AABR

AABR NEWS

Australian Association of Bush Regenerators

working with natural processes

№ 139
January
2019

Crowdy Bay Celebration and Workshop

Saturday 18th May 2019

Exact time and meeting location to be confirmed

AABR joins with mid-north coast branch of NSW National Parks Association (NPA) for their 40th year celebration (see page 3 for a short history about the work).

AABR visitors will be able to join in the annual bush regeneration camp (to be held from 13-19 May) at beautiful Kylies Beach.

It is anticipated that the day will include the following activities, starting at around midday:

- **a workshop on the Recovery Wheel doing a site assessment on the area they are working on this year**
- **AABR members socialising with the group at the celebratory lunch**
- **sleep over on 18/5/19 at the 'fee free' camp site and enjoy the free evening meal**
- **AABR members welcome to do some onground support on Sunday morning - finish by 11:30am.**

Other info-

- there is a kitchen trailer available for volunteers to use
- camping fees will be waived for the event
- Sat night BBQ is free
- 10am on 18/5/19 is the 'official celebration'
- RSVPs required for celebration and BBQ
- volunteers welcome throughout the week 13-19th .

More information will be sent in an e-news bulletin or email Suzanne at admin@aabr.org.au

Other AABR events being organised for 2019

- **Aug/Sept; Cumberland Land Conservancy: Site visit - Aug/Sept**
- **March/April: DPI workshops: Aquatic Weeds and NSW *Biosecurity Act 2015***

President's Perspective

Hi all

Happy new year to all.

Another busy year approaches, what with multiple field trips, events and initiatives. And our committee activities are becoming even more interesting.

That is, the AABR committee is shaping up to be more representative nationally. We now have reps on the committee from Qld, NSW, VIC and SA – and are finding many issues of national importance. The primary among these is the need to assess the status of Vocational Education and Training (VET) across Australia that serves the bush regeneration and ecological restoration industry. To that end, in February the committee is commencing discussions between the State reps and training specialists about issues of course accessibility and delivery standards.

We also anticipate reviewing the wording of a couple of the 12 bush regenerator practitioner competencies around genetics and revegetation to ensure they are consistent with the recently published Version (2.1) of the National Standards for the Practice of Ecological Restoration, which AABR collaborated on. (A short 'explainer' of the National Standards can be downloaded from the AABR website - (go to http://www.aabr.org.au/learn/what-i-bush-regeneration/national-restoration-standards/) or from the SERA home page (click on the picture).

Another major focus this year will be raising sponsorship to further support **regenTV**, which you will know is AABR's educational video platform. Our videographer Virginia Bear's hard drives are just brimming with new material yet to be edited. Sponsoring a video will be an excellent way for bush regeneration companies, nurseries, suppliers and other approved sponsors to gain greater visibility across Australia. (Watch this space.)

In summary, the wider national representation and reach of AABR promises to inject our work with more energy and activity, increasing our potential to influence improved standards for the management of native ecosystems across the country, in collaboration with our many colleagues working in other organisations.

Tein McDonald

President AABR

AABR's New Committee

At the AABR AGM in November 2018, the committee members were elected as below.
Note that committee members come from a variety of locations

Executive

President: Tein McDonald (Far North Coast NSW)
Treasurer: Suzanne Pritchard (Hunter NSW)
Secretary: Jane Gye (Sydney)

Committee members

Matthew Pearson (South Australia)
Agata Mitchell (Sydney)
Rob Scott (Victoria)
Deb Holloman (NSW Central Coast)
Scott Meier (Mid North Coast NSW)
Victoria Bakker (Queensland)
Spencer Shaw (Queensland)
Peter Dixon (Sydney)

Unelected roles

Public Officer: Heather Stolle
Admin/Education: Suzanne Pritchard
Accreditation: Danny Hirschfeld
Newsletter and Membership: Louise Brodie
Video/Photo expert: Virginia Bear
Technology guru: Mitra Gusheh

View the bios of the comittee members on the website.
http://www.aabr.org.au/about-aabr/aabr-committee-members/

Projects for 2019

(prioritised according to human and financial resources)

- AABR Draft Strategic Plan (including question of state groups and succession planning to involve next generation)
- Business planning to raise sponsorship for '**regenTV**' post NSW Environmental Trust grant
- Reviewing and promoting AABR accreditation and ongoing professional development
- Transparent process for RTO 'recognition' for AABR accreditation
- Potential to assist Revision of Bush Regeneration Contracting Guidelines
- CLM customisation and encouragement of skills sets for bush regeneration and ecological restoration
- Planning and hosting an Industry Forum.
- Ongoing editing of new videos for regenTV (including Albert Morris Documentary).

Welcome to new AABR Members

Sue Baker
Andrew Coghill
Juliette Deane
Roger Lodsman
Edouard Loisance
Julie Marlow
Callie McDonald
Joyce Meyer
Beth Michie
Carla Pearce
Yann Riou
Maurizio Rossetto
Rob Scott
Jessica Strong

Business

The World As I Am Pty Ltd
Naturelinks Landscape Management Pty Ltd
Enviroculture Maintenance Services Pty Ltd

Organisations

Greater Sydney Landcare Network
Agribusiness SkillsPoint TAFE NSW Griffith
Wingecarribee Shire Council

Congratulations on Accreditation

Paul Price
Paul Thistlethwaite

Are you wanting to be an AABR Accredited Bush Regenerator?

Behind the scenes of the Accreditation process

AABR accreditation as a bush regeneration practitioner is recognition of a person's competency to practice in the industry and is sought after by practitioners and employers alike. Few are aware however, of the diligent approach that underlies the accreditation process.

Assessing an applicant for AABR accreditation is a comprehensive process performed by highly experienced volunteer assessors. The assessors are bush regenerators who have extensive industry expertise along with a commitment to maintaining the standards of the bush regeneration industry to ensure the best possible restoration outcomes for the environment.

Assessors are AABR accredited practitioners who have themselves been through an application process to become an Assessor.

When an application for accreditation is received, a regional assessor will review the documentation and determine if the qualifications and field experience are adequate for a **standard assessment**. The qualification required is CLMIII delivered in a bush regeneration industry context. The minimum experience is 500 hours over at least two years under an AABR recognised supervisor. If these criteria are satisfied, the application is automatically approved.

If, for a variety of reasons, the knowledge obtained through prior learning and in the qualifications needs to be explored, or the skills gained through field experience need confirming, a **non-standard assessment** is undertaken involving either one or two assessors preferably in the field.

Determining an applicant's merit is not just up to one individual assessor. Not only are there usually two but AABR's Accreditation Sub-committee, currently of 6 members, consider the Assessors' report and its recommendations. The Accreditation Sub-committee then puts forward a recommendation to the AABR committee, currently at 11 members, the majority of whom are accredited practitioners themselves.

As you can see it is quite a rigorous process and, because of this, AABR Accreditation is highly regarded within the bush regeneration community and by contractors and land managers.

If you would like your competency as a bush regenerator acknowledged, applying for accreditation involves completing a form outlining your qualifications and experience. The application form and competencies which are expected of an accredited practitioner are on the website http://www.aabr.org.au/about-aabr/accreditation/.

Crowdy Bay 40th Anniversary Celebration

AABR will be joining with the mid-north coast branch of NSW National Parks Association (NPA) for their 40th year celebration .

On May 18th 2019 Mid North Coast Branch of NPA will celebrate a milestone — forty years of bush regeneration in Crowdy Bay National Park. The celebration will be held during the annual bush regeneration camp from 13-19 May at beautiful Kylies Beach.

Originally the area was sand mined and when operations finished, sown with South African bitou bush, which of course is now known to be a major weed. Its spread was rapid, moving onto the iconic Diamond Head. The then park ranger Mike Dodkin (still involved to this day) suggested that to address the negative perception by some in the community of the NPA branch's strong involvement in the campaign to save the north coast rainforests from logging, they take on a positive on-ground project, namely to eradicate bitou bush from Diamond Head.

Forty years later and the project has spread north, south and west of the headland involving numerous government grants, aerial spraying of bitou, on ground contractor work and thousands of labour hours from NPWS, the branch and other volunteers.

Sue Baker, coordinator for the past 20 years said, 'I gave up counting the in-kind and cash contribution from the groups' contributions when it reached $2 million between 2001-2006! Ditto the number of bitou plants removed when it reached 250 000 many years ago. Twenty-four km of foredune including crown land to the Park's north have been intensively regenerated, together with hind dune littoral rainforest and several other habitats involving all weed species present.

The project is recognized nationally as not only highly successful but as Australia's longest running bitou bush eradication project.

Left: Clearing up the last remaining patches of bitou at the base of Diamond Head

Above: Ex NPWS regional manager Greg Croft lends a hand.

Photos: NPA

AABR Achievements

between the AGMs of September 2017 and November 2018.

Thirteen committee meetings were held since the last AGM (6 full committee and 7 the executive) to progress the following activities:

Communications

- 5 Newsletters since the last AGM - #134 October 2017, #135 January 2018, #136 April 2018, #137 July 2018, #138 October 2018 – to >600 people (4 newsletters per year)
- 12 e-bulletins sent to between 595 and 1556 people (6 related to Albert Morris Award and Big Scrub Field Trip)
- Awards Nomination: Tein McDonald - Green Globe finalist

Events

- Site Visit to Popes Glen in the Blue Mountains - 22 Sept 2017
- Site Visit 'The Fern & The Burn', Coal Point NSW 28 Oct 2017
- Flame Weeding workshop and Site Visit. Artarmon Reserve, Sydney. Willoughby Council 8 May 2018
- Workshop 'Getting to Know Your Grasses' with Harry Rose. Western Sydney 2 June 2018
- Bus Excursion and Field Trip to the Big Scrub in Northern NSW. In conjunction with SERA18 conference Sept 20 to 24 2018: Sites included Wingham Brush, Lumley Park, Victoria Park NR, 2 private properties, Booyong NR, Rocky Creek dam, Cooramba NR

Industry advocacy: Representation and Submissions

- NSW Biosecurity Round Table- Jane Gye - raised Coolatai Grass issue. http://www.agriculture.gov.au/biosecurity/partnerships/nbc/biosecurity-roundtable/nsw-act-aug18
- Plant Sure Scheme Reference Group – Jane Gye
- Australian Industry and Skills Committee - Amenity Horticulture, Landscaping, Conservation and Land Management - Jen Ford
- NSW OEH Wildlife Licensing Reforms submission
- National Biodiversity Strategy submission
- NSW Environmental Trust Grant Assessment Panels: Community applications – Mary-Lou Lewis; Government applications – Louise Brodie

Gifts and Donations

- NSW Total Environment Centre $100
- Barrier Field Naturalists (Broken Hill) - $200
- Albert Morris Award and Sculpture -$1835
- Mark Foster Award $50 (Student Award NSW Central Coast TAFE)
- regenTV survey prize $50

Membership, Accreditation and supporting regenerators

The system of renewal involving sending out invoices is proving successful with a higher level of renewals early in the financial year. Renewals are from 1st of July, and up to mid September 2018, around 62% of members are financial for 2018-19, which is slightly higher than last year.

Accreditation: 13 Accreditation applications were received: Approved = 1; Still in progress = 10; some pending Assessor availability = Central Qld, SA, NE NSW. AABR is streamlining with the AABR administration officer input to improve support for the process.

regenTV

Our **regenTV** videos are currently accessed via the AABR website.

The videos have accumulated 4200 plays of the 39 professional videos which have been produced to date from AABR's forums(12 videos), seminars (17 videos) , field days (9 videos) and conference (1 video) with the accompanying indexes.

Four sets of learning resources, with fact sheets and work sheets, have been produced covering the themes of seed and plant production areas, appropriate approaches to restoration, reference ecosystems and scaling up.

A page of external links has also been established. Eleven more videos and a learning resource on engagement will be produced to complete the grant in Feb 2019.

regenTV Promotion has included

- AABR presentation at Volunteer Coordinators Network 5/4/18
- Trade Table at the September 2018 SERA conference
- regenTV presentation at the September 2018 SERA conference
- AABR brochure revised
- regenTV banner
- regenTV T-shirts

Collaboration and partnerships

- SERA – Forum field trip
- ANPC/GA/SERA: Albert Morris Award & National Restoration Standards
- Network of Biodiversity Managers-Victoria/IFFA
- Great Southern Forest
- Journal of Ecological Management & Restoration (membership discount)

Maintenance of the AABR Facebook Page: likes are at 1504 (up from1200 at Sept last year). The reach of the Facebook page over the past year peaked at 7640 on 23/9/18 with a post on grass trees aren't a grass (and they're not trees).

The AABR Website performance: 69,115 unique pageviews Sept'17 to Nov'18.

In the past year there has been 24,994 users of the website over 40k sessions. Users viewed 82,426 pages for an average of 2pages/session for 2 minutes. 14.8% were returning visitors. 58% access the site from desktop, 32% by mobile, 9% by tablet. 46% website users are female and 54 % male.

Most viewed pages were:

- willows in Australia 3746 pageviews (5.42% of total unique views)
- Bradley Method 2058 pageviews (2.98% of total unique views)
- regenTV 1533 pageviews (2.2% of total unique views)
- what is bush regeneration 973 pageviews (1.14% of total unique views)
- what is bush regeneration - different Australian vegetation types 702 pageviews (1/02% of total unique views)
- bush regeneration history essays

New Services provided by the website:

- Online listing of accredited practitioners and mentors
- Online membership sign up

Website Promotion of regenerators and servicing the industry

- Provision of Bush jobs Service - 17.52% website traffic (12112 unique pageviews in the past year)
- Business Directory - 1.68% website traffic (1159 pageviews in the past year)
- **NEW** Online listing of accredited practitioners

Publication

Ed. P Ardill & L Brodie : *Albert Morris and the Broken Hill regeneration area. Essays and supplementary materials commemorating and celebrating the history and eightieth anniversary of this project*. See http://www.aabr.org.au/aabr-publishes-a-regeneration-anthology/

regenTV

The Environmental Trust grant that has been funding the regenTV project for the past three years will be coming to an end in February. The regenTV crew are busy sprinting towards the due date with a new learning resource on Engaging Others and 11 more videos in production.

The final uploads will include a selection from AABR members who presented at the SERA2018 conference - Striving for Restoration Excellence, along with some gems from the vaults of the 2015 NCC bushfire conference - Fire and Restoration: working with fire for healthy lands.

The videos that will be available in the near future include:

- Fire management business in Australia's tropical savannas, Adjunct Professor Jeremy Russell-Smith
- Jonathon Sanders and Dr Charles Morris - Trialling the use of fire to manage priority weeds in Cumberland Plain vegetation,
- Professor Lesley Hughes - Setting the scene: climate change and the changing fire risk.
- Den Barber - Blue Mountains FireSticks,

Have you been watching regenTV?

Several of AABR's aims relate to promoting the study and sound practice of ecological restoration, fostering education and advancing knowledge in bush regeneration. The regenTV platform allows AABR to meet these aims.

The regenTV videos have been played 4600 times. The most played to date has been Mark Bachmann's presentation on the Wetland restoration case studies from the Discovery Bay Coast (288 plays), closely followed by Trevor Booth's explanation of how to use the Atlas of Living Australia to assist in provenance selection (262 plays) and Jen Ford's Introduction to the National Restoration Standards(248 plays).

Have you watched one of the regenTV videos, or used the learning resources? Your feedback via the online survey on bottom of every video page would be greatly appreciated. This will not only assist in the final reporting to the Environmental Trust but it will also help us to better understand what you would like to see from the regenTV project. AABR is looking to continue to fund the project through sponsorship. Providing testimonials and feedback will strengthen our case. Here is the link to the feedback form https://goo.gl/forms/Il2xGmi7Iojf5dNP2

From SERA2018

- Dr Paul Gibson-Roy - Keynote : Native seed production 'farming for restoration supply': Lessons from local and US sectors
- Dr Tein McDonald - Keynote - How the National Restoration Standards' affirmation of native ecosystems as references can strengthen SERA's function as a broad church
- Damien Cook - Restoring tree cover in the Ramsar-listed Koorangie marshes through an indigenous partnership
- Tein McDonald - Recovery processes underpinning rainforest restoration in the Big Scrub
- Tony Parkes - Big Scrub - making a vision of genetically appropriate seed production areas a reality
- Rowena Morris - Community solutions to rehabilitating seabird breeding habitat on Big Island (Booirodoong), Five Islands Nature Reserve
- Jen Ford - Maximising ecological restoration outcomes through threatened species management programs
- Jen Ford-Scaling up - Is it possible or an ongoing aspiration?
- Todd Dudley - How ecological restoration can help facilitate a nature conservation culture
- Suzanne Pritchard - Six years and $250,000 - what a community group learnt from implementing a major project
- Nikola Manos - 'Creek Heroes' are winning the battle in the City of Onkaparinga urban watercourse restoration project
- Alexandra Campbell - Operation crayweed: Restoration of underwater forests
- Basil Schur - Using the YouTube platform to promote Gondwana Link eco-restoration

Recognising Water Weeds Course

A partnership between Hunter Local Land Services & Department of Primary Industries

Location: Bulahdelah Bowling Club, 50 Jackson St, Bulahdelah

TUESDAY 26 February 2019
9:00am – 4:30pm

Morning tea, lunch and afternoon tea provided

You can RSVP via this link:
https://hunterlls.wufoo.com/forms/zhu5gmx01yjxxf/

Inquiries to: Charles Mifsud, 0428 015 455 or charles.mifsud@dpi.nsw.gov.au

This free one day course is designed for weed professionals or people working within the natural environment, including landholders or Natural Resource Management staff.

Attendees will receive a range of resources including a workbook, resource CD, Plant Identification Field Guide and Survey Guidelines.

Topics to be covered include:

- Examining live plant specimens to help to distinguish between native and introduced species
- Water weed habitats
- Impacts and vectors of spread
- Legislative requirements
- Recognising plant characteristics
- Correct disposal of aquatic plant material
- Early detection survey guidelines.

This project is supported by Hunter LLS, through funding from the Australian Government's National Landcare Program.

NSW GOVERNMENT

Australian Government National Landcare Program

Rainforest Restoration. AABR Journey to the Big Scrub!

The AABR group and others who toured to the Big Scrub in September 2018, visited a number of bush regeneration sites near Lismore and Alstonville in north east NSW. The story continues.

Lumley Park

This rainforest remnant was visited as part of the trip with a celebration to commemorate the work of Ambrose Crawford on this site of what is likely to be the oldest 20th Century ecological restoration project in Australia, if not the world, having started in 1935 (See AABR Newsletter #138).

We were guided through the reserve by Stephanie and Julian Lymburner who worked in the reserve for many years. Stephanie described the work in AABR Newsletter #137.

We walked through the park to see the results of past and present regeneration work. Darren Bailey is currently working at the site and has been for more than 10 years now and the site is currently looking better than ever.

After work by Stephanie and Julian, who treated most of the mature weeds, there was a period of about 2 years when the site sat idle. At that time there was a substantial flying fox colony roosting at Lumley park which resulted in significant canopy damage. There were major ground and mid layer infestations of Madeira vine as well as moderate infestations of Cocos palm, montbretia, coffee bush, ochna, privet, trad, cats claw creeper, murraya and white passionflower. The high light levels and extra nutrient input resulted in very rapid growth rates for the main weeds. Darren carried out repeated follow up treatment over an extended period and this facilitated a complete recovery of the mid stratum of rainforest and effected an overall shading out and slowing of growth of environmental weeds.

Ongoing problems include regrowth of most weeds which remain common along the creek bank and around the other edges of the site while the core area of rainforest is relatively stable. Currently there is relatively small resident population of flying foxes and canopy damage is minor. They do however deposit seeds of a variety of weeds and various exotic fruit trees into the site. There are also major infestations of Madeira vine on vacant land upstream of the site which is deposited along the creek bank and in nearby areas of rainforest during seasonal flood events. So ongoing follow up work will be required for this small urban remnant into the foreseeable future. Hopefully Ballina Council will continue to support this ongoing work.

Pictures of Lumley Park
Signage giving history. Photo L Brodie
Group in the rainforest
Flying foxes in the park
Photos: S Pritchard

Victoria Park Nature Reserve

One of the earliest Big Scrub camphor conversion and extension planting sites. Work commencing in the late 1970s. Mike Delaney, Dan Cox, John Nagle and Jen Ford were our hosts and guides, along with Tein McDonald who has assisted with monitoring of changes.

Long-term bushland restoration projects are difficult to interpret for recent visitors - it is hard to tell what the site looked like before restoration commenced including restoration on the cleared land surrounding the reserve. A knowledge of the initial planted species is needed if we want to know which species are now recruiting to the re-vegetation or plantation site. Knowledge of the successional phase of these recruited species will help us judge how well that recovery is going

Our visiting group included people who remembered Victoria Park as a small and vulnerable remnant with a weed infested edge and with camphor laurel trees in the adjacent grassy paddock, with very young plantation trees emerging from kikuyu and soft weed competitors. Now to the visitor's eye it would be hard to determine where the edge between the remnant and the restored forest of the cleared paddock meet. Our guides showed us that not only are there many new species regenerating which were not planted, but that many of them represent a much more mature phase of succession than the early colonising species that were first planted.

Victoria Park is a 17.5 ha Nature Reserve near Meerschaum, SE of Lismore, of which 9 ha is remnant subtropical rainforest vegetation — part of the former Big Scrub. It was gazetted as a Nature Reserve in 1975.

The core remnant area had few weed issues, and it was the remnant edges and the surrounding cleared paddock which required what was called 'reafforestation' at the time (now forest restoration). Since the grazed area belonged to NPWS it was to be restored.The remainder of the reserve has been undergoing rainforest restoration works since 1978.

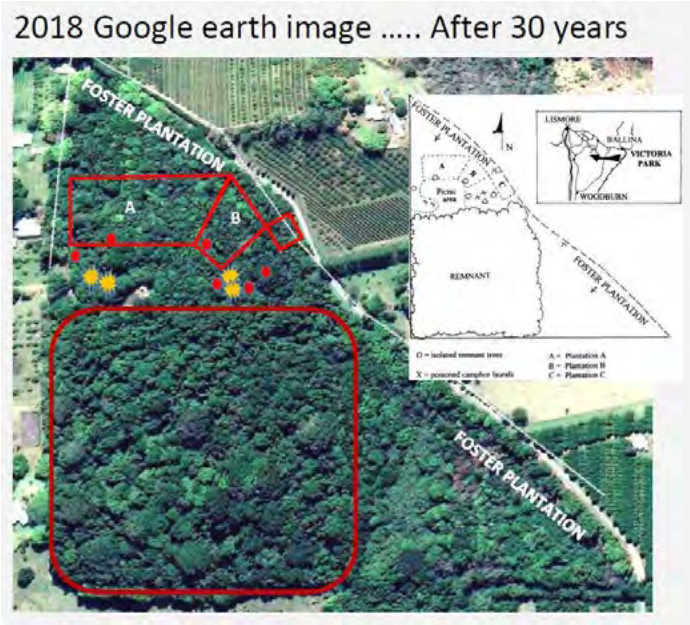
In the early 1980s, with the involvement of Alex Floyd, John Hunter, Sandy Gilmore and John Nagle, restoration work began, including replanting of the grassy areas. Works were supported by the Richmond Valley Naturalists Club and much needed but limited funding and resources were provided by NPWS through the main planting decade of the 1980s and early 90s.

In the early stages there were battles between the mowing team maintaining areas for day use and picnicking and the bush regeneration teams, with an outstanding compromise achieved which offers a range of experiences to the visitor today. The plantings required substantial maintenance, particularly in the early years, as weeds thrived on the deep red soils of the area.

Victoria Park grassy paddock near remnant in the process of being planted, late 1970's. (Archival photo: National Parks and Wildlife Service Lismore).

The main species planted were largely early successional: red ash (*Alphitonia excelsa*), brown kurrajong (*Commersonia bartramia*), corkwood (*Duboisia myoporoides)*, silky oak (*Grevillea robusta*), white cedar (*Melia azedarach*), bleeding heart (*Omalanthus populifolius*) and red cedar (*Toona ciliata*). Some isolated paddock trees of camphor laurel were poisoned, with outstanding natural regeneration in response to the diminishing canopies and root zone competition. Regrowth, especially of lantana was controlled by bush regenerators who worked in the reserve from 1985 to 1990.

Big Scrub Landcare Green Army teams have carried out planting and maintenance of the southern end in 2015 to 2017



After 15 years …

- 68 species were found in the plantations (i.e. 72% of 94 species in the remnant)
- Most of those found (45) were later successional (late secondary or mature phase)
- 56 were flying frugivore spread and 8 were wind spread.

And after 30 years…….

This number has increased and there are now more mature phase species in higher levels of the canopy, demonstrating that maturation is happening. The project is succeeding!

Implications and further questions arising from studies of the plantations in Victoria Park

Victoria Park is but a microcosm of the similar processes occurring throughout the once-cleared landscape of the Big Scrub — i.e. it exhibits all the restoration processes and challenges on the way to forest recovery that are likely on other sites. The remnant provides more mature phase seed sources for bird and bat dispersal into the adjacent early phase plantings.

The broader landscape has increasing amounts of regrowth 'receiving areas' (including camphor regrowth) for reweaving some of the fabric of the lost Big Scrub — but work is needed to ensure that there are sufficient mature phase species seed sources near these areas to enable them to become more complex and better resemble the former Big Scrub.

This challenge is being addressed by Big Scrub Landcare's new and ambitious project (being undertaken in collaboration with the Royal Botanic Gardens' Restore and Renew program — to create seed orchards of genetically appropriate mature phase species that landholders can plant adjacent to or within camphor regrowth areas.

Mike Delaney, Jen Ford, John Nagle and Tein McDonald were our hosts and guides (Plus Dan Cox - not in photos). Right: Heading into the plantation. Photos: V Bear Little Gecko.

Brockley

A private property where some outstanding camphor conversion has occurred, funded by grants and the landholder, the Handley family. We will be welcomed by Jenny Handley and our guides here will be Stephanie Lymburner, Tim Roberts and Jen Ford who have all worked at the site.

Charlie and Jenny Handley are the owners of 'Brockley' which is an agricultural property of 88 hectares, on the Alstonville Plateau, near Lismore in northern New South Wales. The property has been in the Handley family for over a hundred years. The current owner's great grandfather went to the Canterbury Plains in New Zealand, which had little timber. On settling on Brockley in the late 1860's he decided to retain timber on the property.

Two remnant areas of around 28 hectares are retained on Brockley and together with a riparian corridor are managed alongside the commercial Macadamia plantation and other enterprises.

Although the remnant areas of mostly sub-tropical rainforest were relatively intact and had high native plant diversity, they had extensive weed growth with a range of exotic vines, shrubs and trees. The dominant weeds on the property included large-leaved privet (*Ligustrum lucidum*), camphor laurel, coffee (*Coffea arabica*); cat's claw creeper (*Dolichandra unguis-cati*), lantana (*Lantana camara*), thorny poinciana (*Caesalpinia decapetala*), corky passionflower (P*assiflora suberosa*), morning glory (*Ipomoea indica*), mist flower (*Ageratina riparia*) and crofton weed (*Ageratina adenophora*).

The current restoration program began in the late 1990s. From 1995 to 1997 Big Scrub Landcare Green Corps under the supervision of Environmental Training and Employment (EnviTE) teams worked on the property. Initially this was in remnant 1, adjacent to the Bruxner Highway to control cat's claw creeper.

Brockley Remnant 1 - prior to bush regen work

Location of the Big Scrub in Northern NSW

This extended to remnant 2 to carry out control of camphor laurel.

The owners realised they needed further assistance and sought funding. In 1999, a 40-year Property Agreement was signed between the Handleys and the former NSW Department of Land and Water Conservation to secure the formal protection of the remnants. This also allowed for funding to employ a team of professional rainforest regenerators for a few years. Regenerators Julian and Stephanie Lymburner and Tim Roberts have all worked on the site.

In 2000 the Handleys were also able to have a restoration plan written by Hank and Sue Bower, which detailed restoration priorities and practical management strategies for the remnants. This plan also identified potential for further work in the corridors between the remnants. The regenerators have also been employed by the family to maintain the treated areas.

Remnant 1 of around 22 hectares, prior to treatment was invaded by cat's claw creeper along the forest edge and canopy, and seedlings carpeting the forest floor. This was treated early in the program. Exotic vines and woody weeds were treated by the cut stump method plus stem injection of larger weed trees using glyphosate herbicide. Spraying of seedlings on the ground was part of the follow-up. Some camphor laurel trees were retained, as were the germinating exotic species tobacco bush (*Solanum mauritianum*) to maintain microclimate conditions and to attract birds dispersing seed of rainforest species and to protect regenerating seedlings. After treatment regeneration was good with many native seedlings replacing the weeds.

Brockley Remnant 2. Original rainfoest tree

The smaller second remnant of ~6 hectares, was considered to have good resilience, with little weed invasion in the rainforest core but with a fringe of weed species. Camphor laurel was removed by Greencorp teams and this was followed-up.

On the edge of remnant 2, soil disturbance occurred when clearing camphor laurels to expand the areas for Macadamias. A dramatic germination of pioneers occurred. This resulted in the area being left to develop into regrowth rainforest.

More information:

Lymburner, Stephanie & Handley, Charlie & Handley, Jenny. (2006). Rainforest rehabilitation on a productive Macadamia property: The Brockley story. *Ecological Management & Restoration.* Volume 7 No 3 December 2006 Pages184 - 196.

Rocky Creek Dam

The group visited Rocky Creek Dam which is the location of outstanding pioneering work by Ralph Woodford in converting Lantana and camphor to regenerating rainforest. Rous Water's Anthony Acret is one of our hosts together with Tein, Iain Stych (EnviTE) and Jen Ford as guides.

Rocky Creek Dam is a well know restoration site with the work supported by Rous Water the owners of the site. It was exciting for the group to visit and see the success and progress of the restoration work.

Rous Water Rainforest Reserve is at Rocky Creek Dam, managed by Rous Water and which supplies drinking water to the Northern Rivers area. The Rocky Creek Dam site is adjacent to the Big Scrub Flora Reserve, the largest remaining remnant subtropical rainforest in the region. This reserve acts as a reference site for the restoration project in the rainforest reserve.

The area was cleared and used for dairy farming. Rous Water acquired the site for the dam and at that stage the land was weedy regrowth with scattered rainforest remnants.

In 1983, Rous Water commenced restoration of the site, which has involved the removal of weeds that suppress rainforest regeneration. Ralph Woodford was employed 3 days per week to undertake horticultural work around the main entrance of Rocky Creek Dam. Ralph also undertook (with the support of management) some tentative regeneration work

Over the years of his work, Ralph developed a method of rainforest restoration which is now called the Woodford Method, which has led to the treatment of around 70 hectares in 1-2 ha blocks. This is around 30 % of the Rocky Creek Dam property.

In brief the Woodford Method involves treating secondary regrowth of rainforest dominated by weeds as follows.

- In **winter**, killing the lantana which dominate secondary regrowth. A tractor can be used to flatten extensive areas; followed by slashing repeatedly to create deep mulch. Removing the lantana thickets allows access to tree weeds.
- In **spring**, when tree weeds uch as camphor and privet have a growth spurt, kill them by using herbicide treatment. Leave the camphor in place to act as 'perch trees' for birds and bats which spread seeds through their droppings. As the weed trees die, their leaves and branches fall and form mulch on the forest floor. Light is also able to reach the forest floor, and spring storms will wet the mulch allowing fungal mycelium to break the mulch down and produce bare patches of soil.
- **In Late spring / early summer the** bare soil, with moisture, light and an appropriate temperature, allows seeds to germinate. The first things to come up are annual weeds plus camphor and privet seedlings. It is important to remove these weeds and not let them go to seed so that light can again reach the forest floor. Two sprays during this season generally removes all the weeds and their seeds and on this site the native seed bank is strong enough to lose some rainforest seedlings in this initial spraying.
- Seeds of rainforest species tend to germinate after the highest summer temperatures (sometimes up to 38 and 40 degrees) have passed. Thus by late February and early March, conditions can produce a massive germination of rainforest seeds which grow very rapidly. Hand weeding is usually needed around these rainforest 'pioneers'.
- **By Early winter** on a good site, with the best seasonal conditions, many of these rainforest seedlings will have grown to saplings above head height and can create a closed canopy within the same year. With less light reaching the forest floor, the amount of weed regrowth is reduced but there is still enough light for later successional rainforest seedlings to germinate.

Use of this method means that, means that recruitment from the seed bank and adjacent rainforest areas and the use of stags (from dead camphor laurel) as perches for seed dispersing birds, very limited planting has been required on the site, which has preserved the genetic integrity of the Big Scrub in this location.

Monitoring has shown that the structure of the older treated regrowth areas sites appears to be converging on rainforest conditions, with 25 ha of systematically treated compartments that were covered almost entirely with lantana are progressing back towards the original Lowland Subtropical Rainforest's composition, structure and ecological function.

We walked across the dam wall and into the rainforest where the former dairy was still visible as foundations amid the regenerating rainforest. Today, it is hard to imagine that this was a previously cleared dairy farm and, and it would be easy to assume the site had not been cleared.

The group also looked at a site treated more recently, where Ian (EnviTE) and Kylie (Rous water) talked about their work using a splatter gun in weed infested areas. This work was carried out under a NSW Environmental Trust grant for work over 6 years. Tracks were cut into the areas which had camphor laurel and lantana, and this provided easy access. The splatter gun was used - work was carried out in strips. A lot of follow-up was required.

Contact: Anthony Acret, Catchment Assets Manager, Rous Water. Tel: +61 (0) 2 6623 3800, Email: anthony.acret@rouswater.nsw.gov.au

More information:

https://site.emrprojectsummaries.org/2016/03/06/subtropical-rainforest-restoration-at-the-rous-water-rainforest-reserve-rocky-creek-dam-1983-2016/

https://site.emrprojectsummaries.org/2016/03/06/establishment-of-an-assisted-natural-regeneration-model-for-big-scrub-sub-tropical-rainforest-the-woodford-method/

Top: Dead trees remain as perch trees.

MIddle: Path into the rainforest

Bottom: Remains of the dairy in the restored rainforest.

Photos: L Brodie

Booyong Nature Reserve

Darren Bailey was our guide, supported by Jen Ford.

Booyong Flora Reserve is a 13 hectare remnant on the Wilsons River at Booyong. The area is crown land and was set aside in 1916 and gazetted as a Flora and Fauna Reserve in 1931, with a Board of Trustees. Many of the current Trustees are descendants of the people that originally set aside the rainforest.

Booyong Reserve contains one of the largest remaining examples on the Richmond River floodplain of the endangered ecological community Lowland Subtropical Rainforest. There are fine examples of trees such as white booyong, red cedar, black bean, white beech, pepperberry, steelwood, small-leaved fig, giant-leaved stinging tree, rough-leaved elm and scrub bloodwood among a diversity of native vines, palms, ferns, orchids and epiphytes. The site supports significant populations of rare and endangered flora such as ball nut, red lilly pilly, thorny pea, southern Ochrosia, arrow-head vine, and includes the largest known population of Isoglossa eranthemoides in NSW (Listed as endangered under both commonwealth and state legislation). Isoglossa is a small herbaceous plant that grows to 50 cm tall and is scattered throughout the core areas of the rainforest remnant.

Left to its own devices for many years Booyong ultimately succumbed to the effects of isolation facing many similar remnants and became degraded by unchecked weed invasion.

Bush regeneration work commenced in 1997 after production of a site management plan with a Green Corps team supervised by exemplary local bush regenerators Mike Delaney and Jen Ford. Madeira Vine infestations were treated by bagging tubers and tuberlings as well as scrape and painting climbing vines. Bagged material was placed in a series of piles throughout the site and covered with heavy black plastic. These programs ran for a few years before contractors such as Darren Bailey were engaged to follow up and extend the original work.

Initially focusing on core infestations of Madeira vine the work eventually incorporated all parts of the remnant and the control of all environmental weeds. These included major infestations of privet, Ochna, Cocos Palm, moth vine, balloon vine, smooth senna, lantana and balloon vine. Contractors were specifically engaged to spray the Tradescantia fluminensis, Madeira vine regrowth and weed seedlings. The same standard techniques are used today. However, with Madeira vine, bagged material is removed from the site as the original method was not as effective.

The threatened species, *Isoglossa eranthemoides*, in Booyong Reserve
Photo: L Brodie

Many of the plant species have increased in population size over the last 20 years of active restoration work, most notable the herbaceous ground layer species Isoglossa which has grown from 4000 to 140000 individuals. Monitoring of this species has been carried out by measuring changes on the site using fixed monitoring quadrats and photo points.

Maintenance is carried out by a regeneration team of three 4 times a year. Funded by private donations and Save our Species funding.

Parkes property

This is an example of a landholder putting into practice the philosophy of the Landcare group, planting to increase the extent of rainforest in the former Big Scrub Landscape.

Dr Tony and Rowena Parkes and family hosted this visit to their property near Binna Burra, 10 kilometres from the coast in the Byron Bay hinterland. The restoration of the property also lead to Tony's involvement with Big Scrub Landcare (BSL) and he has been President of Big Scrub Landcare for 25 years. Tony identified the environmental challenge of restoring critically endangered Big Scrub rainforest and has made it a priority for action over the past 25 years. He has had outstanding success in engaging the community and saving the Big Scrub. This is part of the story Tony told us on the site visit.

We purchased part of the property in 1986 and the remainder in 1994. To date we have restored and permanently protected rainforest on a third of this 42 hectare (100 acres) family farm, which was a typical size farm when the land was divided for farming. We have rich biodiversity, with 258 indigenous plant species, including 13 threatened species, and a bird list of 119. The rest of the property is actively farmed. Soil fertility is being restored alongside a buffalo dairying enterprise.

Soon after purchase we became aware of the Big Scrub and in 1991 Mark Dunphy and John Nagle, then young rainforest regenerators, identified 28 locally indigenous rainforest trees in a small 100-metre patch of roadside vegetation on our property. It was suggested that we should clear the weeds engulfing the tiny rainforest patch and undertake an enhancement planting.

Our work since then has involved the planting of more than 40,000 trees on our property and the rehabilitation of three small remnants. We had great assistance from Mike Delaney who was operations manager for BSL at the time. He brought a labour market team to help with the plantings. Mark Dunphy had the best local nursery who supplied most of the plants and was another person of great assistance.

We started with a planting in 1992 of a small, degraded, largely buffalo grass paddock about half a hectare in area that was surrounded by a wall of weeds —camphor laurel, coral tree, privet, lantana and many more. We sprayed out all the paddock weeds and grass, hand dug holes and planted about 2500 trees (comprising 110 species) at 1.5 metre spacing using a mix of about 35% of pioneer species, 35 % secondary-phase species and 30 % mature-phase species. The whole area was mulched with straw and watered regularly with spray irrigation that, together with the protection provided by the

wall of weeds surrounding the site, resulted in spectacular growth. We had canopy closure in 30 months. However, this was an expensive approach because of the close tree spacing, total mulching of the whole site and the irrigation set-up costs.

We as, part of BSL, also trialled variations of the planting model so a properly designed trial of alternative planting models was carried out to determine the most cost effective method. This was carried out in 1995 using different tree spacings and three surface treatments for 59 species. It was found that the most cost-effective planting model for this typical degraded pasture /soft weed site was 1.8-metre spacing and surface treatment of prior spot spraying a 600-centimetre diameter area around where each tree was to be planted, and heavily mulching the sprayed area with straw after planting.

We fenced off the remnant to exclude cattle and made good progress in dealing with the massive weed invasion. The response of the remnant to removal of the threats to its survival posed by cattle and weeds was rewarding. We had good recruitment of an array of native species and a big improvement in the vegetation condition.

We also linked the remnant with earlier plantings and created a 10-hectare patch of restored rainforest that would provide valuable habitat.

Over time we have learnt lessons as the revegetation process has been a journey of discovery. Initially we just wanted rainforest trees and shrubs in the ground – didn't matter where they came from. We did not think about provenance or species and we included cabinet timber trees and some species from Queensland and planting stock from outside the area. (Some have since been poisoned.)

On advice we progressed to local species from local provenance, and also the use of site appropriate species.

Above: Tony Parkes talks to the group while being filmed by Virginia Bear for AABR's regenTV.

Right: Restored rainforest on the property Photos. L Brodie

Above: A photo of the Parkes property prior to restoration work. Photo: V Bear

Below: A current photos from NSW Six maps shows the chage in vegetation cover due to the rainforest restoration program

BSL sought advice from geneticist Dr Julia Playford, and advice was to get material which would be genetically diverse as possible and the importance of local provenance.

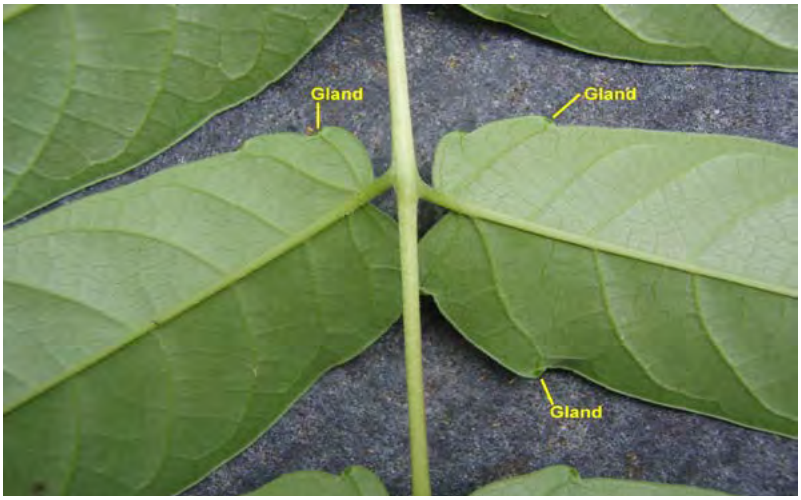
Tony's work with the restoration of the Big Scrub and as leader of Big Scrub Landcare has been recognised by awards as NSW Individual Landcarer of the Year in 2001 and 2015. In 2016 he was awarded the Banksia Environment Minister's Award in Community Environmental Leadership. In 2016 Big Scrub Landcare was recognised by the Society for Ecological Restoration Australasia with the award for Excellence in Ecological Restoration Practice.

Treating Tree of Heaven in Remote areas

Martin Slade

Bush walkers along the Shoalhaven River in Morton National Park south of Sydney, will probably have seen thickets of the noxious weed 'tree of heaven' (*Ailanthus altissima*). Originating in Nerimunga Creek and Bungonia Creek it is appearing downstream in increasing amounts.

Tree of heaven is recognisable from a distance as a thicket of straight stemmed saplings with large compound leaves. Notable features of the leaves are an unpleasant smell, a terminal leaflet and raised glands at the base of each leaflet (see photo). It is deciduous.



Glands on the underside of tree of heaven leaflets

Tree of heaven on the banks of the Shoalhaven River

Tree of heaven can tolerate very dry stony positions, but it grows best with a source of water, particularly along creeks and rivers. Characteristically, the tree of heaven grows high on the bank rather than close to the water because it has a poor resistance to the force of flood waters. Root and stem fragments broken by floods readily grow, so tree of heaven is able to rapidly spread down creeks establishing new colonies along the strand line. Tree of heaven also produces winged seeds that are spread by winds, birds and flood waters. However, in Sydney trees frequently do not flower. Individual thickets are single sex clones, so seed production may be low in isolated patches of tree of heaven.

From an inconspicuous start, a tree of heaven thicket spreads inexorable by producing abundant suckers, potentially allowing it to grow to cover hectares. It competes for both light and nutrients, excluding other species. In addition, the tree of heaven is a very effective competitor due to its suppression of other plants with toxins (i.e. allelopathic chemicals) that it produces from its shallow roots (Biosecurity Queensland). A thicket formed by suckering may have a single root system, allowing it to share resources to overcome damage and herbicide treatments.

In our case it took some time to realise that what we are seeing on the Shoalhaven was tree of heaven weed and even longer to move from "someone should do something about this" to "what are we going to do?" However, our initial attempt to kill some tree of heaven on crown land near Nerimunga Creek was ineffective. Part of the problem was the sheer logistics of driving 3 hours and walking for 2 hours before doing some work and then not seeing the results for another year. Obviously before going to the effort of working in a remote site we first needed to have a technique that worked! In a change of direction I resolved to try out different techniques on easily accessible tree of heaven stands in Sydney. In the meantime we combined forces with the NPWS ranger Audrey Kutzner to tackle the tree of heaven infestations in Bungonia NP, providing practical experience in what works in a remote area.

One might think that there would be a simple recommendation on how to remove tree of heaven. However, most treatments on the web are for foliar spraying, methods which are definitely not suitable for sensitive environmental sites, nor for riverine areas and not for use by bushwalkers! The straight forward approach of cutting and painting stumps with herbicide does not kill the extensive root system and simply results in extensive suckering, increasing the problem by an order of magnitude. Basal bark spraying with herbicides in diesel also sounds problematic when camping out. A good summary of control techniques is available from Pannill (2000), whilst the NSW Department of Primary Industry recommends various mixtures of herbicides (DPI. 2014). Anecdotally, tree of heaven is recognised as being difficult to kill, but I can't find any direct comparisons of different methods.

We decided that scraping and painting saplings and drilling trees was a reasonable, low technology approach to use in the bush. But could we get this approach to work with glyphosate, probably the least environmentally hazardous herbicide? And would the treatment be effective with infrequent visits to a site?

A major question was the optimal season for herbicide treatments. Glyphosate is most effective in actively growing plants, but with tree of heaven our primary aim is to ensure translocation of the herbicide to the root system. In Sydney the tree of heaven produces leaves in mid October and grows rapidly until December, slowing in the summer months. So should the treatment be applied during the maximum growth period in early summer? On the other hand, it could be argued that a late Summer and Autumn treatment may give greatest translocation to the roots. Leaf fall in Sydney is usually in April, depending on when cooler conditions arrive.

Methods

The treatment that worked was to make a long scrape with a sharp knife from the base of a sapling to waist height and, using a brush, paint it with neat 360 glyphosate, ensuring the edges of the scrape are covered. This treatment is very quick and efficient for tall saplings, but it also needs to be applied to even the smallest shoots. For the glyphosate to be effective, plenty has to be applied to the stem; it is no use just making a small scrape on the stem of the saplings or just putting some drops of the herbicide onto a scrape. Thicker stems (>2 cm in diameter) are drilled and the holes filled with neat glyphosate. A cordless drill with a 1 cm auger bit does a quick job of putting shallow, inclined holes 5 cm apart around the periphery of a tree. It should be noted that the tree of heaven is mildly toxic and may cause contact dermatitis.

Treatments were applied over a short period of time and then left for a year before a second treatment, to imitate infrequent access to remote sites. Usually the sites were also assessed after 1 month to count how many saplings had been accidentally left untreated. I treated patches of the tree of heaven in Lane Cove National Park and Kuring-gai National Park under the supervision of rangers Matt Springall and Susan Guthrie.

Results

The table shows the results of treating tree of heaven throughout the growing season.

Month	Site	No. scraped	No. drilled	No. missed	2nd year regrowth	3rd year
Oct / Nov	CC2	1123	125	5	27	7
Nov / Dec	K	489	44	16	13	?
January	BW	112	28	3	0	0
February	TC1	295	31	14	92	0
March	CC1	169	45	5	13	2
March	PR	47	0	0	0	0
April	DR	56	17	10	0	?

Notes
The figures for regrowth in 2nd year do not include any saplings untreated in 1st year.
The 3rd year figure includes all saplings found 3 years after treatment.

The first finding was that it is very difficult to treat all the saplings in a thicket. Furthermore, untreated saplings were usually unaffected by the death of neighbouring plants. In the worse case 12% percent (10/83) of saplings were missed, buried in weeds on the edge of one small, difficult site (DR). The proportion of untreated plants can be much larger when a team of people is working in a larger area. This emphasises that, without followup, any single treatment of tree of heaven is very likely to be ineffective.

The gear

The glyphosate treatment killed all the stems that were treated, provided the edges of the cuts were painted with herbicide. Treatments in late March and April (ie. just before leaf fall) seemed to be particularly good at minimising regrowth. Treatments in Spring, early Summer and Autumn were also very effective at stopping regrowth, with only a low percentage (<6%) of new suckers appearing in the 2nd year, compared with the original number of saplings. However, strong regrowth (24%) occurred after treatment during a particularly hot, dry February suggesting the treatment fails if the plants are stressed.

Treating all growth in the 2nd year largely stopped any additional suckers appearing in the treated area. A low number of plants were still observed in the third year after the primary treatment, which bears testimony to the difficulty of finding small shoots among other vegetation. Some of these late appearing plants were outside the treatment area and presumably arose from the periphery of the original root system.

Most of the work was in treating the small saplings of tree of heaven, which usually outnumber the thicker, drillable stems by 10:1. Poisoning small saplings is laborious work, doing 40-50 stems per person per hour, for a maximum of 2.5-3 hours of work per day.

A large area of tree of heaven in Bungonia Slot Canyon (see photo) has been treated by a team of bushwalkers working with the ranger Audrey Kutzner. This work used the same scrape and paint / drill methods described above. Both metsulfuron-methyl (5g in 4l water, a saturated solution) and 360 glysphosate seemed to give comparable results, but were not quantified in detail.

Discussion

The tree of heaven is appearing in more and more places in the Sydney region. Individual thickets of this weed spread slowly and so the initial small, easy to treat thickets tend to be regarded as a low priority until they become so big they are difficult to manage. This study demonstrates a practical, environmentally benign control method. It also demonstrates both the difficulty of treating every plant in an area and the high probability of regrowth from suckers. Thus monitoring and treatment needs to continue for at least 3 years. Unfortunately, without followup after treatment the infestation is likely to become as bad as ever within a few years.

It can be difficult to recruit bushwalkers to tackle tree of heaven because of its reputation for being both very difficult to eradicate and being unpleasant work using herbicides in diesel. This study has used the more user friendly glyphosate to demonstrate that it is feasible to control tree of heaven in an environmentally sensitive manner in remote locations. The technique is laborious,

A photo from 2013 showing Tree of heaven in the mouth of Bungonia Slot Canyon

The same area in 2018 with the tree of heaven removed

but effective, particularly when applied in Autumn. The technique also worked in Spring and early Summer, reducing growth by at least 94%. Any suckers emerging later can then easily be treated the following year.

The technique used in this study was ineffective in late summer. The high level of suckering (24%) after treatment in dry, hot conditions in February shows that under these conditions insufficient herbicide was being translocated into the root system. In an attempt to increase the amount of herbicide entering the roots, I am now trying 490g/l glyphosate with good results. 490 glysphosate is more viscous than more commonly used 360g/l, resulting in more herbicide being painted onto the stems. I am also increasing the number of drill holes since injecting more herbicide is much easier than dealing with a crop of new suckers.

In remote areas the tree of heaven thickets have frequently grown beyond the size that can be treated in a few trips. Here the priority is to treat the saplings on the periphery of the thicket to limit further spread. When tackling the main bulk of a thicket it is best to try to work systematically, treating just one quadrant on each visit so the herbicide is all being applied to one area of the root system. When there are an apparently infinite number of trees, it is very easy for people to get split up, allowing patches of untreated growth to facilitate the recovery of treated areas. Old thickets do show a stronger capacity to regenerate after herbicide treatment.

References

Biosecurity Queensland. https://keyserver.lucidcentral.org/weeds/data/media/Html/ailanthus_altissima.htm

DPI, 2014 http://weeds.dpi.nsw.gov.au/Weeds/Details/142

Pannill, 2000 http://extension.umd.edu/sites/extension.umd.edu/files/_docs/programs/woodland-steward/DNR_TreeOfHeaven.pdf.

I would like to thank the Coast and Mountains bushwalking club who carried out the remote area work in Bungonia Gorge, for their assistance, particularly the hard work of Ute Foster, Sanford Larsen, Hester Slade, Duncan Cross, Margaret Waugh, Drew Stones and the NPWS ranger Audrey Kutzner. The experimental treatments were carried out in Sydney.

Photos: Martin Slade.

Government funding for tick research

It was recently announced that the federal government has committed $3 million for two studies (https://www.smh.com.au/healthcare/hope-for-people-with-mysterious-and-debilitating-tick-bite-symptoms-20190104-p50pk3.html). The studies are to be carried out over five years to investigate the nature, prevalence and causes of symptoms linked to tick bites including fatigue, arthritis, chronic pain, neurological and cardiac problems, and psychological illness.

However a press release from the Lyme Disease Association of Australia, highlights their concern with this funding.

Local and international Lyme disease experts have expressed dismay at the news of how this funding is allocated as currently more than 4,000 Australians with a serious Lyme-like illness unable to gain access to adequate health care.

"Neither of these projects offer immediate support for sick Australians nor address the very real and urgent problem the Senate highlighted when they recommended the Government invest research funds into "patient-centric" outcomes.

"The Lyme Disease Association of Australia (LDAA) supported a research submission by Professor Gilles Guillemin, which proposed a personalised medicines model, in collaboration with doctors in Australia including Dr Richard Schloeffel OAM, Dr Bernie Hudson, Royal North Shore Hospital and esteemed scientist Prof Edward Holmes. The project would have been the first to establish a nation-wide comprehensive biobank of Lyme-like illness samples and would have provided answers for patients quickly.

Read the LDAA response to the allocated $3M funding.

Restoration Challenges

Restoration projects can be actually make things worse if the project is not well planned and researched. Here are two aspects of what can go wrong.

Mislabelling of seed and plant stock

A recent report highlights mislabelling of seed which results in the sale of seed of grass weed species to those carrying out mine restoration.

Supplies of grass to mining companies in Queensland were labelled as containing the native species *Themeda triandra* and *Cymbopogon refractus.* On examination the grass seed was identified as being from *Themeda quadrivalvis* or grader grass which is an environmental weed in Queensland and invades pasture and native grassland, and replaces native plants.

To ensure that the correct species is purchased, it is worthwhile discussing the seed source with the supplier and purchasing from those with good quality control procedures.

If you would like a copy of the report, email newsletter@aabr.org.au.

Introduction of pathogens

In California, for some time it has been known that native wildflowers and herbs, grown in nurseries and then planted in ecological restoration sites, were infected with *Phytophthora tentaculata*, a deadly exotic plant pathogen that causes root and stem rot.

New work by a University of California Berkeley team in the College of Natural Resources shows for the first time just how widespread and deadly the threat of pathogens from restoration nurseries may be.

The team surveyed five native plant nurseries in Northern California and found that four harboured exotic, or non-native, Phytophthora pathogens. Strains of the pathogens from native plant nurseries were shown to be at times more aggressive than strains found in the wild, and some of them are rapidly developing resistance to the fungicides that can be used to control them, the researchers found.

Working with restoration nurseries around the state, the researchers showed that new management techniques, coupled with new methods for detecting pathogens, can help these nurseries limit the spread of exotic pathogens.

Source and more information: https://www.eurekalert.org/pub_releases/2019-01/uoc--ihr010219.php

Giant eucalypts value for habitat explained.

Below is just a small part of this clever poster - it is much longer. To see the entire poster go to http://theconversation.com/comic-explainer-forest-giants-house-thousands-of-animals-so-why-do-we-keep-cutting-them-down-106708

Peter's pivot block

Peter Fagan has developed a block to assist use of the Peter Lever (named after a different Peter) in sandy soils.

The lifting power of the Peter Lever is compromised when it is used in soft, wet or sandy soils, as the lever lacks a firm pivot point. After a few bushcare sessions in the sandy soils of Sydney's Eastern Suburbs, I frequently found myself hunting around for a rock to place under the pivot point of my Peter Lever, so I decided to design and make a pivot block.

The block enhances the leverage of the Peter Lever in these soils. Improving the leverage enables us to remove plants by the root that previously we had to cut off at the base and poison — more plants are removed entirely, with no chance of regrowth and less use of glyphosate.

Pivot block features

- consists of a single piece of lightweight timber
- made from scrap (recycled) wood
- a notch is cut in the top face of the block to hold the Peter Lever on the block
- the block can also be placed on its side for greater leverage, or on its end for maximum leverage
- recessed hook to hang the block in your workshop or on your tool belt
- painted in high visibility colours so it doesn't get lost

The pivot block is used by Botany Bay National Park, Randwick City Council and Friends of Malabar Headland bushcarers. It was awarded Randwick City Council's Bushcare Innovation Award in 2015.

To purchase one or more of Peter's pivot blocks, contact fagan.peter@gmail.com

Peter Fagan, Little Bay NSW 2036

What's happening

Monday 18th - Thursday 21st February 2019

Conference: Eucalypt genetics: fundamental and applied research in a post-genome era

University of Tasmania, Hobart, Australia

It is 20 years since the first Molecular Genetics of Eucalyptus symposium held in Hobart. Enormous advances in this field have occurred, including the publication of the eucalypt reference genome in 2014.

The conference will bring together researchers and aims to i) review the national and international advances since the reference genome project was completed, ii) identify future research challenges and foster a coordinated approach to develop new genomic resources, and iii) channel advances to benefit the conservation and utilisation of eucalypts.

This four-day conference will include talks, posters and a field trip

The conference is hosted by the Eucalypt Genetics Group and the ARC Training Centre for Forest Value at the University of Tasmania.

https://www.eucalyptgenetics2019.com.au/

Friends of Grasslands

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

Friends of Grasslands is a community group dedicated to the 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 holds a number of events and activities

www.fog.org.au/

Running from January to mid-March 2019

Monster Mouse-ear Hunt

The 'Monster Mouse-ear Hunt' is a volunteer program supporting the eradication of a noxious weed in Kosciuszko National Park. Mouse-ear hawkweed (Hieracium pilosella) was first detected on the Main Range in Kosciuszko National Park in December 2015.

It poses a major threat to the Australian Alps. The National Parks and Wildlife Service (NPWS) is committed to eradicating mouse-ear hawkweed.

Volunteers have been instrumental in protecting sensitive environments from the hawkweed invasion, by helping to find plants during the summer season. This season, NPWS will conduct three and a half day surveys that coincide with peak mouse-ear hawkweed growth.

A high level of physical fitness is needed as surveys require a lot of walking.

Bookings are essential. NPWS Khancoban (02) 6076 9373 or Tumut (02) 6947 7000

https://www.environment.nsw.gov.au/topics/animals-and-plants/pest-animals-and-weeds/weeds/new-and-emerging-weeds/mouse-ear-hawkweed

Sunday 26 to Tuesday 28 May 2019

3rd National EcoArts Australis Conference:

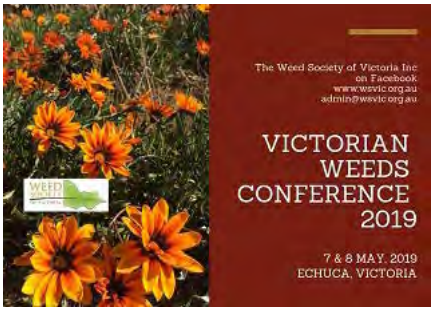
Using the Visual and Performing Arts to Encourage Pro-environmental Behaviour

Wollongong, NSW

Our environment is being pressured on all sides, with burgeoning levels of rubbish and greenhouse gas emissions, increasing urban congestion, tree decline and land degradation and decline in biodiversity. All of these issues relate back to our behaviour as Australian citizens. The arts are uniquely placed to explain these problems to the general public and to motivate people to adopt behaviours that have lower impacts on the environment.

The third EcoArts Australis national conference is an opportunity for you to network and communicate with others who using the arts in creative ways to encourage pro-environmental behaviour.

http://www.ecoartsaustralis.org.au/events-and-projects/conference-2019-using-the-visual-and-performing-arts-to-encourage-pro-environmental-behaviour/



20th Weeds NSW CONFERENCE
city country coast
putting the we in weeds

Monday 26-Thursday 29 August 2019
Newcastle NSW

https://www.nswweedsconf.org.au/

Australian Association of Bush Regenerators

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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 January, April, July, and November.

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.

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Newsletter contributions and comments are welcome

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Opinions expressed in this newsletter are not necessarily those of AABR