



AABR NEWS

Australian Association of Bush Regenerators

working with natural processes

Nº 128
March
2016

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AABR Walks and Talks

A field trip to Remony Farm, Kurrajong

Saturday 30th April 2016:

Arrive 9.30 for a 10am start - ends 2 pm

Janet Fox, in collaboration with Peter Mobbs, will host a visit to Remony Farm (60 acres) and discuss the ongoing efforts in regenerating bushland remnants including rainforest gullies, ironbark/turpentine transition forest and grassland.

Janet says she was completely naive about weeds but fell in love with the place. Now coming into her 9th year of ownership, several grants, several TAFE courses and 2 applications of the Green Army mean they are seeing wonderful results.

Further information is available on the AABR website . <http://www.aabr.org.au>

LOCATION: Remony Farm is at 54B Springrove Lane, Kurrajong. Head out of Richmond on the Bells Line of Road. Approximately 12 km west of Richmond turn left into Bakers Lane and then immediately right into Springrove Lane. The property is about 500 metres further on.

BOOKING: Bookings essential as numbers are limited. Email events@aabr.org.au.

For further information or contact on the day: Ring Janet Fox 0413 883 388



Field trip to Western Sydney Parklands -balancing mechanical clearing and hand weeding

Friday 13 May 2016

TIME: 10 am – 1pm

See Page 3 for more information.

BOOKING: <https://aabrwalktalk.eventbrite.com.au>

AABR Workshops

Rainforest Tree Bark Trunk Workshop : Border Ranges NP 30th April 2016

TIME: 10am to 2 pm

WHERE: Meet at the Brindle Creek picnic area car park in the Border Ranges National Park, NSW.

See Page 3 for more information

Sedges of the Sydney Region: Workshop with Van Klaphake 4th and 5th June

WHEN: Sat 4 and Sun 5 June 2016 (it is a 2 day course): Time: 8:45 am to 4:00 pm

WHERE: The C.E.C.A.L. Hall at 15 Clarke Street, Earlwood

COST: \$165 per person, \$155 for AABR members.

See Page 3 for more information

President's Perspective

AABR's NSW Environmental Trust Education grant is off to a flying start.

It is fabulous to report that AABR has engaged Suzanne Pritchard as Project Officer for the AABR educational videos project. Suzanne is eminently qualified in both the education and administration aspects of the project and we are moving full steam ahead producing learning materials for use by our education partners by mid-year.

The learning materials pivot around AABR's growing video library – **RegenTV** (read more on page 7 of this newsletter) – and due to the herculean efforts of project's videographer, Virginia Bear, six new videos have already been uploaded with more to come. The videos are really worth watching and capture some of the most interesting recent work in our industry – as well as illustrating some of the key principles from our National Standards!

National Standards.

At last the Ecological Restoration Standards are available online at <http://seraustoralasia.com/standards/contents.html>. As you will know, AABR has been an active partner in this project for the full three years of the highly collaborative drafting process – and will continue to play a major role in disseminating and interpreting the Standards to a range of practitioner groups.

You will be pleased to hear – and you can read more details on this on page 6 of this newsletter – that the online version of the Standards includes links to about 120 case studies of plant and animal community restoration being practiced across Australia. The intent of this is to illustrate how the main principles and practices can be interpreted for a range of industries as well as well as a range of terrestrial and aquatic ecosystem types.



Are you passionate about environmental projects?

Across Australia, there's a dynamic network of environmental change-makers and practitioners - from community groups, not for profit organisations, government, universities and industry - by sharing our different backgrounds, talents and ideas, we'll be better equipped to tackle the environmental challenges that we're facing.

So we created EnviroSource. to help you to deliver even more great environmental outcomes by crowd-sourcing innovative ideas and opportunities to support your environmental projects.

No matter what specialist area you work in, what level of experience you have or where you're from, if you're ready to work together to support positive environmental change, join us.

Take a look at www.envirosource.com.au

Christine Bell | Co-Founder, EnviroSource
Australia's environmental projects community

The Standards will also be published this month as an open access journal article in the international journal Restoration Ecology. As the first national standard for restoration anywhere in the world these are attracting quite a bit of attention and rumours abound of other countries following suit before too long.

AABR's 30th anniversary – save the date!

AABR will be holding a one-day forum in Sydney on Thursday July 21st to celebrate our 30th anniversary. The event will be co-badged with Society for Ecological Restoration (SER) Australasia, Greening Australia and the Australian Network for Plant Conservation. The selection of speakers will help focus attention on best practice ecological restoration, emphasising progress that has been made over the last 30 years and highlighting some interesting directions for the future. A small working group has been formed to invite guest speakers from largely the eastern half of Australia, with a blend of longer talks and speed talks as usual. Presenters of the longer talks will be invited to ensure we select the most topical case studies to include in our growing video library.

AABR is currently engaged in a range of other projects:

maintaining its bush regeneration practitioner accreditation program, conducting very good walks and talks, hosting training workshops and last but not least, a new forum for contractors, sole operators (and any regenerator really) who wishes to tap into the knowledge of other practitioners. Articles and snippets on all these activities grace the pages of this newsletter issue.

We have maintained our focus in our 30 year history and, if anything, appear to be consolidating and improving with age. Our secret is the new members joining the committee over the last 2 years and offering their youthful energy; but we can always do with more. Anyone - whether students or retirees - interested in voluntary work with AABR is always welcome to contact us.

Tein McDonald

President AABR

Welcome to new AABR Members

Hiram Orange

Sara Thomas

Martin James

Hugh Goymour

Eloise Doyle

Regina Brinsmead

Business

UnderCover Landscapes

Congratulations on accreditation

Brent Turner

Daniel McLeish

Nigel Parker

What is happening near you?

AABR is always looking for contributions from members to share knowledge and opportunities. Ideas for other stories are always welcome.

Drop us a line newsletter@aabr.org.au

Upcoming AABR Events

Workshops, Walks and Talks

Western Sydney Parklands – balancing mechanical clearing and hand weeding on a large bush regeneration site

A range of integrated bush regeneration approaches appeared to be the key in dealing with primary weed control over 44 hectares of Cumberland Plain Woodland at the Western Sydney Parklands at Abbotsbury.

Edgar Freimanis will lead a two-hour loop walk through his Western Sydney Parklands site at Abbotsbury where he and the Ecohort crew used a range of techniques to target mid-storey weeds, respond to follow up weeds and to identify resilience levels and opportunities for natural regeneration.

Edgar will discuss 'lessons learnt' and how an integrated approach has worked well during the last three years, treating over 44 hectares of mostly heavily African olive infested Cumberland Plain Woodland with transitional vegetation communities, variable topography, and resilience levels.

Following the walk, there will be a short drive to a viewing site in the Hoxton Park section of the Parklands, where restoration activities have been ongoing for over 15 years. David Kirkland, the Principal Environment Program Officer for the Western Sydney Parklands Trust, will discuss some of his management issues and opportunities, including BioBanking and using recreation activities to secure bushland conservation.

When: Friday 13 May 2016 **Time:** 10 am – 1 pm

Meet: Western Sydney Parklands - off Elizabeth Drive Plough and Harrow, Abbotsbury, NSW 2176.

More information and a map are available on the eventbrite website (below)

BOOKING ESSENTIAL: <https://aabrwalktalk.eventbrite.com.au> ****NOTE:** BOOKINGS CLOSE MONDAY 9 MAY



Sedges of the Sydney Region

Workshop with Van Klaphake

This course will show you how to key out the more common species of the Sydney area with ease. By the man who wrote the book on sedges and rushes of Sydney:

Dates: Sat 4 & Sun 5 June 2016 (it is a 2 day course) **Time:** 8:45 am to 4:00 pm

Place: The C.E.C.A.L. Hall at 15 Clarke Street, Earlwood (entrance on Lewis St) Nearest railway station is Bardwell Park & buses 423, 471, 499 pass nearby.

Cost: \$165 per person, \$155 for AABR members. This includes the cost of the manual. Payment must be made in full to secure a place on the course. Refunds may not be possible for cancellations after 15th May.

On street parking is available nearby. You may bring your own food and there are several food outlets nearby.

How to register:

Pay by Electronic Funds transfer to : Australian Association of Bush Regenerators: BSB: 012209, Acct No: 338123665. Please mark the deposit with your name. Then email Neridah Davies, ndavies101@gmail.com with 'Sedges 4 and 5 June', your name and organisation.

OR

cheque made out to 'Australian Association of Bush Regenerators, and posted to 17 Spedding Rd Hornsby Heights 2077.

AABR contact person is Neridah Davies, ndavies101@gmail.com 0420 363 396

Rainforest Tree Bark Trunk Workshop : Border Ranges NP 30th April 2016

Note: Previously advertised for Feb. Rescheduled to April due to wet weather.

Spend time with Peter Poropat who will take participants on a rainforest walk to learn about the bark textures and trunk features of rainforest trees. Peter has written two books on the identification of rainforest trees using these features.

WORKSHOP Northern NSW: Border Ranges NP

WHEN: Saturday 30th April 2016

TIME: 10am to 2 pm

WHERE: Meet at the Brindle Creek picnic area car park in the Border Ranges National Park, NSW.

BOOKINGS ESSENTIAL! Email: pgporopat@gmail.com or phone 0434 606 357 or Rhonda James goorambil2@bigpond.com

COST \$20

All participants will receive a free poster, and Peter's books will be for sale for \$50 for Volumes 1 and 2. (See Review AABR Newsletter No 127)



Green Bluff, Moonee Beach

AABR walk and talk



Lindy Davis, on site Bush Regenerator and Landcare Co convener

On the last day of October 2015, a number of AABR members, some travelling a couple of hundred kilometres to take part, gathered at Moonee Beach, north of Coffs Harbour NSW, for a guided tour of the Green Bluff restoration site.

The tour showcased the achievements of bush regeneration efforts which began in 2009 and included visiting a littoral rainforest and *Themeda* grass headland (both listed as endangered ecological communities under the NSW *Threatened Species Conservation Act (1995)*). In addition the group saw the native grass meadows constituting over a dozen native grass species which have emerged where weed grasses have been removed and suppressed. An exciting development has also been the increasing proliferation of *Viola betonicifolia*, which is the host plant of the threatened butterfly species, the Laced Australian Fritillary, not seen in this area for over a decade.

Of particular interest to the group was seeing the results of the recent controlled burn and subsequent weed control on a previously heavily degraded section on the *Themeda* grass headland. All were impressed with the obvious improvement in the condition of the *Themeda* grass (ie: lush and vigorous) where this treatment had taken place as compared to the untreated section.

The group witnessed the window of opportunity for access and techniques made possible in the post burn period. A few were even keen to practice a few of them.

Examples of the techniques used...

Immediately after the burn the conical stumps from mature Rhodes grass clumps were hit with a brush cutter blade with about an 80% kill rate and no off target damage.

Within weeks, as grasses began to reshoot, a knapsack unit was used to 'drizzle' (low pressure) herbicide directly onto weed grasses (again avoiding any off target damage).

As the window of opportunity begins to close, in order to maintain the goal of avoiding off target damage, 'surgical' application of herbicide was done using a paintbrush and a dustpan and/or the 'Tongs of Death' (BBQ tongs with sponges

attached) to target weed grasses as they emerge from the *Themeda*.

Once the window of opportunity closed, a track was mowed (using a catcher to harvest weed seed) around the remaining diminished 'redzone' being careful to avoid any *Themeda*.

This allows for a focus on the area outside the 'redzone' which is being treated by hand using serrated steak knives to harvest weed seed for bagging and removal before crowning out remaining weed grasses from amongst the *Themeda*. (Cutting just below the crown creates an effective kill with minimal disturbance as compared with other manual removal techniques, and seed harvest has proven to significantly reduce re-emergence of weed grasses)

An account was given of the protracted and complex bureaucratic process leading up to the burn, which took over three years. Hopes were unanimously expressed that given the obvious effectiveness of this practice the process will become more streamlined and accessible for headland restoration into the future.

As the group skirted the northern cliff of the bluff, almost on cue a mother whale and calf made an appearance just beyond the surf.

The morning concluded on the viewing platform with a very worthwhile exchange of questions, ideas and information taking place over a fruit platter, coffee and homemade cakes as we heard about the various projects taking place up and down the coast.



Identifying native grasses emerging amongst spot sprayed weed grass

Green Bluff Restoration Project

An Overview

Like many other headlands along the north coast of NSW, Green Bluff at Moonee Beach (10km north of Coffs Harbour) was subject to grazing and recreational vehicle access through much of last century. These factors are a couple of the reasons that today *Themeda* grass headlands are an endangered ecological community listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act).

This site also contains littoral rainforest (another Endangered Ecological Community, EEC listed on the TSC Act) that was, until recent years, being over run by lantana and other weeds.

In 2009 the Landcare group was able to secure funding to create a vegetation management plan and pay professional bush regeneration contractors to begin to implement the plan to help restore the natural balance of this important place.

Since then many hundreds of hours have been spent in the restoration of this site and its EECs. The most recent funding (25th anniversary NSW Landcare Grant) is allowing for the last of the major primary work to be undertaken on the site, which involves tackling the two remaining areas still dominated by weeds.

In August this year, after a three year wait, a prescribed burn was finally undertaken on a patch heavily infested with weeds that was encroaching on the *Themeda* grass.

By the time the burn took place a great deal of interest had been attracted within the community, with 23 people turning up on the day. A team of local Aboriginal bush regenerators specially trained by the Rural Fire Service assisted the local Moonee Brigade with the burn. As well, representatives from National Parks, Coffs Harbour City Council, Fire Sticks Project, Jaliigirr Biodiversity Alliance, Bush Regenerators Action Network (Coffs Harbour AABR sub-committee) and of course Landcare all attended.



Group at Green Bluff looking at area outside the 'redzone' to be handworked
Photos: Darren Moon)

The fire has allowed for improved and more accurate access to weeds, with treatment of regrowth resulting in minimal off target damage to emerging native vegetation. Ecological surveys by a local senior ecologist are being undertaken to determine the effectiveness of fire as a management tool in the revitalisation of this vegetation type with a number of species requiring fire to regenerate. The results could help pave the way for appropriate burning to be used as a matter of course in the future, as it was traditionally practised by indigenous people in the past.

The wait is now on to see if a recent application to the Environmental Trust will be successful. If it is, a further three years funding would facilitate the effective completion and double the size of this long-term restoration project.

To access a story on the burn go to the Firesticks website on <http://www.firesticks.org.au/prescribed-burn-at-greenbluff-moonee-beach/>



Photo of burn: firesticks.org.au

Launch of National Standards for Restoration

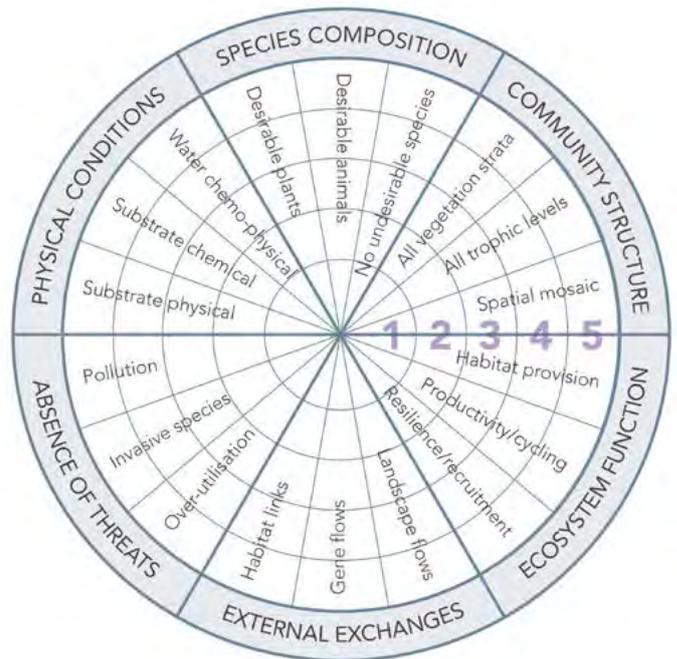
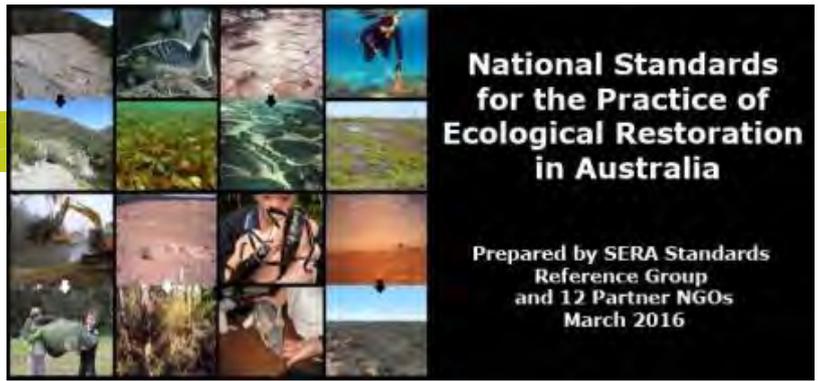
Tein McDonald, (Standards Co-editor)

The National Standards for the Practice of Ecological Restoration in Australia were launched at Mt Annan Botanic Garden on March 15th 2016. After a three year process led by the Society for Ecological Restoration Australasia (SERA) and collaboration from 12 non-government partners. Read the Standards and case studies here (<http://seraaustralasia.com/standards/contents.html>)

While recently checking over the Standards for their final release I was reminded of two main points about the document. The first is that every sentence has been carefully debated and composed by the editors and many other contributors to convey consensus insights, knowledge and protocols. The second point is that this very richness means it is not a document you can read and digest in one sitting. Instead it is a resource for managers, planners, regulators, teachers, consultants, contractors and others to read progressively and dip into over time - particularly when questions arise.

While I am probably too close to the document to judge its strengths and weaknesses, I hope that its main strength is it is a conceptual framework that defines ecological restoration as distinct from other important and complementary forms of environmental repair.

Pivotal to the distinction between restoration and rehabilitation is the intent to fully restore a site guided by a local indigenous 'reference ecosystem', acknowledging the complexities of climate change. This then helps us identify and measure targets, goals and objectives. Yet both restoration and rehabilitation can use the Standards' tools for assessing the degree recovery is achieved over time with respect to six 'ecosystem attributes'. (See diagram.) Five levels of recovery are identified to help managers



track the extent each attribute is returning to a former or more appropriate condition – whether the outcome is restoration or rehabilitation. This is further developed in an appendix describing suitable standards of practice for each industry sector.



A detailed list of activities required for professional level restoration planning, implementation, monitoring, recordkeeping and aftercare is provided. Yet it is made clear that the essence of the standards can be complied with by non-professionals by adjusting the performance criteria to better match the individual project resources.

Left: Some key players at the Mt Annan launch.

Left to right: Scott Meier, Jen Ford, (both AABR reps to the Standards) Kingsley Dixon (SERA Chair), Tein McDonald (Standards co-editor), Lucy Commander (SERA Board member) and Gregory Andrews. The main address was given by the Commonwealth's Threatened Species Commissioner, Gregory Andrews, who spoke movingly about the need for Australian's to become more familiar with our natural ecosystems and care for them. (Photo: Little Gecko Media.)

AABR's new online learning tool is on its way



Have you longed to get to an AABR workshop but found you were too far away and beating about in the bush? Have you wished you could go back and hear that fantastic speaker that was at the last AABR forum and share it with your colleagues? Do you want to be inspired and learn something at the same time?

Thanks to a three year NSW Environmental Trust grant, AABR is creating online restoration videos, more affectionately known as regenTV (<http://www.aabr.org.au/regentv/>). You will very soon have available at your fingertips a comprehensive and inspirational collection of bush regeneration expertise.

A number of videos, made by Virginia Bear of Little Gecko Media, are now online at AABR's regenTV page. This is a temporary home until the formal launch on July 21st at AABR's 30th Anniversary celebration and forum. To date, several topics are covered.

- If you'd like to get up to speed on the latest in seed collecting take the tours around Greening Australia and Mt Annan's seed production facilities both just outside of Sydney. Greening Australia's Cumberland Plain seed production facility is a real eye opener. You can see how they set up a low cost facility that allows for efficient harvesting and promotes genetic diversity. This protects remnants from over-exploitation and allows for much greater quantities of seed to be harvested more economically.
- The Mt Annan seed production facility is focussed around growing native grasses for revegetation. The video covers the learning that has evolved to understand the process behind the establishment of the seed production areas.
- If you want to be inspired by a catchment based Landcare group, the video of the Big Scrub landcare group, is well worth a watch. Mike Delaney, from EnviTE outlines the strategic approach of the Landcare group towards education and re-establishing corridors across the Big Scrub, an area just east of Lismore on the far north coast of NSW. He also explains his approach to dealing with forests of camphor laurels.
- The reconstruction of saltmarsh at Penrhyn Estuary, Botany Bay, Sydney for migratory shorebirds is an insightful case study that details the process of accommodating habitat shifts in an industrially impacted intertidal zone. Project planner Geoff Sainty effused about the 15 year long project, 'if there's any chance to get involved in working with saltmarsh get into it, because it's loaded with variables, you'll never get smart, but you'll have a lot of time...it's a brilliant area to work in'.
- Dan Cunningham from Sydney Water describes the reconstruction of 'one of the most polluted waterways in Australia', Cooks River, west of Sydney airport. An alternative

to reconcreting was proposed to a highly engaged community that involved renewal of trapezoid concrete channels to regraded and naturalised vegetated banks. A great example of a paradigm shift in Sydney Water, 'who for 126 years have done big concrete things and this is the first time they've done a big un-concrete thing'.

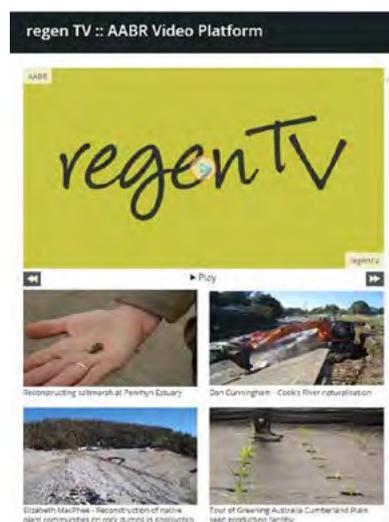
- Reconstruction of native plant communities on rock dumps in Kosciusko National Park, a \$1,548,443 project, explores the process of redressing the impacts of 400 disturbed sites that were created during the construction of the Snowy Hydro scheme. Elizabeth MacPhee talks through the logistics and the process of reshaping steep rock dumps, organic enhancement with scavenged materials and revegetating using natural systems to guide the process, 'rehab is the work of the future if we are going to survive as a species'.

Peggy Svoboda has been helping saltmarsh to recover on the Hunter River estuary near Newcastle in NSW. This video outlines the significant benefits of the restoration project at a Ramsar site of significance for migratory shorebirds and the process of constructing saltmarsh communities. Contouring of the landscape, *Juncus acutus* removal and riparian restoration are covered.

Over the next few years at least 50 videos will become available online at the regenTV site. Additional resources for learners and educators, will also be produced. The fact sheets and worksheets will draw on the recently released *National Restoration Standards* (<http://www.seraustralasia.com/standards/contents.html>) to link the case studies with best practice.

You can keep up to date with the releases via our Facebook page, and website. Or by being on a mailing list for either Contractors, Community Groups, Networks or Educators.

The mailing groups will be alerted to resource material as it becomes available. If you would like to be added to any of these mailing lists please email Suzanne Pritchard, the Project Officer, education@aabr.org.au



New biocontrol agent for crofton weed already impresses

Louise Morin,
CSIRO Health and Biosecurity

Crofton weed (*Ageratina adenophora*) is found in several areas along the NSW coast and in south-east Queensland. It produces copious quantities of windborne seeds, spreads rapidly and once established at a site reduces its agricultural or ecological value. Following extensive testing, the rust fungus *Baeodromus eupatorii* (ex. Mexico) was approved in May 2014 for release in Australia for the biocontrol of crofton weed. It infects young leaves and stems of crofton weed. It was first released at a handful of sites on the NSW South Coast in winter-spring 2014. Within 6–12 months of these releases, the rust fungus had caused extensive defoliation of crofton weed and naturally spread to nearby crofton weed infestations (in one case up to 15 kilometres away from the release site). See *AABR Newsletter 124*, March 2015 for information.

In partnership with the community, a large-scale release program of this new biocontrol agent was initiated across NSW in autumn 2015 with financial support from the Weeds Action Program (WAP) of the NSW Department of Primary Industries. The fungus was also released in 2015 at 11 sites in national parks in south-east Queensland with support from the Queensland Parks and Wildlife Service.

The community-based release program in NSW is continuing in 2016 with support from the NSW Environmental Trust. Rust-infected potted plants, grown either in pasteurised soil or in rock wool, are distributed to managers of private or public land at field events or via the post. Managers are provided with simple guidelines on how to make the release and monitor establishment and spread of the agent, and are expected to provide feedback. The potential gains from this biocontrol agent for land managers far outweigh the efforts (albeit limited) required to make a release and monitor outcomes.

As part of the WAP project in 2015, 336 rust-infected crofton weed plants were produced and distributed to land managers. A total of 81 releases (each involving a minimum of 4 rust-infected plants) were made at different sites. Details of release sites, especially coordinates, were obtained for 94% of the releases



Left: Severe symptoms of the rust fungus on young leaves of crofton weed.



Right: Infection of crofton weed stems by the rust fungus.

made. Post-release feedback was obtained from 88% of the participants, with the agent confirmed established at 79% of the sites monitored. The maximum natural spread of the agent within around 1 and 6 months after a release was 5 and 250 metres, respectively.

The partnership with land managers and community groups from different regions of NSW is enabling the new biocontrol agent to be cost-effectively released at several locations across the entire range of crofton weed in NSW. All signs so far are that this new agent will provide a sustainable tool to reduce populations of crofton weed. Continued infection of foliage by the agent should considerably reduce flowering in crofton weed and thus the quantity of wind-borne seed produced. Such reduction in reproduction will decrease likelihoods of new crofton weed infestations establishing.

Visit our web page for more information on this biocontrol release program: <http://www.csiro.au/> [enter crofton weed rust fungus in search box].

Contact us if you are interested in participating in the release program:

CSIRO Health & Biosecurity, Canberra

Dr Louise Morin, Tel: (02) 6246 4355, louise.morin@csiro.au

Mr John Lester, Tel: (02) 6246 4325, john.lester@csiro.au

February 2016

The underpinning research on the crofton weed rust was supported by the Australian Government through the Rural Industries Research & Development Corporation, the Lord Howe Island Board and the Office of Environment and Heritage NSW.



Defoliation of crofton weed by the rust fungus at a site on the NSW South Coast.

Treating mature Mickey Mouse Plant *Ochna serrulata*

Nancy Pallin

In the Ku-ring-gai Flying-fox Reserve at Gordon in northern Sydney, we have been using scrape and paint technique for many years on mature Mickey Mouse plants, where 'snap and paint' would not be appropriate.

'Snap and paint' was described in the article *New Techniques or new Terms for Old Techniques* in the *AABR Newsletter* 124 March 2015 on page 7.

The 'snap and paint' technique was described as follows:

"Snap and paint has a similar mode of action as stem scraping but can be less labour intensive. Regenerators can walk through a site relatively quickly snapping woody weeds such as senna, Micky Mouse plant, privet and camphor laurel seedlings and saplings. Technique – partially snap the stem so as not to separate it and allow it to keep growing, and dab on herbicide."

Many of the ochnas in the Flying-fox Reserve are multi-stemmed, have regrown from large trunks with many stems and often the lower part of the trunk has been buried by soil. We suspect that this form of growth may be a result of previously being cut off while others have been repeatedly browsed by wallabies. Parts of the reserve show evidence of past gardening with stone walls. Gardens adjoining the reserve are full of old ochnas, many two metres tall.



With tangled roots like this it is no wonder they are easily broken and therefore regrow.



Volunteers are killing *Ochna* one at a time using our time consuming but effective technique. Note the group of old ochnas in centre of photo; one tall one has fuzzy regrowth.

The method we have developed is to carefully remove soil from around the stem/s and roots to gain access to as much of the root system as possible onto which we apply 100% glyphosate 360. We also scrape and paint opposite sides of each stem from ground level, then high up at 90 degrees. It is critical to scrape and paint an adequate area of stem on each plant to kill it.

From our experience we would be loath to use the snap and paint method as insufficient herbicide would be applied to these 'iceberg – type' plants - more below the soil than above.



The complex root system. Before and after treatment.

All photos: N Pallin.



Restoration of Cumberland Plain Grassy Groundcover AABR Walk & Talk

November 5th 2015 saw over 50 AABR members and friends visiting the University of Western Sydney Hawkesbury campus at Richmond (~ 60 kms north west of Sydney) to see the Greening Australia Cumberland seed production area (SPA) and a grassy woodland restoration site.

Dr Paul Gibson-Roy, Lead Scientist with Greening Australia was our guide for the morning, ably assisted by Samantha Craigie, Kieran Kinney and Jane Kenny.

Seed Production Area

Our first stop was the seed production area. The installation of this facility is part of a federally funded program that aims to restore 40 hectares of grassy woodland. However, the SPA has also received support from other partners such as the NSW Office of Environment and Heritage, Western Sydney Parkland Trust, and the Greater Sydney Local Land Services. In addition there has been generous support from public donation campaigns. Since 2004, Paul has led the Grassy Groundcover Research Project which developed methods for restoring grassland and grassy woodland. Such restoration has been carried out across a broad area of Victoria, the Tasmanian mid-lands, South West NSW and for the past four years the program has been building capacity in the Sydney region to undertake the restoration of complex Cumberland Plain Grassy Woodland.

Why do we need such a facility?

Direct seeding is being used to re-establish the ground layer of these vegetation communities. This technique has been shown to be much more cost effective and result in superior ecological outcomes on-ground when compared with traditional tube stock planting methods. Restoration using these techniques is also desirable when working in landscapes where native communities are so degraded that changed management or natural regeneration are insufficient to restore complex and functional communities. There are many constraints to both natural regeneration and restoration techniques in highly degraded landscapes. Often the inter connected issue of inbreeding depression and limited seed supply will hinder natural improvement of plant populations as well as resulting

in insufficient seed available for restoration techniques to be undertaken at scale.

For restoration (or enhancement), whether for the propagation of plants or for direct seeding, seed availability is the most critical component. If small, fragmented and isolated areas of remnant vegetation were to be the sole source of this seed, the survival of these remnants would be compromised and there would be insufficient seed for the purpose.

This highlights the critical need for SPAs with cultivation of wild plants under horticultural conditions as dedicated seed crops, to ensure this resource is available in sufficient quantities for restoration and enhancement of native flora.

The Richmond SPA has been under development for three years, and is likely to take up to three more to become fully operational. The plants growing in the SPA come from wild harvested seed from multiple populations of a given species (if they are available) in order to obtain a good genetic representation. This, of course, has the potential to be controversial when provenance is discussed. However, this SPA is designed to represent and provide seed for the Cumberland Plain, which until relatively recently was contiguous and hence gene flow was likely to take place across the areas of woodland. If the premise of combining seed for genetic diversity was not accepted, and tightly constrained provenance ranges the norm, it would follow that restoration of species-rich plant communities in this region (and across Australia) would not be able to be carried out. This would surely be an undesirable outcome.

Ironically, more recently there is also the response to climate change to be factored in. This has resulted in a sector-wide greater acceptance of the concept of mixing genetic material from other regions as a buffer to climate change. So, at this point ideas about these concepts are very fluid.



Growing the seed crop

Collection of native seed has many challenges. Often there is little or limited knowledge of the plant species itself (including fruiting and seed structure, stages of seed development and ripening). On top of issues with collection from wild stands combined with unpredictable propagation outcomes for some species it may take 2 – 3 years to get viable numbers of plants to set up seed crops for a given species. Even then, it may take extra years of enhancing crops with additional plants from the wild to get healthy genetic characteristics. The aim is for crop populations to be a minimum of 350 plants. Many are up to 1000, and for a smaller selection (of dominant grasses) in the tens of thousands.

Establishing a facility of this size and complexity takes long term commitment and resources. That it will not be fully functional by the time the current funded project is completed exemplifies this. However, a primary aim of the project was to establish seed production infrastructure for the Cumberland Plain region, which would provide a legacy beyond the on-ground restoration targets of the project, i.e. to provide a resource in the region that would improve the sector's capacity to restore or enhance native woody communities well into the future. This model is somewhat different from what is normally required by funders. The fact that this project is supported by funding bodies that are prepared to support a long term vision rather than demand quick results is to be commended. Perhaps this approach might be taken up and supported by agencies in a similar way in other regions of Australia, where the need is equally pressing.

The seed collected to grow the production crops comes from across the whole Cumberland Plain, encompassing a range of soil types. Many (but not all) populations were found on shale derived clay areas. In the SPA plants are grown on a sandy loam (the prevailing soil type). We have found that, by and large, growing plants on this soil is fine but it should be remembered they are growing under horticultural conditions. Many (but not all) are growing in weed matting, some are on raised beds, others on flat beds or growing up trellises. The different growing formats are designed to facilitate seed collection. For example, the use of matting ensures seed that drops to the ground can be easily harvested by sweeping or vacuuming. The plants are irrigated with recycled water which contains some nutrients.

Some pest control is carried out, such as netting to control cockatoos which like to eat *Arthropodium* lily tubers. There are a huge number of other fauna moving into the SPA, including invertebrates, reptiles, birds and mammals. Pollinators are important and we have found large numbers of both native and introduced bees.

Morphologically the plants grown in the SPA do not show great differences from the wild parents, except they are likely to be growing more vigorously. The seed produced by the plants, is likely to be similar in characterises to that produced



by their parents in a 'good year'. When this seed is returned to the landscape by direct seeding, it is assumed the resultant plants will naturally have the genetic residence to cope with the prevailing and in the longer term natural fluctuating conditions (just as their parents may have).

Samantha, a manager of the project, explained that the species in the SPA originally commenced with common or easy to locate species, but now we are getting to rarer species. The learning involved in operating a SPA of this size and complexity is ongoing for all staff involved. Given that this is one of 39 projects currently being undertaken by GA in this region, sometimes it is difficult to maintain staff and develop the skills and knowledge needed. Despite this, the SPA is now producing significant amounts of seed from a large number of locally rare species. As an indication of this Sam noted that 200 grams of wildflower seed had been sourced from remnants last season, while the SPA produced 45 kg, a quite extraordinary increase.

Revegetation site

The ABBR group then moved on to the nearby 10 ha restoration site located about 500 metres away and still on Western Sydney University (WSU) land. Here the project had undertaken its first direct seeding of ground layer species in the previous spring. The group discussed the various techniques used and challenges faced in undertaking this work trying to restore species-rich communities. It was noted that while there were very positive signs even only after 12 months, it should be expected that there will be a longer transitioning phase in which the site moves from one dominated by exotic species to one where natives are the dominant feature.

The site where the restoration took place has a long and complex history as part of WSU, and the former Hawkesbury Agricultural College. While it is difficult to find clear records of the early history of the paddock, it was confirmed from a past student that it was used for mould-board ploughing lessons in the 1960's, a method which inverts a layer of soil. This intense cultivation would have ensured that weed and nutrient layers were mixed as were soil profiles. We also learned from herbarium records that African Love Grass (ALG), a major weed at this site and region, has been found in this location since at least 1923.

Clearly there has been a complex management history of the restoration paddock. In line with experience from similar restoration work undertaken in Victoria, and informed by testing of soil nutrient and weed bank characteristics it was decided that soil removal by scalping would be used to relieve the high prevailing nutrient and weed bank loads. However, the long term presence of ALG and the historic use of intensive cultivation mean that the efficacy of this technique was compromised to some extent. Despite this, the high nitrogen and phosphorus levels (which have been shown to favour exotic species) were reduced by scalping to levels that while still above those found in a nearby remnant site, but were much lower than what had been the case prior to scalping.

African love grass is a major weed in this area. Here its presence has been assisted when cattle differentially graze pasture species such as rye grass and leave the ALG. However, we also noted that cattle seem to eat the ripened seed of ALG. This was noted when we found many hundreds of AGL seedlings emerging from cow pats. This has serious implications for the spread of this weed through the movement of cattle, at a farm, regional and national level when one considers the routine movement of livestock in agriculture. Frustratingly, ALG is a species that can grow in low nutrient soils. And while it remains on the restoration site it has been reduced from up to 80% ground coverage to less than 30% by the scalping and subsequent management.

The restoration area was divided into different zones. The large part was scalped and sown to grass only mixes. Some of the scalp spoil was inverted (leaving nutrient and weed at the base) and sown to wildflower only mixes. This idea to create



an 'inverted island' was done to reduce costs associated with spoil movement. The seeding of zones as grass-only or wildflower-only areas means each can be managed or treated differentially (such as by the use of an elevated wick wiper or selective herbicides).

In the grass only zones there are now between 10-20 native grasses/square metre establishing, whereas prior to the restoration there were essentially

none present. On the inverted islands where the wildflowers were sown there are over 50 native wildflowers per square metre. It is fair to say there are also exotic species present as well, but these can be managed over time by various approaches and through competition from the natives as they establish.

Kangaroo pressure in the restoration area is high. There is a mob

of upwards of 100 kangaroos in the adjoining bush block. The impact of these herbivores on the native vegetation remains to be seen, but it is worth noting that in central Victoria there are some areas where the kangaroo populations are severely restricting growth of the native ground layer vegetation.

The restoration site is located on crown land. Its tenure is secure, which is very desirable. The other restoration sites chosen for the project have similar land tenures. In this way, they become something of 'safe arks' for the restored native communities. They should be safe from future development, and available for the public to see and enjoy. It is the goal of the project to recreate biodiverse and functional grassy woodland of the Cumberland Plain, and to perhaps for the first time, halt and even reverse its long term demise.

The Future

So what happens when the current funding finishes? Other sources would be required to run and maintain the SPA, but it is hoped, that if it can be shown it's possible to restore functional ground layer vegetation there may be some commercial opportunities associated with Sydney's future development plans. This would ensure that there are also important environmental/ biodiversity outcomes expected from the investment in public infrastructure. One way to improve the likelihood of this occurring would be by regulation i.e. mandating restoration as part of any approved development and construction. Let's hope this is in line with future government policy.

Many thanks to Paul and the team for a most informative day.

Photos:L Brodie

Thinking about our use of glyphosate

Kate Hughes

Thirty years ago, the use of glyphosate-based herbicides was welcomed. It's apparent lack of toxicity was seen as the main advantage over rival herbicides of the old school, especially the phenoxy herbicides, including 2,4-D and it's more notorious sister product, 2,4,5-T. Both these herbicides were used to create *Agent Orange*, the formulation used during the 1960s as a weapon of war in Vietnam (CHAST, 1989).

Today, the narrative about glyphosate is very different. Rather than a herbicide that is 'non-residual, and environmentally benign' [(Powles and Holtum, 1994) p.229], the chemical has been found to be residual in a range of environmental media, including the most important food of all, breast milk (Moms Across America and Pulse, 2014). This may have come as a surprise to many but not to all. In 1990, a biodynamic farmer found glyphosate traces in rice in a random test on an organic farm [(Short, 1994) p. 69]. Not surprisingly the finding about residues in breast milk has been strongly challenged as 'bad science' and the overall medico-scientific debate is set to continue for years, just like the debates on *Agent Orange* and DDT.

These contestations of knowledge highlight 'data gap' issues and the continual evolution of medico-scientific knowledge about the characteristics and toxicity of glyphosate, the most recent being the 2015 finding by the International Agency for Research on Cancer [IARC] which listed glyphosate as a potential human carcinogen. A medical research agency of the World Health Organisation, the IARC upgraded its assessment from "possibly" to "probably carcinogenic to humans," placing it in

the same category as red meat. Go figure that!!! The agency found limited evidence of carcinogenicity in humans for non-Hodgkin lymphoma, mostly in agricultural workers. It's status as an endocrine disruptor is also under investigation, with scientific opinion divided and the issue far from resolved.

These and other issues about the properties of glyphosate raises questions for all those who use products containing it, especially those who use it routinely at work like bush regenerators. In this short article, it is not possible to analyse current scientific debates. Rather I am aiming to contribute to the discussion with the hope that all commercial users of glyphosate-based products will think the issues through and consider the options available to them, should bans or restrictions on use be considered in Australia at some future time.

There are so many questions to be answered and as many opinions about toxicity and use value. Let's consider use value: Everyone working in bush regeneration or some form of land care often use glyphosate-based products for the control of weeds. The most common technique, known variously as 'cut-and-paste' or 'stem injection' is the safest in terms of reducing the risk of human exposure. It is also the most efficacious as it correctly targets a plant's circulatory system and ensures that the poison works as intended rather than being the *hit-and-miss* approach that is evident when void or space spraying is used. Off course, spraying directly onto weeds is part of a bush regenerator's arsenal of techniques, but one that should only be used by qualified users.

And that brings me to a critical point. As bush regenerators, members of AABR may well be aware of the quandary posed



Correct protective clothing and equipment are essential to ensure safe herbicide application. Photo: Kate Hughes

by the latest IARC findings about glyphosate. As professionals, they will be using the internet to gain information about public and private responses to its upgraded risk status. Overall, use in parks and schoolyards and on street verges seems unwise and unnecessary as there are alternatives readily available, although these are problematic due to expense or availability. It is also immoral to knowingly expose people, particularly children to a potentially carcinogenic chemical (Smith, 1991). Moreover, local governments in jurisdictions in Australia and abroad are considering their options and some have placed bans on its use. These responses to the exposure risk are occurring because of the legal liability that may result from inadvertent exposure in the urban environment, particular of children. But what about the main risk issue; the use of glyphosate-based products on food crops...something that was considered such a benefit before the inevitable issue of herbicide resistance became apparent many years ago.

For those following the debates, the same arguments that attached to food residue issues twenty-plus years ago still apply; those arguing for continued use will refer to the size of the dose whilst opponents will bring forward issues like 'no threshold' and 'total pesticide load' to argue against use of potential carcinogens on food crops. This debate on dose and response is a long-contested field of scientific knowledge and will continue to be so for some time yet. But what about glyphosate use on

woody weeds. Surely the ultimate test is one that considers the benefits of use as well as the risks, and draws upon the wider frame to highlight the essential role played by judicious herbicide application to protect Australian biodiversity.

Sound like a cop out? Depends on how you think about the wider frame. For me it is no cop-out because weed invasion is a reality for people who actively work to protect local biodiversity and the health of waterways. Here in the Macdonald Valley, glyphosate-based products are used to control black willow, arundo and tree of heaven. Without it, our river would be virtually over-run with these invasive weeds. It works on scramblers too if applied properly; Madeira vine, turkey rhubarb, you name it, they are here and keen to out compete our lovely natives. From my perspective, it is important to continually emphasise the safety of users, a situation which translates readily to protection of the original natural environment.

Off course, we all want to find safe, effective and practical alternatives to hazardous herbicides but until we do, we are, as they say, *between the devil and the deep blue sea*. Given this, it is essential that bush regenerators ensure correct application techniques and also consider some lobbying efforts to ensure their voice is heard. A highly strategic approach is recommended.

References and Further Reading

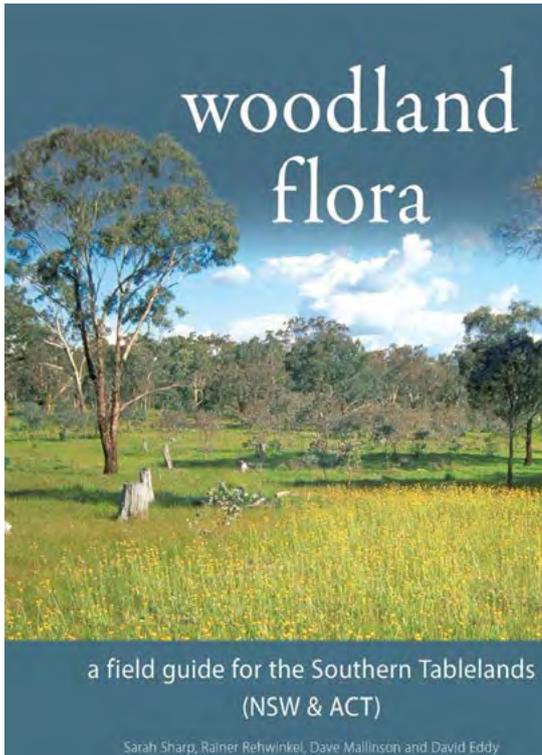
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Kate Hughes [nee Short], is a resident of the Macdonald Valley and Author of 'Quick Poison, Slow Poison. Pesticide Risk in the Lucky Country'. She is a writer, researcher and advocate with a focus on hazardous chemicals and their remediation. During the 1980s and 1990s, as Kate Short, she she successfully campaigned for bans on organochlorine pesticides and for cleaner production techniques in cotton farming and other major pesticide-dependent rural industries. Kate drafted the environmental guidelines for the 2000 Olympic Games and organised a technical and educational program to secure useful games legacy. Since then she has worked independently as a researcher and writer focussing on the clean-up of contaminated land and waterways. Today she is undertaking research into risk communication at UTS. Kate has a PhD in Politics.



The Macdonald River south of St. Albans, north west of Sydney. . Photo:Kate Hughes

Books



Woodland Flora, a field guide to the Southern Tablelands (NSW and ACT)

by Sarah Sharp, Rainer Rehwinkel, Dave Mallinson and David Eddy

The authors of this book are well known experts with a wealth of knowledge about the flora of the area. They have previously produced *Grassland Flora, a Field Guide for the Southern Tablelands (NSW and ACT)* which is a companion to *Woodland Flora*.

This book covers 440 plant species found in woodlands in the Southern Tablelands of NSW and the ACT. Many of these species also occur in other habitats and in other regions and states. *Woodland Flora* has been produced with the highest professional integrity, with all descriptions having been checked against herbarium specimens and the authors' own extensive knowledge of the Southern Tablelands.

The species includes native species of all types as well as invasive introduced species, which are identified by their common names and scientific names. Every page has descriptions of the features of each species, together with one or more photos to help identify them and in some cases, other information that is of interest or about their management.

The field guide has been produced and is distributed by Friends of Grasslands (FOG), a voluntary community group committed to the conservation of natural temperate grassy ecosystems (grasslands and grassy woodlands) in SE Australia.

Friends of Grasslands Inc is the distributor for the book and can supply both retail and wholesale quantities.

The price is \$20 per copy plus postage for current FoG members. For non-members it is \$25 plus postage.

You may order *Woodland Flora* and/or *Grassland Flora* by mail or email, and pay by cheque, money order or direct debit. You can download an order form . [Order form \(docx\)](#) [Order form \(pdf\)](#) from Friends of Grassland website. www.fog.org.au and post to: Friends of Grasslands Inc., Attention: Book Sales, PO Box 440, Jamison Centre ACT 2614, or email it to booksales@fog.org.au.

Enquiries including bulk or wholesale orders contact Sarah Sharp on 0402 576412 or email booksales@fog.org.au.

286 pages, 210 x 150 mm Publisher: Friends of Grasslands Inc ;

Paperback - December 2015; ISBN: 9780994495808 - AU \$ 25.00

Native Flora on Shale Soils of the Cumberland Plain

An Identification Guide by Teresa James

Teresa, a well know Botanist/Ecologist of Western Sydney, brought out an identification guide for Cumberland Plain Woodlands plants in 2013. This is an expanded version which includes additional species more generally of the shale soils of the Cumberland Plain.

It is an easy to use guide for around 250 native plants found on shale and alluvial soils on the Cumberland Plain in western Sydney.

It includes community information, simple keys, photos and plant profiles.

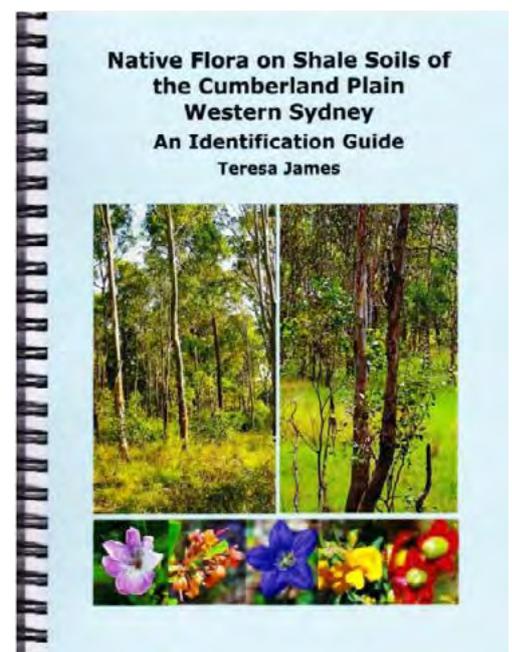
Contact: Teresa James: Tel: 02 6550 7311: Mob: 0428218502.

Email address: t.james@optusnet.com.au The price is \$38.

FLORA WORKSHOPS – Autumn 2016: Teresa is also presenting workshops on the flora of western Sydney

1. Introduction to identifying western Sydney plants (NEW): Sunday 17th April (10 am to 1 pm)
2. Grass Identification Workshop – western Sydney (NEW); Date: Wednesday 20th April (9 am to 3 pm)
3. Shale Sandstone Transition Forest Workshop; Date – Saturday, 23rd April, 2016 (9am – 3.30 pm)

Details: All inquiries and bookings to Teresa James: t.james@optusnet.com.au



Update on the AABR Contractor Forum

AABR Newsletter Number 128 contained information about the proposed contractor forum. People who are contractors, sole traders, those thinking of starting their own company or just interested in contractors' matters, were invited to participate in a survey. The purpose of the survey was to guide the design of the forum which will be set up during 2016.

AABR was pleased with the response with 16 people responding. Nearly 80% of respondents were contractors or sole traders with the remainder being bush regenerators and in other roles.

Respondents ranked topics according to what they thought were the most relevant and important areas for framing discussions.

Information people thought would be beneficial but not currently on the website included the following topics:

- Biological control trials including sites, methods, results.
- Specific treatment regimes for individual weeds in specific ecosystems.
- Activities being undertaken in less populated areas. Networks to connect to these.

- Upcoming projects.
- Work notices.
- A calendar of events from around Australia whether that is conference or Landcare events etc.
- Assisted natural regeneration discussion.
- Client and bureaucracy management.
- A place to add information reviewing material suppliers etc.

The forum will have a Code of Conduct. Rules felt to be important all included the need for respect for all stakeholders. Particular suggestions were for sledgers to be removed, use of professional language only, no personal attacks, be impartial, be polite, accept different points of view, no swear words in the public domain (should try and be professional), no 'isms' eg. racism, sexism, ableism etc., would be tolerated, no naming and shaming individuals or businesses, respect issues not personalities, and everything attributed and not anonymous.

In addition a few respondents indicated their willingness to be further involved in the forum.

It is planned to set up a unique email address for the forum contact. In the meantime, for any queries, or if you would like to help set up the forum, contact secretary@aabr.org.au

Bush Regen Holiday - Korinderie Ridge - 1-5th Aug 2016

Korinderie Ridge is a 200 hectare community-owned bushland property adjacent to Bundalung National Park on the NSW north coast. The residential community members provide delicious meals, bushland camp sites and opportunities for afternoon sightseeing in exchange for the visiting campers helping remove lantana in our conservation areas each morning. (Camping facilities include a solar shower, compost loo and a spacious community shelter - but you will need their own tent, sleeping mat and sleeping bag etc.)

Thanks to work by visiting volunteers over the last 12 years, we can see light at the end of the lantana tunnel! There is still a bit of uncleared parent lantana - enough to keep the fitter ones busy for a while down the more remote creeks - but we'll definitely be focusing on follow up this year.

So if you have not been before or would like to return - please phone Tein or Graeme on 02 6682 2885

or email Tein on teinm@ozemail.com.au

Bush pizzas: We're ready to cater! Come and try out Korinderie's latest gastronomic delights - wood fired pizzas (which are sure to feature on one night of the regen week). We will also plan a stargazing session in an area with fewer trees than last year.



Like a Holiday with a difference?

Join in one of the Friends of Lord Howe Island Bush Regeneration Tours 2016

A unique eight-day ecotour program - mornings are spent assisting the Lord Howe Island administration with eradication of asparagus fern and other weeds; afternoons spent exploring the island with naturalist Ian Hutton; evening slide presentations complete the picture of this World Heritage Island

19-26 June 2016

27 August - 3 September 2016

contact Ian Hutton 02 6563 2447

email ian@ianhuttontours.com



What's happening

Saturday 30th April 2016

Rainforest Tree Bark Trunk Workshop

Where : Border Ranges NP, NSW

AN AABR event: For more information see Newsletter Page 3.

BOOKINGS ESSENTIAL! Email: pgporopat@gmail.com or phone 0434 606 357 or Rhonda James goorambil2@bigpond.com

Cost: \$20

Saturday 30th April 2016

A field trip to Remony Farm , Kurrajong

At this AABR event, Janet Fox, in collaboration with Peter Mobbs, will host a visit to Remony Farm and discuss the ongoing efforts in regenerating bushland remnants including rainforest gullies, ironbark/turpentine transition forest and grassland.

10 am to 3 pm

Further information: www.aabr.org.au or call Janet Fox 0413 883 388

Thursday, 21st April 2016

Grass Identification

Greening Australia Workshop, SE Qld

Learn how to identify common grass species within the South-East Queensland area, comprising a classroom-based session, followed by a field trip to a suitable field site.

Where: 33 Bennetts Road Norman Park QLD.

Cost: \$159.50

More information: <https://www.greeningaustralia.org.au/events/grass-identification3>

Saturday 4th & Sunday 5th June 2016 (a 2 day course)

Sedges of the Sydney Region with Van Klaphake

This two day course, an AABR event, will show you how to key out the more common species of the Sydney area with ease. By the man who wrote the book on sedges and rushes of Sydney

8:45 am to 4:00 pm

Place: The C.E.C.A.L. Hall at 15 Clarke Street, Earlwood

Cost: \$165 per person, \$155 for AABR members.

AABR contact person is Neridah Davies,

ndavies101@gmail.com

0420 363 396

Friday 13th May 2016

Field trip to Western Sydney Parklands

A range of integrated bush regeneration approaches appeared to be the key in dealing with primary weed control over 44ha. of Cumberland Plain Woodland at the Western Sydney Parklands at Abbotsbury.

Where: Western Sydney Parklands - off Elizabeth Drive Plough and Harrow , Abbotsbury

10 am to 1 pm.

Bookings: <https://aabrwalktalk.eventbrite.com.au>

15-18 November 2016

11th Australasian Plant Conservation Conference

'New Approaches to Plant Conservation Challenges in the Modern World'

APCC11 aims to bring plant conservation scientists and practitioners together to discuss how best to approach the key threats to plant conservation in Australia.

An increased understanding of the current and potential future impacts of climate change will significantly influence the practice of conservation in Australia. While the challenges remain the same - how to deal with habitat loss, how to recover small populations, how to connect habitat - it is clear that restoration goals, extinction risk assessments and species translocations have all been re-imagined in the face of climate change. New approaches to plant conservation are now available to practitioners and in this conference, we want to explore the ways that plant conservationists are dealing with the modern challenges of protecting Australian plant diversity

Where Melbourne Vic.

Registrations open Monday 9th May 2016

<http://www.anpc.asn.au/conferences/2016>

Friends of Grasslands

For a whole swag of interesting events, check out the FoG calendar.

Friends of Grasslands is a community group dedicated to conservation of natural temperate grassy ecosystems in south-eastern Australia. FoG advocates, educates and advises on matters to do with the conservation of grassy ecosystems, and carries out surveys and other on-ground work. FoG is based in Canberra and its members include professional scientists, landowners, land managers and interested members of the public.

www.fog.org.au/



President

Tein McDonald president@aabr.org.au

Treasurer

Kirsten Vine

Membership Officer

Louise Brodie membership@aabr.org.au

Secretary

Jane Gye secretary@aabr.org.au

Website advertising

Mitra Gusheh advertise@aabr.org.au

Committee members

Elisabeth Dark, Spencer Shaw, Kate Low, Scott Meier, Suzanne Pritchard, Kirsten Vine, Mark Cachia, Melanie Ledgett, Ben Ford, Matthew Pearson

Northeast NSW/Southeast QLD subcommittee

Mike Delaney 02 6621 9588
miked@envite.org.au

Coffs Harbour subcommittee

Lindy Davis 0448 651 239 or
02 6654 5313

Australian Association of Bush Regenerators

The Australian Association of Bush Regenerators Inc (AABR)

was incorporated in NSW in 1986, and has several hundred members from all over Australia. AABR is pronounced 'arbor.'

Our aim is to promote the study and practice of ecological restoration, and encourage effective management of natural areas.

All interested people and organisations are welcome to join. AABR members include bush regeneration professionals, volunteers, natural area managers, landowners, policy makers, contractors, consultants, nursery people, local, state and commonwealth government officers—and lots of people who just love the bush and want to see it conserved.

AABR also offers accreditation for experienced practitioners.

AABR News is usually published in March, June, September and December.

AABR C/O Total Environment Centre

P.O. Box K61 Haymarket NSW 1240

0407 002 921

www.aabr.org.au

enquiries@aabr.org.au

ABN: 33 053 528 029 ARBN: 059 120 802

Membership fees

Individuals \$30 (unwaged \$15)

Organisations (*does not confer membership to individuals in the organisation*)

• business (< 5 staff) \$120

• business (5-20 staff) \$300

• business (> 20 staff) \$480

Government \$60

Not for profit \$30 (*or \$0 with newsletter exchange*)

Benefits of Membership:

- discount admission to all AABR events
- four newsletters per year
- increased job opportunities
- discount subscription to the journal Ecological Management & Restoration
- opportunities to network with others involved in natural area restoration
- helping AABR to be a strong and effective force to promote natural area restoration, and support the industry.

Newsletter contributions and comments are welcome

Contact Louise Brodie newsletter@aabr.org.au 0407 068 688

Opinions expressed in this newsletter are not necessarily those of AABR