



Nº 141
July
2019

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working with natural processes

AABR Fieldtrip Saturday 31st August

Connecting Corridors by Conservancy

AABR and the Cumberland Land Conservancy (CLC) are hosting an all-day field trip on Saturday 31st August 2019 at the property Wallaroo, at Mulgoa NSW, to explore the natural assets of the endangered Cumberland Plain Woodland and evaluate the tools and techniques being used to monitor and restore the seven vegetation types present on the CLC reserves.

The CLC stands apart as the only community-based charity successfully securing biodiversity corridors in Western Sydney and manages four reserves protecting 49 hectares of strategic habitat linkages in Western Sydney. See <https://cumberlandlc.org.au/>

The day will highlight the bush regeneration techniques being used for restoration, such as fire, revegetation, habitat enhancement and enhancing dam biodiversity. The monitoring tools being utilised on the site will also be showcased: CSIRO's Checking for Change, weed mapping, vegetation assessments and Streamwatch. An avian expert will be on hand throughout the day.

Running alongside the profusion of educational opportunities will be a chance to try your hand at using the National Restoration Standards recovery wheel assessment tool.

Catering is a BYO share affair, where the combined offerings will produce a bush regen banquet, whether it's a sandwich or a piece of fruit, a little can go a long way. BYO thermos as the only facility on site is a portaloos. Wear sun safe, suitable clothes for weather and walking.

Where: Wallaroo is at 850-882 Mulgoa Rd, Mulgoa, NSW 2745 ~ 60 Kms west of Sydney - access off Penrith Waste Services driveway at 842 Mulgoa Rd.

Date and Time: 31st August 2019 from 9am to 3 pm

The proposed agenda for the day can be viewed on the booking site.

Bookings and more information can be made via Eventbrite (numbers are limited due to the limited access to Wallaroo Reserve).

<https://www.eventbrite.com.au/e/connecting-corridors-by-conservancy-tickets-65237024697>



Save the Date Tuesday 8th October

Forum: Seeds for the Future

More Information See page 11

AABR Workshop Tuesday 5th November

(new date for postponed workshop)

Water Weeds, the Biosecurity Act, and the National Restoration Standards.

See information Page 3.

President's Perspective

This latest newsletter from AABR comes at a time when there seems to be an increasing interest in networking by bush regenerators. Readers will notice that there are many new members listed this issue, and we can report there have been record numbers of renewals within the first month of the new financial year. These things, and a recent increase in accreditation applications, is very gratifying at a time when many organisations are experiencing a drop in membership.

Indeed, we are very excited about the **new Victorian state branch of AABR** that was formally set up on 16th May 2019. Located in Melbourne, the group held a strategy meeting on 2nd June, which was well attended and productive, and was followed by a June 20 committee meeting that saw the formation of sub-committees for 1. Governance, 2. Membership 3. Marketing and Accreditations and 4. Media. This adds to the existing subcommittee on VET, which engaged people in discussion for over an hour – obviously a hot topic.

This burst of energy has led to the Victorian and National committees collaborating on a professionally assisted marketing strategy beginning with a membership drive – to increase membership around Australia. This will be combined with a campaign directed with practising bush regenerators to encourage more to apply for accreditation (although we are focusing first on those eligible for the standard application pathway so that we avoid a backlog of in-person assessments).

Future newsletter issues will have regular contributions from Victorian members – and for those keen to attend the next Victorian branch meeting, it will be held at a location in Melbourne (TBC) at 7pm 15th August 2019. Enquiries please email Kylie at vicbranch@aabr.org.au.

Information on **three AABR events** is included in this Newsletter. A visit to the property Wallaroo at Mulgoa in NSW managed by Cumberland Land Conservancy (See front page). A workshop on water weeds (see page 3) and a forum on Seeds for the Future (See Page 11) – co hosted with ANPC

Tein McDonald

President AABR

Congratulations Tein, from all of us in AABR for your recent Member of the Order of Australia Award (AM) .

A well-deserved recognition of all the effort you have put into promoting the best principles of bush regeneration and ecological restoration for the long term benefits of Australia's unique biodiversity

Go to page 8, to read the interview with Tein describing her involvement in bush regeneration and ecological restoration.

Thanking our donors

It was wonderful to look back at this financial year for 2018-19 and see the generosity of our members.



We had 19 donations of varying size totalling \$3853.55. This has helped us work on some specific projects and to keep our Admin Officer.

Thanks to our donors who included Georgina San Roque, John Diamond, Janet Fairlie-Cuninghame, Kate Boyd and Marion Lugg and all the others.

Georgina says 'I was donating because of the great time John and I had on the AABR trips to Broken Hill and the Big Scrub. But of course it goes deeper than that – bush regeneration has been so important to me, and AABR has helped keep the principles and practice of bush regen alive for me, plus I still love working on site with other AABR people. A bit of a home from home.'

....and its easy. The online payment of annual subscriptions allows for a donation to be included as well.

Membership renewals for 2018-19

Invoices for renewals for the 2018-19 financial year have gone out by email. Thanks to all who have renewed so promptly. Paid up members allow AABR to advocate for bushland restoration.

If you haven't received the email – firstly check your 'Spam' or 'junk' mailboxes. Otherwise, contact Suzanne to re-issue the invoice. If your circumstances have changed and you would like your membership lapsed or to find out about unwaged membership payments, talk to Suzanne at admin@aabr.org.au, 0407 002 921.

Welcome to new AABR Members

Marianne Bate
Christopher Bowdler
Elliot Bowerman
Elliot Connor
Tom Cotter
Adam Dacey
Fiona Dawson
Todd Dudley
Laurel Fowler
Jack Fry
Christine Gui
Deirdre Hanrahan-Tan
Chanel Hazell
Thomas Hickman
James Hook
Jamie Knight
Ramnarayan Krishnan
Jack Leclercq
Michael Longmore
Liam McConachie
Derry Moroney

Sameera Patoor-Brah
Jason Rawnsley
George Roberts
Susan Scott
Allana Sheard
Jamie Slaven
Thomas Staff
Jill Steverson
Jason Stone
Josie Vincart
Hayley Woodward

Business

Palmwoods Revegetation
Provincial Plants and Landscapes
Boyd's Bay Environmental Services Pty Ltd

Organisations

Skillset Ltd (Land Works)

AABR on the glyphosate issue

There has been increasing public concern about the use of glyphosate since 2016 when the International Agency for Research on Cancer (IARC) re-classified glyphosate as 'probably carcinogenic to humans'. This concern has only increased after successful litigation in the USA against the manufacturer by cancer patients, and since class action law suits by cancer patients are in preparation. As a result, several overseas and Australian authorities are necessarily in the process of considering replacing glyphosate with alternative herbicides.

It is essential, indeed legally mandatory, for employers to take all reasonable steps to protect the health of workers. However, we also need to ask ourselves whether our consideration of withdrawing from the use of glyphosate is based more on fear of litigation than sound evidence of glyphosate toxicology, particularly if juries are influenced by anti-Monsanto campaigning. This campaigning, while well-intentioned and understandable, unfortunately conflates criticism of Monsanto's genetic modification of food crops to ensure they are 'Roundup ready' with criticism of the chemical itself. Such conflation does not progress our journey towards finding out the truth about glyphosate toxicology for users involved in ecological restoration, and to separate this from the question of toxicology in foods produced for human consumption.

Indeed, sorting information from misinformation on glyphosate toxicology is difficult for a range of reasons – and getting correct information is important to bush regenerators because we do not want to discard a highly important tool from our conservation toolbox without sound justification. Firstly, regulatory authorities largely depend on manufacturers to commission the initial studies, which raises doubts about vested interest (although peer reviewing does apparently occur). Secondly, although many reputable institutions have increasingly carried out studies over the last 40 years (including

a few hundred on toxicology), most of these studies have been conducted since 2000. This is relatively recent considering the herbicide has been in use for four decades, although much of this may be due to the fact that the passage of time is needed to study health effects on humans, and the use of glyphosate is increasing in food production.

Australia's Agricultural Pesticides and Veterinary Medicine's Authority (APVMA) ruled in July 2017 that there was insufficient justification for a change of their advice on the use of glyphosate in Australia (<https://apvma.gov.au/node/13891>) although they continue to monitor all new science. AABR has no reason to distrust their advice (which is based on assessment of the published science) that glyphosate can be used safely if the manufacturer's specifications are followed. However, to address recent doubts we support calls for further independent and transparent review of all research on the toxicology on glyphosate relevant to users – as well as any further research needed to more fully assess both potential human and ecological health impacts of glyphosate.

Professional practitioners in our industry invariably hold pesticide handling certification – and our approaches involve targeted and judicious use of herbicides, combined with non-herbicide methods where appropriate. These approaches ultimately reduce the need for weed control (and therefore herbicide use) at restoration sites. Practitioners characteristically continue to explore improved methodologies, whether herbicide based or non-herbicide based. Nonetheless, AABR reminds bush regenerators to continue to exercise caution in the use of all herbicides, including glyphosate, and to ensure minimisation of exposure through the continued use of appropriate Personal Protective Equipment (PPE) and mixing and application procedures.

AABR Workshop Tuesday 5th November

(new date for postponed workshop)

Water weeds, the Biosecurity Act, and the National Restoration Standards.

Charlie Mifsud, DPI's Aquatic Weeds Project Officer in the Invasive Species Program, is the main presenter.

The day is designed to be a learning and networking opportunity with morning tea and lunch provided (Indian) to optimise networking time.

Tuesday 5th November 2019. Time: 9-4pm (8:30 registration)

Venue:

Harry Todd Band Hall, 10 Jubilee Lane, Harris Park NSW 2150

Cost: AABR Members \$20, non-member \$25

The learning outcomes include:

Aquatic Weeds: 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

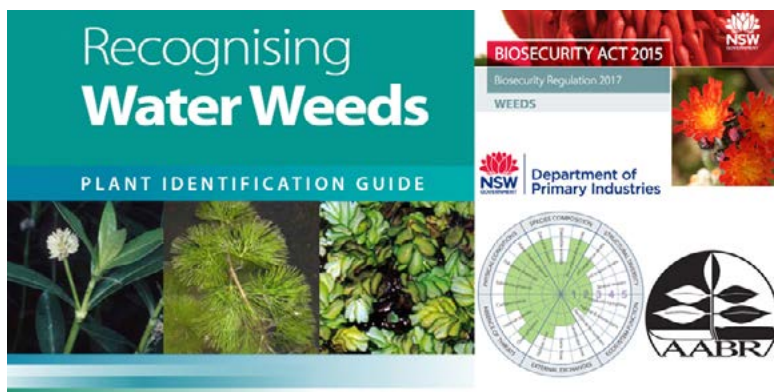
Biosecurity Act: Understanding of the NSW Biosecurity Act 2015 in relation to weed management.

National Restoration Standards: An overview of the standards; Using the recovery wheel as a site assessment tool

All information and Bookings are via the Eventbrite site,

<https://www.eventbrite.com.au/e/aabr-workshop-with-dpi-water-weeds-biosecurity-act-and-the-recovery-wheel-tickets-59749358941>

or if an invoice is required please contact Suzanne education@aabr.org.au.



Volunteering at Crowdy Bay National Park



Elisabeth Dark and Meron Wilson

Crowdy Bay National Park is on the mid north coast of NSW, around 270 km NE of Sydney. This area is noteworthy for at least two reasons. It was much loved by the novelist Kylie Tennant who lived for a time in nearby Laurieton and built a one-room cottage, known as Kylie's Hut, as her writing retreat in what is now the national park. The hut still exists, surrounded by littoral rainforest. The second reason, and the subject of this article, is that one of the longest-running bush regeneration projects in NSW has been conducted here.

An article in Loose Leaves issue 139 (January 2019) outlined the project, which has progressively targeted bitou bush since 1979 and celebrated its 40th anniversary in May this year. Inspired by the article, we travelled to Crowdy Bay to participate in the annual one-week bush regeneration working-bee.

Volunteers were a combination of people there for the week, camping together at Kyllies Beach, and local day-visitors. All had considerable bush regeneration experience, either in local duncare groups or further afield from Central Coast, Port Macquarie, Sydney and the Blue Mountains. Many were regulars which testifies to both their commitment to the project and its excellent management by the energetic coordinator Sue Baker in conjunction with local NPWS staff. Camping was made easy and enjoyable. A National Parks mobile kitchen provided hot water, washing-up facilities and fridge on one side, with tool storage on the other. Gas camping stoves, tables and chairs were under a large marquee which was the focal point for the group while in camp. A campfire, creatively contained in an old washing machine drum, was a gathering point for weary volunteers in the evenings.

Each day the volunteers divided so that a lengthy strip of coastal vegetation could be worked by several groups of 2-5 people who would meet up at the conclusion of their segment, ready for the next task. Work was completed in this way on several sites – immediately north and south of Kylie's Beach, Diamond Head Beach and Indian Head. One volunteer crucially took

responsibility for tool maintenance so that loppers and poison bottles were checked daily and kept in top condition.

The first full day (Tuesday) we worked along Kylie's beach, focussing on bitou. The majority of the bitou found during the week was immature, with seed spread by birds or germinating from the remaining seedbank. The next day was devoted mainly to removing bitou regrowth from a 1km length of hind dune which was predominantly healthy coastal vegetation. During the week we worked mainly under scattered *Banksia integrifolia* canopy as the following week aerial spraying was to be done of all bitou on the open dune areas. Where there is no canopy, the spraying can be done with a high degree of precision and minimal off-target damage. Other weeds we dealt with during the week included coastal morning glory (very difficult with such slender stems), ground asparagus, moth vine, lantana and senna. On the Thursday, with the largest team of volunteers for the week, we worked up the slope behind the Kyllies Beach dune into the dense littoral rainforest, where the focus was primary treatment of lantana and other unwelcome, scratchy weeds. On the last day some of us went with the rangers to nearby Indian Head. On the steep slopes, when we weren't clambering around looking for bitou hiding among the rocks and wind-shaped vegetation, we had sensational views along the coast. The headland vegetation is gradually undergoing change. The extent of Themeda grassland being reduced as *Banksia* sp expands, with lower frequency of fire than historically would be the case, presents a challenge.

Sue demonstrated a high level of site knowledge and flexibility in allocating people to tasks so that current management priorities were met as well as adapting to emerging weed issues, all in the limited time available. The project serves as an excellent model for how to conduct a volunteer restoration program that is effective and has long term support.

In addition to the annual camp, working bees are held throughout the year. An increasing focus will be continuing restoration of the weedy littoral rainforest above Kyllies Beach. If you are planning a trip north and would like to help in the project, contact Sue Baker on 6559 7134 for further information.

Crowdy Bay Bushcare Celebration

On the 18th May a celebration of 40 years of caring for Crowdy Bay National Park was held, topping off a week-long bush regeneration camp. The commemoration included cake and speeches acknowledging the efforts of volunteers, contractors, key NPWS staff and the NPA community.

AABR representatives Scott Meier and Suzanne Pritchard attended the celebration and delivered a presentation on the National Restoration Standards, and undertook a field assessment using the Recovery Wheel, which will appear in the next newsletter.

The following tribute was penned by Suzanne Pritchard, inspired by the people, the passion and the place.

The Crowdy Crew

The not-so-rowdy Crowdy Crew around the campfire sat.
The chook, risotto, salad greens were laid out on the mat.
We supped around the tub of fire, reflecting on the past,
where sands were mined, where dunes were stripped, a legacy so vast.

The giants fell, the littoral loss, the dunes erased by might,
and afterwards the National Parks were told to make it right.
So mighty Mick he got the job to put back what was lost,
he made a swamp and shaped the dunes where rutile once was tossed.

He planned, reshaped, replanted, the goal was to restore,
but he was just one man, and clearly needed more.
An NPA team led by Sue and Gwen took on the Bluff,
and then they kept on going, the crew was mighty tough.

Once Diamond Head was sparkling in the morning light once more,
the team expanded efforts banishing Bitou from the shore.
They've heaved and hoed for forty years, a lifetime task it's true,
their legacy a National Park whose landscape was renewed.

Without the Crowdy Crew and their yearly Bitou bashing,
monoculture green shiny leaves, yellow flowers would be splashing,
far and wide across the plains, with not much more to see,
a desert green, completely void of biodiversity.

So thank you to the Crowdy Crew, for your foresight and your willing.
For once-a-year for one-whole-week going Bitou bush-a-killing.
You're a wonder team with passion plus for nature that is true!
Walkers, campers, fisher folk appreciate what you do.

Four decades of the doing have given hope and life to many.
We can visit an inspiring place, for the cost a just a penny.
We still have flora, fauna, fungi, little pygmy possums,
seasonal wildflowers, with their spectacular blossoms.

The chorus of a forest, heathland, birds upon the shore,
the efforts of the Crowdy Crew have given this and more.
Bandicoots and wallabies, a kaleidoscope of plants,
dunes alive and mobile, doing their tidal dance.

Like waves that sculpt the landscape, effort over time,
we thank you Crowdy Crew for keeping Crowdy Bay divine,
and thanks to National Parks as well, for offering to support
a team of passion people who like work for naught.

The future of this special place is held within our hands.
Who will keep on working upon the shifting sands?
Where are the willing workers whose age is under 30,
who care enough to take some time and don't mind getting dirty?

If this is you, then this is good, next year will be a dandy
Bring your tent, your tools and togs, guaranteed you will get sandy.
You'll also get to learn a lot and make a few new friends,
renewal and replenishing... this story never ends.

Suzanne Pritchard 2019



Sue delegating the day's tasks.

Photo: Meron Wilson



Kylie's Hut at Crowdy Bay National Park.

Photo: Meron Wilson



Crowdy Bay Celebrations
The crew, the Park and the Cake.

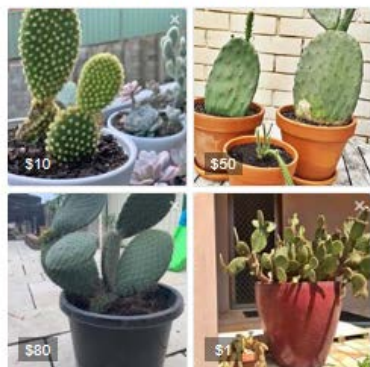
Photos Suzanne Pritchard

Opuntoid cacti

in the Greater Sydney region

Nicola Dixon
Regional Weed Coordinator - Greater Sydney

Still Available on Marketplace



Find More on Marketplace

Head to gumtree, facebook marketplace, wish, etsy or ebay on any given day and search for 'cactus' or 'succulents' and you will find dozens of ads offering a huge range of species. The plants available for sale are rarely correctly labelled and it is often difficult to know exactly which species are being traded just by perusing the photos.

But many of the species on offer are invasive weeds that have the potential to adversely impact our environment, economy and community. With online trade of plants on the rise, local council weed officers are increasingly required to have an active online presence and must be readily able to identify species that are not permitted to be sold under the *NSW Biosecurity Act 2015*.

So in May 2019, 44 people representing 22 different government and non-government organisations from across the Greater Sydney region met at the Elizabeth Macarthur Agricultural Institute in south-west Sydney to learn how to identify and manage Opuntoid cacti. The training was supported through the *Greater Sydney Weeds Action Program* and delivered by Matt Sheehan, co-author of the *Managing Opuntoid cacti in Australia: best practice control manual*, and Director of Wild Matters.

What are Opuntoid cacti?

'Opuntoid cacti' or 'opuntoids' are terms used to describe cacti species in the Cactaceae family, sub-family Opuntiodeae. Opuntoid cacti are not native to Australia but

- 31 species are known to be in the country
- 27 of those are listed as Weeds of National Significance (WoNS)
- 21 are known to have naturalised and infestations of these types of cacti occur in all states and territories.

The problematic species found here in Australia are all from the *Austrocylindropuntia*, *Opuntia* and *Cylindropuntia* genera. Unfortunately, many of them are easily propagated and commonly available for purchase through online and physical markets.

What do Opuntoid cacti look like?

Like all cacti they have **areoles**, round cushion-like bumps from which new shoots, spines, flowers, fruit and roots can grow. Opuntoid cacti are set apart from other Cactaceae sub-families by the presence of **glochids** – small, detachable, barbed bristles that protrude from the areoles, which is how they earned the common name of 'prickly pear'. Glochids detach readily by disturbance such as wind or touch, often causing irritation to skin, eyes and lungs.

Opuntoid cacti seeds have a hard, pale coat called an **aril**, while most other cacti seeds are black.

Opuntoid cacti have **jointed cladodes** (aka pads or stem segments). A joint occurs at the areole where new cladodes emerge during the growing season. Over time, as more cladodes form, a segmented stem is formed. Cladodes can break off at the joint and grow into new plants. Cladodes of plants in the *Austrocylindropuntia* and *Cylindropuntia* genera are commonly cylindrical. Cladodes of plants in the *Opuntia* genera are typically flattened.

What impacts can Opuntoid cacti have?

Opuntoid cacti are highly competitive and have invaded grazing land, range lands, pastures, as well as native vegetation, from coastal systems to open grassland and woodlands, roadsides,

gardens and recreational reserves. They also commonly occur along water courses and floodplains and have the capability to establish in the majority of soil types and climatic zones throughout Australia. They can form dense impenetrable thickets that prevent grazing and restrict access to land, shade, water infrastructure and assets. They can cause injury, infection and death to native animals and to livestock, injure humans, contaminate and devalue wool, cause bloat if ingested, harbour pests such as fruit fly and provide shelter for foxes and rabbits.

All species reproduce by vegetative means and many can also reproduce by seed. They are well adapted to spread and can be moved by wind, water and animals and are easily moved around on clothing, backpacks, machinery, vehicles and shoe laces, without detection.



Areoles and glochids on *Opuntia microdasys*.
Photo: Paul Marynissen



Jointed pads on *Opuntia tomentosa*.
Photo: Paul Marynissen



Tiger Pear (*Opuntia aurantiaca*)
Photo: Paul Marynissen

What are my legal requirements?

Under the *NSW Biosecurity Act 2015*, there is a prohibition on the import or sale of ALL Opuntoid cacti in NSW, except for *Opuntia ficus-indica* (Indian Fig).

The General Biosecurity Duty also applies and therefore any person who deals with these species, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

One species of Opuntoid cacti (Tiger Pear - *Opuntia aurantiaca*) was recently included in the Greater Sydney Regional Weed Management Plan as a regional priority species. Blacktown and Wollondilly Shire LGAs are in the Core Infestation and land managers in those LGAs should mitigate spread from their land.



Workshop participants learning the key identifying features of different Opuntoid cacti species. Photo: N Dixon

Prickly Pear in Australia Successful biological control

The introduction of *Opuntia* species has been attributed to Governor Phillip at Port Jackson in 1788.

Prickly pears, including *Opuntia stricta*, the common pest pear, were highly invasive and had spread over 4 million hectares by 1920 resulting in the land becoming unproductive.

In 1912, the Prickly Pear Travelling Commission looked at promising insect pests from other countries and released the *Cactoblastis cactorum* moth in 1914. Within three



Prickly pear infestation 1920's. Photo Collection of John Oxley Library, State Library of Queensland

Land managers in all other LGAs are in the Exclusion Zone and plants should be eradicated from the land and the land kept free of the plant.

Other States: Check relevant legislation

What else should I do?

Put the 'us' in cactus!

- Please contact your Local Control Authority if you see them being advertised for sale, or contact the Greater Sydney Regional Weed Coordinator at wapadmin@hrcc.nsw.gov.au.
- Practice good hygiene after leaving sites that are infested with Opuntoid cacti.
- Spread the word.



More information?

www.weeds.dpi.nsw.gov.au

<https://www.agric.wa.gov.au/invasive-species/opuntoid-cacti-best-practice-control-manual>



years of release, most stands of drooping prickly pear, found in Queensland, were destroyed. There is a monument to the *Cactoblastis cactorum* in Dalby, Queensland commemorating the eradication of the prickly pear in the region.

For the full story in Queensland and NSW:

https://www.daf.qld.gov.au/__data/assets/pdf_file/0014/55301/IPA-Prickly-Pear-Story-PP62.pdf

<http://www.northwestweeds.com.au/images-library/image-library-prickly-pear-species/prickly-pear-history-ppdc/prickly-pear-history/>

This background of this box is the colour of Cochineal. It is thought that the plants of *Opuntia* were introduced to Australia to support the establishment of a cochineal industry. Cochineal are scale insects that feed on *Opuntias* producing a red dye, which was used for dyeing the distinctive red coats worn by British soldiers.

Order of Australia award for Dr. Tein McDonald

The AABR President is interviewed by AABR Secretary, Jane Gye

JG: AABR is thrilled and delighted, but not surprised, that you received a Member of the Order of Australia Award (AM) in this year's Queens Birthday Honours list, for significant service to conservation and the environment. One of your major contributions is through the bush regeneration movement. How did you first become involved?

TM: I first heard about bush regeneration in 1978-9 when I was studying horticulture at Ryde TAFE in Sydney, as a mature age student. (There were no bush regen courses then of course.) I happened to see Joan Bradley speak at a festival at Sydney uni, and her views seemed eminently logical. Regeneration had not been on my radar prior to that as I had previously been volunteering with groups on the north coast of NSW trying to bring back the bush - but in those days we saw 'bringing back' as necessarily depending on planting. So I only gradually became aware of the bush regeneration industry, starting with some exposure while I was at TAFE studying some basic botany, ecology, plant physiology, weed control, propagation and so on. That sort of course was a fairly good foundation for starting me on the journey of learning about how ecosystems work and how to work with them, but it wasn't until late 1982 that I actually started training as a bush regenerator with the National Trust in Sydney.

JG: So were you practising as a horticulturist then?

TM: Well, I was earning a living in whatever way I could - gardening, working in plant shops, drawing up landscaping plans etc. But my main pull was voluntary conservation work back on the North Coast. And it was through organising the 1982 conference with the Lismore Australian Year of the Tree Committee titled 'Rescuing the Remnants', that one of the other members of the committee, Rosemary Joseph, convinced us that the National Trust were the 'go to' people for bush regeneration. Rosemary had trained with the Trust in Sydney and suggested that the Committee bring them up to the north coast to evaluate potential for a couple of sites to adopt bush regeneration programs. One of the sites was Rotary Park, a project in the heart of Lismore suggested by the forest conservationist Dailan Pugh and fully supported by Lismore Council's Parks Supervisor Keith King. The other was Goanna Headland at Evans Head, an area of vacant crown land that a group of us were fighting to conserve. Wanting to be involved in helping to run both these projects, I started on-the-job training with the Trust in Sydney later that year. The training continued for what seemed like an eternity because I was itching to get back and get to work, but which was probably less than a year.

JG: Then you went back to start these projects?

TM: Yes, we'd been applying for funding so then I went back to Lismore and helped Rosemary and Keith King to get the Rotary Park project started and helped my colleague Jenny Henderson (who had been a stalwart in the site's original Goanna Headland conservation campaign) to get the Goanna Headland project started.

Goanna Headland - now named Dirrawong Reserve - is an absolutely stunning coastal landscape with ancient geology, ecosystems and cultural importance to the local *Bandjalang* clan people, one of the clans who ultimately gained a strong legal role in the management of the site after it was saved from

development. The first bush regeneration project, largely focusing on the removal of Bitou Bush, was funded by the NSW Department of Aboriginal Affairs through the auspices of a local community organisation, Community Aid Mid-Richmond Area, advised by the National Trust. We were able to employ young Aboriginal men and women as well as elders to guide the cultural side, reinforcing language and so on.



After some years getting these projects started (and needing full time work), I handed the coordination of the Dirrawong Reserve project over to Jenny Henderson. The work was later largely carried for the Dirrawong Reserve Trust by volunteers led by Ellen White, with assistance from contractors on steep cliffs.

At Rotary Park, Rosemary Joseph was very ready to lead the regen team. She subsequently became a highly sought-after rainforest restoration contractor and planner in the region and taught the first bush regeneration courses at the local TAFE, so she taught most of the first cohorts of professional regenerators in the area, as well as the next generation of teachers

JG: And that was when your full-time employment with Ku-ring-gai council began?

TM: Yes, I was very fortunate in late 1987 to get a position with Ku-ring-gai, in northern Sydney, as Bush Regeneration Technical Officer. They needed someone with experience running teams because the officer who had established a bush regen team at Ku-ring-gai Council, Helen Petersen, had left the position. Luckily there were not many people with experience at the time who were interested in full time bush regeneration work.

Helen had done some amazing work there to establish a regen team in what was a very blokey field staff culture typical of Councils at the time. The team was already well set up, and over the four years I was there comprised many individuals (e.g. Kevin Wale, Virginia Bear, Sue Brunskill, Barbara Buesnel, Helen



Gerald and Gerrida Cohen, David McNaughton, Tein McDonald and Nan Goodsell were all involved in a bush regeneration workshop last week
—Photo: PATRICK CUMMINS

Tein, second from right, with Ku-ring-gai Bushcare volunteers. From The North Shore Times 6/6/1990

Webb and others) who subsequently made their careers in bush regeneration, teaching, management or writing. We worked on numerous sites around Ku-ring-gai and all the sites responded beautifully, whether Blue Gum High Forest sites on shale soils or open forest on sandstone soils. After some advice from Doug Benson from the Herbarium we started applying fire to mimic conditions typically needed to trigger regeneration of what were 'missing' soil seed storing species.

There was also a group of volunteers, Nancy Pallin's group at Flying-fox Reserve, Gordon, and this model of volunteering under the supervision of skilled coordinators inspired Ku-ring-gai's development of a fully-fledged community bush regeneration program. Whenever a resident phoned up to say Council 'had to do something about the weeds in the bushland behind our place' we sweet-talked them into volunteering. We formed a network of coordinators and part of my job was to guide a growing number of groups, to my great delight, as lots of wonderful volunteers made you want to do more - so that was a very satisfying period for me. Ultimately the volunteer corps became so large that a second position had to be created.

JG: And you connected with restoration practitioners elsewhere in Australia and overseas at the time too?

TM: Yes, at that time I started seeking out examples of ecological restoration work occurring all over Australia, all forms of restoration irrespective of whether it was assisted regeneration or not. This connected me with lots of colleagues in Australia and that led me to attend conferences run by the international Society for Ecological Restoration (SER) at which I met some very inspiring practitioners and applied ecologists from all over the world. It was an exciting time when the field was just emerging and I found people were genuinely interested in the restoration work practised here in Australia and included me in their conversations about restoration theory. Jeffrey Caldwell, a practitioner from California, who was impressed by the Bradley Method, arranged for me to give a small series of talks to restoration groups in California and introduced me to work being conducted at many sites, including state agencies and volunteer groups. I was vitally interested in the restoration philosophy work being developed at the time and remain in touch with many of the colleagues I met during those years.

JG: And when did you fit in further study, as I understand you took on further study at night?

TM: Well yes, this is when I took on post graduate study. I had a huge appetite for learning more about restoration and cracking

its codes and realized that I needed more than a hort certificate if I was to continue to grow in my work. Most of my bush regen team were more highly qualified than me and I wouldn't even get my own job if I had to reapply for it. So further study was an obvious direction I needed to pursue. My experience again enabled me to enrol in a Graduate Diploma of Environmental Studies at Macquarie Uni. That led to a masters at Western Sydney Uni that was converted to a PhD.

You see I was very very interested in the science behind the practice of restoration. At Macquarie Uni, of course, I had discovered the power of libraries and particularly science journals and so my reading led me to seek out good external supervisors including Marilyn Fox, Robin Buchanan and Ross Bradstock who were very encouraging. I focused my doctoral thesis on the concept of ecosystem resilience and its role in restoration of damaged plant communities, and my field work allowed me to conduct experimental work at multiple sites across Sydney and survey sites on the north coast, some in detail and I still monitor one of those sites.

JG: Yes, resilience is at the heart of assisted regeneration and site assessment.

TM: Well, yes. In the mid-late 1980s and '90s, I and others had been advocating that the Bradley Method complied with some rather basic ecological principles. We were trying to tone down the fairly needless criticism of the Bradley Method. Certainly there was excessive dogmatism applied to the Bradley Method by others after Joan's death, which over emphasised detailed 'rules' (that were not always applicable) at the expense of clarity about the essential ecological processes underpinning the approach. We tried to defuse some of the disagreements of the time by emphasising that the essential principles were that bush regeneration was (a) triggering species' own potential for recovery and (b) ensuring effective follow-up treatments during that recovery phase. But we didn't have much success. So it was necessary to learn to speak in ecological terms and in fact 'ecosystem resiliency' or 'resilience' was a term coined by Holling in the mid 1970s, and referred to the adapted capacity of species to recover after natural disturbances. His work was followed soon after by some seminal work on the subject by Walt Westman, another American, who came to work in Australia and influenced ecologists here including one of my PhD supervisors Marilyn Fox. Walt wrote some of the most practical and understandable texts on resilience and influenced me quite a bit.

But there was a surprising dearth of acknowledgement of the importance of natural recovery processes in restoration. 'Resilience' was unhelpfully confused with 'succession' in most textbooks prior to Westman's. I believe he was on the cusp of exploring the extent to which this property could be harnessed (or not) to assist recovery after human-induced impacts but his life was cut short. So my thesis focused on this question, using Australian case studies representing our four major vegetation types (rainforest, sclerophyll, grassland and wetland). Its purpose was to explore how assessing degrees of resilience at a restoration site could be used as an organising principle for designing more effective restoration.

JG: This has been very helpful in our industry but I understand you now have some doubts about using the term?

TM: Well yes. There was a branch of ecological thought that stemmed from Holling's original theories but which took off in a 'complex social-ecological systems thinking' direction. The international think tank, the Resilience Alliance, have redefined resilience away from a specific capacity to bounce back to a much broader property that includes persistence over time and



Tein with colleague Dr Andre Clewell (lead author of the Society for Ecological Restoration SER Primer and other SER foundation documents) during their fortnight in March 2014, delivering restoration training to agencies in Sichuan, China.

including *resistance* to degradation, which normally would have been distinguished as a separate property. This has annoyed a whole bunch of ecologists around the world, but the Resilience Alliance's work is providing such valuable underpinnings for managers of social-ecological systems that would be churlish to complain that the term has been shanghaied. I am wondering if the answer is to informally use something like 'recovery potential' or 'recovery' instead, when talking with the public and managers, because 'resilience' has become a trendy buzzword among managers. I worry that the way it is now often used is wrongly implying that ecosystems can survive dire things like climate change and unchecked development if only we have enough conferences and coffees. They won't - because resilience is limited.

JG: So are you not optimistic about restoration?

TM: Well, any reasonable person could be forgiven for being pessimistic. But ecological restoration is a key to turning people onto what the true limits and potential of things are. It has great potential but only if we stop the damage. That is the first law of ecological restoration. We have now made sure that this point about reducing society impacts is made loud and clear in the latest version of the international Standards for the Practice of Ecological Restoration.

JG: These are standards that you have been working on with the international organisation Society for Ecological Restoration – and they flowed on from the National Standards prepared by the Australian chapter?

TM: Yes, I have been involved in both because I believed that restoration models have been somewhat confused and have not addressed environmental change and global threats like climate change in the past. Some suggest that potential for restoration is dead but this is only the case if you think restoration is about restoring the past. It is about restoring health to ecosystems so that they can persist. Resilience is a key to this – but despite all the resilience talk overseas, the concept of facilitating natural recovery has been slow to take off overseas. It has been much more readily taken up in Australia for a range of reasons. There are some notable exceptions of course. Keith Winterhalder in Canada was a great exponent of harnessing natural recovery in restoration, as are Karel Prach in the Czech Republic and Dave Polster in the U.S. And now there are numerous restoration ecologists in South America, notably Robim Chazdon, arguing the importance of natural regrowth. But harnessing natural

recovery is now included as a major approach to restoration in the SER Ecological Restoration Standards. The work will continue but getting to that point is pretty pleasing.

So to go back to your earlier question – it is the work of organisations like SER, ESA and AABR that provide some hope. We need to grow these organisations as there is strength in numbers.

JG: How important is AABR to you?

TM: I am closely committed to a few organisations, but AABR is the NGO with which I am most closely involved. I'm privileged to be the President of AABR now, but I've been an active member through the 33 years of its existence, when there has been a succession of others at the helm, helping AABR to do what it does best. I guess I am referring to AABR's work to influence the establishment and maintenance of satisfactory VET courses for our industry, which has been a very challenging process and still is because of structural changes to VET nationally - and AABR's Bush Regeneration Practitioner accreditation system, which is very valuable. I am very involved in maintaining that system and also in helping to organise conferences and workshops to share information and knowledge between ecologists and practitioners.

I feel that I have been involved with AABR since 1982 when I first started training with the Trust, because it is largely the same 'community' of regenerators, but in reality the organisation only formally started in 1986. And it has tentacles out into a very large body of practice. Bush regeneration is a large and inspiring community, particularly since local councils started their own programs of bush regeneration and employed their own teams and/or engaged contractors - and since grant funding became available for professional work. When I started in 1982 about half the local government areas in the greater Sydney area had programs, but it didn't take long for it to catch on Sydney wide and Bushcare volunteer programs have similarly taken off over the last three decades. Similar programs also operate in other States and a strong AABR branch is now forming in Victoria

So while I do contribute substantially to other ecological and restoration NGOs and connect with lots of other ecologists and practitioners in Australia and overseas who influence my thinking, my formative and core community is AABR. When I am with bush regenerators who have this background training and experience in fostering recovery on sites, we have this understanding in common. We don't have to keep explaining it or advocating on its behalf when we are working together, just getting on with the job of restoring our local native ecosystems.

June 2019

Visit our website <http://www.aabr.org.au/tein-mcdonald-member-of-the-order-of-australia/> to read more about Tein's work



Tein (second from right) presenting an AABR award to Stan Dudgeon a relative of Ambrose Crawford, at Lumley Park in 2018. On the left is Tamara Smith, Member for Ballina, and on the right is Tony Parkes, who was awarded an AO this year
Photo: Virginia Bear



Visitors to the Aboriginal property Minyumai. Tein has been involved with a project here.
Photo: Tein McDonald

Bush Regeneration Holidays

Chile - March April 2020

Would you like to visit Chile and assist in a conservation project?

Myself (Lavinia - a bush regenerator from Australia) and Fernando are calling for volunteers to help next March-April (2020) to build a walking trail, lookout and hopefully install fencing on our mountain conservation property. We were successful in getting funding for installing a 600m long walking trail and lookout. We now need to find labour to help us build it. No experience is necessary, but some physical fitness and strength is required. Note it is volunteer work, not paid. All food supplied.

Description: The property is 120 hectares of endangered Araucaria regrowth forest (it has been partially logged in the past). the aim is to eventually donate the property annexing it to Conguillío National Park with which it shares a boundary.

In the meantime we may use parts of it for tourism, goat keeping and keeping our cabins supplied with firewood from the fallen timber. The vegetation is alpine/subalpine vegetation 1400m-1700m altitude, with fabulous views and has access to the summit of a probably extinct volcano, Sierra Nevada within Conguillío National Park

The project:

- camping on site (BYO tent and sleeping gear) all food supplied
- **jobs include** but are not limited to: carrying and installing timber up a steep slope for making steps, platforms, bench seats, hand rails, hammering, installing signage, digging/moving dirt, chainsaw operation, pruning vegetation with

Right: View of Conguillío National Park with Araucaria araucana trees in the foreground. Photos supplied by Chile Wild



and tools, taking photos/video of the work and scenery for social media, the project report & sharing with volunteers and cooking for volunteers

- spare time activity options include: birdwatching, native fruit & piñon (Araucaria seed) collecting, setting up fauna traps (on the property), having a sauna (and shower) at our cabins property 12km away, visiting one of the thermal baths in the area, walking, and eating a non-camping meal at a restaurant.

Flights from Australia are with Qantas or Latam to Santiago (SCL). Overnight sleeper bus directly to our front door from Santiago. Also domestic flights between Santiago and Temuco, our nearest city 2hrs away. We can provide advice for other travel options for areas in Chile or nearby Argentina (Bariloche region) If you are interested visit our website www.chilewild.com

- Contact Lavinia on contacto@chilewild.com
- Confirmation by early December of any interest is needed to plan the work and when we start etc.
- Know someone who may be interested, please pass this on.

Save the Date

Tuesday October 8th 2019

A one day Forum: Seeds for the Future

Teachers Federation Conference Centre, Reservoir Street, Sydney

Where will the seeds for the future come from?

Planners, managers, practitioners, seed collectors and nursery operators are familiar with the need to collect seed from widely spaced parents to optimise genetic integrity in replanted areas - but do we have a similar problem of inbreeding with small remnants subjected to bush regeneration alone?

Given development pressures and declining space for connectivity, there is an increasing need for restorationists, plant producers and landscape architects to collaborate on ensuring natives of the correct provenance and genetics are conserved as well as planted within urban spaces.

Planning for the Seeds for the Future, a one-day forum is underway to address these issues. This forum brings together people from the bush regeneration, revegetation, nursery and

landscape architecture and planning sectors to set the scene for future collaborations and introduces the innovative project 'Healthy Seeds' that is poised to offer practical solutions for all.

The day will be structured around nine morning presentations to provide the background and context and an afternoon panel discussion on the implications for practitioners and need for leadership strategies which span agency boundaries.

The event is being co-hosted by AABR and ANPC on October 8th at the Teachers Federation Conference Centre, Sydney, and is assisted by the NSW government through its Environmental Trust.

Save the date, Tuesday October 8th. Tickets will go on sale in August.



More Experiences with Tree of Heaven

Lyndal Sullivan

It was interesting to read of the Shoalhaven River experience with Tree of Heaven in the [AABR News #139](#) of Jan 2019 by Martin Slade. Our experience on the Upper Goulburn River has been a little different.

We have worked as volunteers for 8 years on a section of the Upper Goulburn River and its side creeks. Everyone had bushcare experience and some were also trained professional bush regenerators. The Goulburn River flows into the Hunter Valley, and the section worked is north of Mudgee, near Ulan in NSW (adjacent to and on the property 'Gleniston').

Some areas could be considered 'remote' as it involved a few hours walk in and down the Goulburn River, whilst other patches treated were only a 15 minute bushwalk from a car or hut. We were therefore keen to find a technique that was effective and no fuss, and where equipment could easily and safely be carried in a backpack.

Because of the tenacity of the plant, we considered that 'success' was not achieved until there were a couple of consecutive years with no re-suckering. The eight years of involvement allowed for plots to be reassessed for a few years after the patch appeared to have been effectively controlled. As Martin has so well explained, if any roots or suckers remain alive, it will emerge and spread again.

Background

This article primarily covers our findings with the use of a herbicide mix of metsulfuron and glyphosate.

Initially glyphosate was tried but found to be unsuccessful (before 2012). Before we knew anything of this weed, we tried cut and paint with glyphosate, only to be horrified at the growth it had promoted. After that glyphosate was tried with scrape and paint and drilling techniques.

Glyphosate was abandoned after re-suckering rates of 19% were found (93 suckers after primary treatment of a patch of 483). Treatment with a metsulfuron/glyphosate mix proved far more effective after primary treatment - resuckering was less than 1% after 12 months since primary (and < 9 % after 3 years with no intermediate treatments).

After this experience, we did not pursue the use of glyphosate only. Other bush regenerators in the Blue Mountains with experience of this 'Tree from Hell' reported similar outcomes.

Over the years we have worked in some very large plots where the whole patch could not be completed during one trip (a 4-7 day period). These results have not been used in making comparisons. It is only when the whole discrete patch was treated within a week that results have been used here to assess effectiveness.

Methods

Technique

The injection techniques of both drill & fill or scrap & paint were used. Scrapes were all at least 1/3 of the length of the

plant stem. Where stems were 20mm or more in diameter, the drill & fill technique was used. Emphasis was on the immediate application of the herbicide mix.

Spray – Spot spraying of leafy regrowth was used during some follow up treatment when plants were less than 300mm high. This was a good alternative to scraping thin stems, which can easily break.

Tools

- Drills : Lithium battery drills held a charge best for a whole day. Drill bits were used in preference to augers, for ease of handling/carrying. A selection of 8,10, and 12 mm sizes proved useful, with 5mm occasionally.
- Knife: weeding or boning knife.
- Applicator bottles for applying herbicide: 150 ml plastic bottles with lids or twist top. Closing essential for the regular agitating required.
- Applicator holders: to carry 2 bottles on a belt. Cut down 1 litre plastic milk/juice containers

Herbicide

Herbicide used for both Drilling and Scraping for a 1 Litre mix:

- 40 ml glyphosate
- 1/2 teaspoon metsulfuron methyl 600
- 1 ml non ionic surfactant (or 2.5ml Ultrawet or Pulse)
- 2 ml+ dye
- 1L water

Herbicide used for spot spraying for 1 Litre mix:

- 50 ml injection mix
- add 950 ml water
- add 1 ml non ionic surfactant (2.5ml Ultrawet)
- 4 ml dye

Seasons

Work was carried out either early or late summer, mostly November and March to avoid the hottest part of the year, but to work when plants were actively growing.



Work is continuing on this large older plot with its dense network of suckers (plot E Nov 2012)
Photo: L. Sullivan

Findings

As the focus of the work was just to 'get rid of' this weed, working whenever was possible around personal and work constraints, this was not an ideal 'trial'.

The irregular treatment intervals did not allow for direct comparisons, however the results are instructive as to the effectiveness of the herbicide and optimum periods between treatments. The eight years of observation, treatment and monitoring provided information on the long term effectiveness of treatment.

We also had the opportunity to observe the establishment of some new populations and how the age of the stand influences treatment outcomes. In general, many more follow up treatments are required for older populations than for more newly established ones.

Success/failure rates. All treated stems were found to be 'dead'. Resuckering rates were used to indicate the 'failure' of treatment. This was the number of new stems compared with the number of original stems found (then treated). On some occasions this included also the number of suckers missed (untreated the previous time). In some plots we could be confident that none had been missed (Plots A & E), however in one area (H) small suckers could have been missed because of the dense *Melicytus dentatus* (tree violet).

History of Plot Results

The table below contains the results from 3 discrete patches which had only ever been treated with the metsulfuron/glyphosate mix. The results of these plots would indicate that this treatment is effective, although a few years more monitoring is required.

Plot H was located on a bank above and about 10 m away from the Goulburn River. This is the smallest and 'youngest' of the 3 plots being compared with 490 stems found when first treated. Plants were first noticed about 2.5 years before primary work was able to be undertaken (and hardy souls found willing to fight their way through the *Melicytus dentatus*!)

3 years after primary treatment and one follow up, only 1 sucker was found to have regrown compared to the original patch of 490 stems treated (ie 0.2%). Monitoring of this patch over the next 2 years will be informative.

Plot A was located beside a dry ephemeral creek (Peregrine Creek) which 'flows' into the Goulburn River. This plot contained 600 stems when first treated.

This patch was treated at the start and end of one summer (4 months apart) and then again at the start of the following summer (12 months after primary). The monitoring rate after 4 months was not impressive at 14.6%, however after 6.5 years with only 2 intervening treatments 0.33% suckering was encouraging. These 2 suckers were each less than 400mm high and less than 5mm diameter at the base. This same result may have been achieved without the first follow up at 4 months?

Plot E is located on a creek (Saddlers Creek) which 'flows' into the Goulburn River above and away from the watercourse. This was the first location where Tree of Heaven stems were observed in the vicinity, possibly in 2010, but being busy with blackberry and willows at the time, we didn't want to know!!! Treatment did not commence on this patch for about 2 years. It spread exponentially during this time, possibly promoted by pig disturbance, to cover an area of 1100 square metres.

Whilst this was a huge task, the team was able to deal with the primary work in 130 hours over 4 days in November 2012. After 4 more treatments over 6.5 years the suckering rate reduced to 0.08%.

	H Goulburn River upstream	A Peregrine Creek	E Saddlers Creek - north plot
Density/size of plot	490	600	8140
Primary Treatment - month	March 2016	Nov 2012	Nov 2012
Suckering rate after 4mths since primary		14.60%	?
Suckering rate after 32mths since primary	8.90%		
2nd treatment - month	Nov 2018	March 2013	March 2013
Suckering rate after 12 mths since primary (8 mths since 2nd treatment)		0.83%	0.95%
Suckering rate after 3 yrs since primary (5mths since last treatment)	0.2%		
3rd treatment - month	April 2019	Nov 2013	Nov 2013
Suckering rate 6.5 yrs since primary & 5.5 yrs since 3rd treatment		0.33%	
Suckering rate 3 yrs since primary & 2 yrs since 3rd treatment			0.76%
4th treatment - month		April 2019	Jan 2016
Suckering rate 6 yrs since primary & 2yrs since 4th treatment			0.33%
5th treatment - month			Nov 2018
Suckering rate 6.5 yrs since primary & 5 mths since 5th treatment			0.08%
6th treatment & monitoring date			April 2019



Above: Before treatment (plot C) Feb 2006

Photo: Lyndal Sullivan

- **time interval** between treatments – no benefit appears to be gained by treating a patch at both the beginning and end of one summer season. Twelve monthly intervals is a good time effective program.
- **season** of treatment – no significant differences were apparent between early and late summer treatments.
- **technique** - scrape & paint and drill & fill are both effective. Cut & paint is not effective. Spot spraying of leafy regrowth was effectively used during some follow up treatments when plants were less than 300mm high. This was a good alternative to scraping very thin/fragile stems. Basal barking cannot work where small suckers are present, as the whole patch cannot be treated thoroughly.
- **herbicide** – a glyphosate/metsulfuron mix as described is effective if requirements for mixing and storage are adhered to. Future testing of glyphosate, metsulfuron & garlon using the S&P/D&F methods is warranted.

Discussion of Results

Treatment intervals

The following tentative lessons can be drawn from the table above;

- Monitoring at the end of a summer season just 4/5 months after treatment does not appear to be an accurate assessment of effectiveness, as some of these suckers may still not survive.
- A treatment 12 months after primary would appear to be most time effective (see plots A & E), having allowed for the full effect of previous treatments.
- Follow up treatments (2nd, 3rd etc) can then be effective after longer intervals.

Effectiveness Test

Because of the difficulty of getting rid of this plant we did not believe a result was meaningful, until we could be completely satisfied that NO suckering would recur from established plants.

In general, it took about 4 years to get to this nil suckering rate, and another 2 consecutive years of nil suckering to ensure that the infestation was controlled. Older patches required longer periods and younger, less. The oldest patch being compared required 4 treatments over a 6 year period to reach a near nil result. On another plot, suckers were observed 5 years after the last treatment, with no suckering observed in the interim!

One clear message is that there needs to be a nil suckering rate for at least 2 consecutive years to know control has been achieved.

Lessons and Future Testing

It appears that success depends on the following factors:

- **thoroughness** – every sucker and tree in the 'patch' of interconnected suckers must be treated. If a patch is too large, I would agree with the Shoalhaven recommendations, that it is best to treat one quadrant to focus on one area of the root system.

- **disturbance** between treatments will affect the growth pattern and effectiveness of treatment. The presence of pigs, flooding or other disturbance factors will require longer and more follow up treatments.

Further trials to test these factors would be ideal, but challenging, given the difficulty of finding similar size and age plots subject to the same conditions.



Above: No suckers 6 years after treatment (plot C) November 2012

Photo: Lyndal Sullivan

Acknowledgements

I would like to thank my friends who carried out the hard work over the years and counted plants – Leonie Kelly, Shirley Brown, Susan Ambler, Lesley Sammon, Connie Ellwood, Marianne Bate, Julie Shepherd, Linda Brooks, Linda Thomas and particularly my partner Ruth Ley for her persistence. Also to Julia and Colin Imrie of Gleniston and Lisa Menke of Mudgee NPWS.



A shout out to natural area restoration industry stakeholders

Imagine a future

July 2019

when our industry is universally respected and valued,
projects are properly funded, land managers and governments think long term,
there are effective research, education and networking opportunities,
and we work collaboratively to develop practical solutions for industry-relevant issues.

AABR needs your organisation's investment and involvement. If we all work together, we can build the future our industry deserves.

We have been a strong national voice for ecological restoration since 1986 and are striving to meet the needs of an expanding industry.



Australian Association of Bush Regenerators

- has over 500 members half hold accreditation, the most highly regarded recognition for bush regeneration practitioners in Australia
- makes submissions to all levels of government regarding biodiversity management and quality restoration practice and policy
- has a working group reviewing the training opportunities and course design for Conservation and Land Management, with an AABR rep on the National Industry Reference Committee
- presents at local, national and international symposia on quality restoration practice
- has developed educational resources, best practice guidelines, contract management tools and regenTV video case studies
- runs seminars, identification courses, field trips and meetings
- publishes a quarterly newsletter and manages a high flow website, which hosts Bushjobs
- has credibility and experience accumulated since 1986 — putting us in a strong position to be an effective advocate.

What will your organisation receive?

We offer recognition of your contribution by promoting your organisation at events and on AABR's publications, promotional material, social media channels and website.

Opportunity	Return	Amount
2019 Forum: Seeds For The Future Gold sponsorship.	Sponsorship will be announced by president at forum, logo on program and first slide as gold sponsor.	\$2000
2019 Forum: Seeds For The Future Silver sponsorship.	Logo on forum program and opening slide (listed as silver sponsor).	\$1000
2019 Forum: Seeds For The Future Bronze sponsorship.	Logo on forum program and opening slide (listed as bronze sponsor).	\$500
RegenTV Exclusive sponsorship of regenTV documentary, any field trips, technique videos or conference presentation.*	Exclusive branding on the video, webpage banner or sidebar banner, promotion at AABR events, in the newsletter and social media channels.	\$2000–\$50 000
RegenTV Non-exclusive sponsorship of a regenTV video on a conference presentation, short field trip or technique.*	Non-exclusive branding on the video, listing on honour scroll on video webpage, social media promotional post).	\$5000–\$20 000
RegenTV General contribution to regenTV where the combined funds will produce a video.*	Listing on video webpage and recognition in e-news.	up to \$500
RegenTV Corporate Partnership to produce documentaries on seminal restoration projects and bush regeneration pioneers.*	Multiple year partnership that will tailor outcomes for the organisation and include first option on video branding and exclusivity.	\$25 000 per year

We encourage your input and involvement,
and look forward to hearing from you.

* A detailed regenTV prospectus is available on request.



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working with natural processes

What's happening



**Monday 26
-Thursday 29
August 2019**

20th NSW Weeds Conference

The 20th NSW Weeds Conference is a premier event for NSW weeds officers, researchers, market and industry analysts, government officials and policymakers working towards better weed management across the country. The conference will unite more than 250 weeds management experts in the beautiful beach-side city of Newcastle, Australia.

Weeds are a serious threat to Australia's native flora and fauna and add pressure to our economy. Recent technologies, policies and innovations are helping us manage weeds more effectively - but more work is needed.

Conference session themes include:

- Measuring success in weed management
- Weeds in the urban landscape
- Weeds management in rural settings
- Putting the we in weeds: working together

WHERE: Newcastle NSW

For more details: <https://www.nswweedsconf.org.au/>



**Sunday September 15
2019**

Bushcare's Big Day Out

It's a fun day where anyone can get involved and learn alongside experts. Activities can include weed removal, tree planting, mulching or even follow up maintenance on sites where rehabilitation has already begun. BBDO events are also a fantastic opportunity for sharing knowledge and expertise through activities like bird watching, plant identification workshops and species monitoring. Come along, and bring a friend!

For more information - go to:
<https://conservationvolunteers.com.au/what-we-do/bushcares-big-day-out/>

Tuesday 8th October

**Hosted by AABR, Australian Network
for Plant Conservation and the NSW
Government.**

Seeds for the Future

**A one day forum to discuss ensuring
seed supplies in the future.**

WHERE: Teachers Federation Building, Reservoir
Street, Sydney

More information to come.

See Page 15.

**Tuesday 22-Thursday
24 October 2019**

**Healthy Landcare | Healthy Landscapes
NSW Landcare and Local Land Services
Conference**

Seeking presentations for sessions and posters
Submissions are due by Friday, 31 May.

WHERE: Broken Hill

For more information:

<http://nswlandcareconference.com.au/>

**Sunday 27-Wed 30
October 2019**

**Landcare Unearthed - Celebrating
Diversity, Managing Landscapes**

**SOUTH AUSTRALIA Community
Landcare Conference**

WHERE: Bordertown

For more information: <https://landcares.asn.au/event/2019-sa-community-landcare-conference/>

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/



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Scott Meier, Matthew Pearson, Agata Mitchell, Rob Scott, Deb Holloman, Victoria Bakker, Spencer Shaw, Peter Dixon.

Victorian Committee

Enquiries please email Kylie at
vicbranch@aabr.org.au

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 January, April, July, and November.

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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