTERS RECEIVED

Naarilla Hirsch

Grass Clippings unfortunately reports damage to some grassland sites along railway lines and roadsides in Victoria. Moves are underway to try and prevent further damage.

Native Grass, South Australia (the journal of the Native Grass Resources Group) contains articles on "The sex life of grasses" (RDB Whalley) and "Experiments on the germination requirements of *Aristida behriana*" (Vicki Smith). The first article describes the different types of reproduction found in grasses. Dioecious grasses have male and female floral organs produced by separate individuals; there are only four species of dioecious grasses native to Australia. Monoecious grasses produce separate male and female flowers on the same plant, so seed can be produced by a single plant if there are no plants of the same species around (al-

though some have self-incompatibility mechanisms). Apomixis or agamospermy is the production of viable seeds in plants without fertilisation, or "seeds without sex". The result is highly uniform offspring and is common among Australian grasses. If a species evolves a well balanced sexual and apomictic breeding system, it can minimise the high cost of sexual reproduction but retain a degree of



Dioris dendrobioides at Condor.
Photo: Michael Bedingfield

variation to cope with different conditions. Most grass species are hermaphrodite, ie. they produce both male and female parts. Predominantly self fertilisation occurs in a number of grasses (e.g. Wallaby Grasses (*Danthonia* spp) and Weeping Grass (*Microlaena stipoides*)) because the pollen is shed inside the floret before it opens. The article concludes that the ideal mix seems to be about 10-15% of outcrossing and about 85-90% of selfing or asexual (apomictic) reproduction. This combines the advantages of both modes: sexual reproduction giving a wide range of offspring capable of exploiting variable environments, and selfing or asexual reproduction giving large numbers of offspring capable of exploiting environments that are uniform over time and space.

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

FOG NEEDS YOUR HELP

Can you help with any of the following? If so please contact Margaret Ning. This is the second time we have published this and from the response last time we now have the nucleus of a newsletter collation group and an offer to look after FOG's grass display specimens. Thanks to those who responded.

- Fold, label, and dispatch newsletter
- Post out papers from workshops, etc.
- Set up the FOG photo album and prepare other materials for display
- Publicity: place ads for FOG in Fridge Door and other media. If really keen, organise publicity and information for media
- File statistical returns
- Organise FOG promotions at ACT Alive, World Environment Day, Tidbinbilla
- Be FOG's representative at the Conservation Council
- Visit sites and identify plants
- Built up documentation about sites visited
- Organise a particular activity

We also have a spare committee position for someone who would like to get a little more involved.

Volunteer Wanted For Environmental Education Centre!

Will Inveen at Mugga-Mugga Environmental Education Centre is looking for a volunteer to work a day or two a week. Duties will involve manual tasks around the property, weed control (chipping and spraying) and depending on experience, helping with development and delivery of Environmental Education programs. Phone Will on 6239 5607 or 0419 292 295 if you are interested in taking up this position or know somebody who may be interested.

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Supporting native grassy ecosystems

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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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