AABR NEWS

Australian Association of Bush Regenerators NSW

Nº 114
September
2012

Inside

Mick Webb demonstrating the splatter gun in the lantana infested Sherwood Nature Reserve, Woolgoolga. The story is on page 8.
Photo: Marcello DeNardis

President's Perspective

Hi all,

Hope you are travelling well and enjoying a lovely spring. Although the seasons appear to be becoming more subtle with climate change, we are still getting a good burst of wildflowers at this time of year, a reassuring sight.

Update on the AABR 'change process'. In the last AABR Newsletter, Sue Stevens of Elemental Ecology gave an overview of the AABR survey results. The results, including many comments, have proved helpful in developing the next stages of the change process—drafting new rules and developing a promotional strategy. (These will be required if the membership votes for change at the next AGM and will help members decide if this is the direction we want to go in.)

The Change Committee of AABR (Tein McDonald, Matt Springall, Danny Hirschfeld, Jane Gye, and Peter Dixon) anticipate having a preferred package of changes ready by about mid-October (possibly through a special October AABR News or as a separate package). We hope this package of information will generate plenty of interest from all associated with AABR and interested in its future.

Provision of the package in mid-October—including a special resolution for changes to the rules—will allow members plenty of time to consider how they would like to vote at the AABR AGM on Sunday 2 December (time and place to be advised). The current constitution suggests that members who cannot be present at the meeting can send in a postal vote (forms for these will go into the package).

SERA meeting of NGOs. AABR has been invited to send representatives to the inaugural conference of the Society for Ecological Restoration Australasia in Perth from 28 to 30 November. The invitation is for AABR to participate in two invitation-only workshops bringing together all key Australian NGOs dedicated to the conservation and protection of Australian ecosystems. The purpose of the workshops is to foster active collaboration between the organisations to optimise achievement of our common goals. Specifically, SERA is also keen to promote a collaborative project developing standards for ecological restoration in Australia that incorporates both assisted natural regeneration and reconstruction. We will keep you posted on how this goes.

Tein McDonald

The recent AABR survey

Last issue we reported that most AABR members (and potential members) who responded to the survey would welcome, or are at least open to, the proposed broadening of scope of AABR and separation of membership from accreditation. Below is the promised further information on the results of some of the other questions asked in the survey.

Name change

While only 32% of the **161 current and lapsed members** who completed the survey agreed with a name change, only 28% disagreed and 39% responded 'don't know'. This suggests that over 70% of member respondents were at least open-minded about the possibility of a name change—but that some were not in favour. Of the **113 non-members** who completed the survey, 66% said that they 'would not be more inclined to join AABR if it had a name change', which can probably be interpreted that they would be choosing to join (or not to join) for reasons other than the organisation's name. The combined perspectives suggest to the Change Committee that there is no strong motivation for change among members at this stage, but that it is worth keeping an eye on the possibility in the medium term.

The most popular name was 'Australian Association of Bushland and Biodiversity Restoration'. New suggestions included:

- Australian Association of Biodiversity Restoration (not 'restorationists'—a couple of respondents commented that this is a clumsy word)
- Australian Association for Biodiversity Restoration
- Australian Association of Bushland and Ecological Restoration
- Australian Bushland Management Association/Bushland Management Association of Australia
- Australian Association of Ecological Restoration
- Australian Association of Bush Regeneratiors and Restorationists
- Biodiversity Restoration Australia (many organisations are dropping words such as 'society', 'association' and—to keep with a global theme—finishing their titles with the country they're in i.e. 'Australia' (works well in internet searches))
- Association for Bushland Restoration (Australia)
- Bushcare Australia.

Values and benefits

All activities are valued to some degree. Website and newsletter were the most valued of AABR's activities, but this varied with where respondent resides, e.g. Sydney respondents also value walks and talks. Dissemination of information was seen as valuable.

Advocacy

Results showed that respondents think that AABR does have a role to play in advocacy across all topics surveyed, but especially to ensure standards of practice and promote assisted natural regeneration in ecological restoration. Support was expressed for AABR to represent the bush regeneration industry, but not necessarily in the sense of a trade union-type organisation (although the need for bush regenerators to be represented on industrial issues was identified). Several comments were made about unscrupulous contractors, and that perhaps AABR has a role in bringing them into line.

Willingness to pay more for membership and help out more with AABR activities

It was heartening to see that over 60% of members were willing to pay a higher membership subscription (with the most popular price category being $26 to $50), and a substantial percentage (26%) said they would be willing to help out with activities, with a range of activities ticked from website help to, particularly, walks and talks.

Geographical and demographical

Of the survey respondents, members were more likely to be over 40 (82.6%) than non-members (56.6%). (See Table 2.)

Table 1. Summary of results of AABR survey

	Members/subscribers/ lapsed members (161)	Non members (113)
Percentage of total survey respondents	53.80%	46.20%
Agreed with broader scope	85.60%	81.80%
Agreed with separation of accreditation and membership	79.90%	74.10%
Most valued activity—newsletter members* / website non-members	72.70%	33.10%
2nd most valued activity—links with colleagues (both members and non-members)	55.80%	27.70%
Most used activity—newsletter members / website non-members	63.60%	36.90%
2nd most used activity—website - members / newsletter non-members	52.10%	26.90%
Fee increase members $26 to $50 /non-members $25	45.50%	39.20%
Advocacy—not be involved in advocacy (all topics of advocacy rated >50%)	3.70%	6.00%

* 'Members' refers to members, subscribers and lapsed members

Table 2. Spread of ages of the respondents

Respondent age	members/subscribers /lapsed members	non-members
24 or younger	0	4
25-39	28	45
40-54	72	52
55 or older	61	12
Total	**161**	**113**

Newsletter News

We have a new folder/mailer! Thankyou Lynne Springett.

Interested in editing and/or proofreading? We need to share the load a bit more, and are looking for new voluntary helpers. It's flexible—you can decide how much to take on and how often.

Please get in touch if you are interested.

Virginia Bear 0408 468442 newsletter@aabr.org.au

Welcome to new members

Chris Indyka, Iain Stych, Peter Verrall, Linda Davis

Saltmarsh field day

The damaged saltmarsh at Horning Street, before rubbish removal. Photo: N Gill

Nerida Gill and Virginia Bear

On Friday 25 May AABR co-hosted a field day with Sutherland Shire Council, Sydney Metro Catchment Management Authority, accompanied by Georges River Combined Councils Committee Riverkeeper. We visited two coastal saltmarsh sites on the Kurnell Peninsula.

Paul Price, Bushland Manager SSC led the tour describing two different approaches used in saltmarsh rehabilitation.

Associate Professor Paul Adam (UNSW) guided the identification of species, and discussed the abiotic factors that may influence their presence at a particular location—such as elevation, salt tolerance and the presence of biotic features such as algal mats. Tony Wales GRCCC Riverkeeper showed photos of the dumping removed by his team.

AABR visitors are invited to follow the progress of these sites on future field days.

Horning Street Kurnell

Coastal Saltmarsh is listed as an endangered ecological community under the *NSW Threatened Species Conservation Act 1995*.

The site, adjoining an industrial area, had road access until recently. It has a long history as a favourite place for hooning around in cars, and for dumping cars and rubbish. This continual disturbance had destroyed most of the saltmarsh plants and prevented them from regenerating.

A bare sandy substrate is all that is left after years of disturbance and erosion.

The site is significant as it links two native vegetation corridors. These corridors have been identified for rehabilitation under the Sydney Metropolitan (SMCMA) Kurnell 2020 Biodiversity Corridors Project. Weeds and vertebrate pests are being controlled to protect the adjoining Ramsar wetland at Towra Point.

The SMCMA has contributed $16 000 and Sutherland Shire Council has provided $5 000 in kind to date, while the GRCCC Riverkeeper Program has supplied over 840 hours of community service hours through the NSW Corrective Services Intensive Correction Order (ICO) program.

The adjoining swamp oak forest was heavily infested with lantana etc. The NSW Department of Planning paid for a tritter to remove the bulk of it, but it took Paul Price two years of persuasion to get them to help (councils cannot enforce weed control on government departments).

The way in to the saltmarsh. Lantana was cleared with a tritter. The last of the rubbish collected by the ICO teams is ready to be removed.

Most of the rubbish in the saltmarsh—including over 80 car bodies, asbestos, tyres and furniture—has now been removed. Some car bodies were left as habitat. Riverkeeper ICO Teams removed over 14.7 tonne of loose rubbish from the site.

Concrete blocks and a sturdy steel gate now control car access, but motor bikes are now the major challenge.

Planning for site rehabilitation include:

- community consultation
- propagation of eight coastal saltmarsh species for replanting
- large scale fencing to exclude bikes
- tidal monitoring
- revegetation mapping (provided by A. Prof Paul Adam)
- local school involvement
- a research study comparing revegetation, natural regeneration areas and their function as invertebrate habitat.

The foreground area should have a dense cover of saltmarsh plants.

Looking towards the swamp oak forest.

Saltmarsh can have some bare patches—but not like this!

Sporobolus virginicus regenerating.

Some patches of *Sarcocornia* remain.

Paul Adam points out *Sporobolus virginicus* on one or the higher sections. Here we could see how much parts of the site had eroded.

Bonna Point Kurnell

The second site looked at a different approach to saltmarsh rehabilitation (we also featured this site in AABR News 105 May 2010).

This site adjoins a large area of mown parkland (photo below). Parts of the park had been reclaimed with imported fill. The area continued to be a dumping site for soil, garden waste and other rubbish. Parts of it were mown. Couch and buffalo grass from the park were invading.

Under licence, Sutherland Shire Council removed an area of fill adjacent to naturally occurring coastal saltmarsh (photo top right). The fill was removed to the level of the natural topsoil. A channel was dug to link the area to nearby mangroves and provide tidal inundation.

A star picket and wire fence was erected in 2009 to protect the regeneration area from mowing and trampling.

Dense areas of invasive grasses along the boundary were sprayed.

2000 plants were planted including *Sporobolus virginicus*, and *Sarcocornia quinqueflora*.

Tubestock worked best. Some virocells were used, but they tended to be dislodged by watering.

Jute matting was used for erosion and weed control.

The site is regenerating effectively, the density of regeneration is minimizing the need for weed control.

Some sections, particularly on the seaward side, are in excellent condition.

Common saltmarsh plants

Paul Adam discusses *Sarcocornia*.

Sporobolus virginicus is the most widespread of the saltmarsh plants. It has different forms—the supratidal form is taller. It shouldn't be planted in low lying areas. The type specimen from Virginia USA, is taller again. *Spoorobolus* is mostly infertile.

Triglocin striata has a characteristic smell.

It has abundant seeds and germinates well.

Sporobolus virginicus planted at Bonna Point.

Some discussion points

Paul Adam reported that in international discussion in saltmarsh restoration, the feeling is that **self design** (i.e. letting the plants regenerate naturally where they choose) is better than planting.

The biggest problem in the last 50 years has been the **spread of mangroves.** A difficult question—do you remove them because saltmarsh is an EEC?

Algal mats are important. They support grazing invertebrates such as crabs and snails. Algal mats have expanded on places where bike activity has ceased, but it's successional—when crab numbers build up and eat the algae, the area of mat will decline.

Saltmarsh probably always had some bare areas—in the upper part, where there can be hypersalinity in summer. Bare areas are now extensive here—trail bikes destroy the algal mats.

Algal mat and *Ophicardelus ornatus* common mangrove air-breather.

The photo below shows Paul Price and Nerida Gill trialling a **new transplanting technique** on sarcocornia. They are using golf hole cutters. It works well with a team of two—one cuts the hole and one cuts a plug of sarcocornia, and they swap.

Photos: T Wales

Don't dig too far down! **Acid sulphate soils** are common in waterlogged coastal sites. If the subsoil is disturbed and exposed to air, it produced sulphuric acid. The general rule followed here is not to go down more than about 30 cm.

Photos: V Bear unless otherwise credited.

Sarcocornia quinqueflora is sometimes available at markets (it has edible leaves), but may have been illegally collected. It is, however, grown commercially in Gippsland.

It is very good at taking up heavy metals. It will grow anywhere but tends to be outcompeted, so is usually confined to hollows. It takes ages to come back after disturbance.

It has colour variation—when stressed or at the end of the season it turns red. The red pigment is anthocyanin.

Juncus krausii has lots of tiny seeds and grows readily. Dense stands of juncus krausii as pictured below, are becoming rare. Around Sydney it's often replaced by the introduced *Juncus acutus*

Suaeda australis occurs on higher patches, and has a mosaic distribution on most sites.

Taming the weeds with a gun in the hand

Mick Webb demonstrating the splatter gun. Photo L Rees.

Mick Webb, project supervisor, EnviTE and Lynn Rees, ranger NPWS

A tale of bush regeneration in Sherwood Nature Reserve, Woolgoolga

Imagine eight hectares of flooded gum plantations with impenetrable lantana well over your head? How do you tackle this cost effectively and sensitively enough to allow the rainforest and wet sclerophyll forest to regenerate?

With a gun of course, a splatter gun.

In 2010 NPWS undertook the massive task of controlling dense lantana under flooded gum plantations in a very special rainforest corridor in Sherwood Nature Reserve, Woolgoolga on the mid north coast of NSW. The reserve was previously part of the old Woolgoolga Flora Reserve managed by Forests NSW and handed over to NPWS is 2003.

Flooded gum plantation with understory of lantana 2007. Photo: L Rees

Forests NSW planted flooded gums *Eucalyptus grandis* along the valley from the 1960s as an experiment in sites that were logged. It failed. The soils were unsuitable for hardwood production and the plantations were abandoned. Lantana established and very quickly smothered out everything else.

Almost 50 years after planting the trees are still very narrow, uneven and of poor quality.

NPWS had hopes of selling the plantations and using the income to undertake weed control, however no buyer could be found.

After finding it impossible to sell or give away the failed plantations in the rainforest corridor, NPWS decided the next best thing to do was to remove all the lantana and allow the bush to do its thing. Luckily Northern Rivers CMA provided a grant of $16 000, and then added another $4 000 in this first year. Primary removal of most of the lantana in most of the plantation areas was undertaken in the first two years.

Flooded gums hate competition, so the theory is that once natural regeneration takes off, these trees will continue to struggle for survival and eventually thin out naturally. It was decided not to selectively cull the trees as they make an effective cover crop for the regenerating rainforest, and largely because massive weed germination was anticipated if the canopy was removed. NPWS is prepared for tree falls and damage to the regenerating rainforest as the flooded gums slowly die out.

The bush regeneration contractor EnviTE Environment was hired for the primary weed control in the reserve using the splatter gun technique. This technique was very impressive and extremely cost effective. NPWS staff, contractors and volunteers continue to maintain the cleared areas. Within three years of primary weed removal of lantana, an average of two native species per metre square are regenerating. The challenge is to maintain these sites as the weeds are regenerating at an average of three plants per square metre.

The splatter gun technique

The splatter gun, also known as a gas gun, is LPG powered, compact and portable with a hand held gun with a specialised nozzle that produces large droplets of herbicide that can be applied from a distance of six to 10 metres away. This control technique involves the low volume, high concentration application of herbicide to actively growing thick, clumped lantana or scattered regrowth with a compact growth form which is at least 300 mm in height.

The application rate for control of lantana using a splatter gun is glyphosate 360g/L at the rate of 1:9. The spray was applied over the top of the bush at 45 degrees and down the front face, applying one splatter every two steps, with an occasional horizontal application low across the front edge of the bushes to treat any seedlings.

This technique was particularly useful in areas of difficult access or sensitive vegetation because the splatter gun is easily portable and caused limited off target damage as only a small portion of foliage needed to be sprayed. Large treated areas were achieved by applying the herbicide from elevated positions into gullies and around watercourses where accurate application was achieved from a stable position.

Effective and timely follow up is essential

Remember the Bush Regen Certificate TAFE training, "If you can't follow up don't start in the first place"? This was at the forefront of the regenerators minds. Could they maintain eight hectares in the next year let alone long term follow up?

The project has made very good use of various employment training programs, NPWS staff and contractors, and it has the luxury of a weekly volunteer group working in this reserve. The sustained effort has ensured that, three years down the track, The native vegetation is regenerating beautifully. The greatest challenge is to keep up with the follow up.

Volunteers

After the initial splatter gun control, when the lantana had died off, NPWS volunteers moved in to crush down the dead Lantana canes, allowing ease of access. These crushed canes also acted as an effective mulch for the next 18 months. The regenerators now regularly maintain these sites using spot spraying and hand removal techniques. Wild tobacco *Solanum mauritianum* is being allowed to grow as it is a very effective canopy crop and rainforest berry eating bird attractant. Tobacco will be thinned out as the rainforest regenerates in a few years time.

The cost

In comparison to other control techniques in heavily infested lantana, the splatter gun technique is considerably cheaper than traditional foliar spray methods with approximately 16 mL of mixed herbicide use for a 2 m bush. A five L bottle of herbicide mix should cover approximately 2000 m^2 (0.5 acres or 0.2 hectares) of moderate density lantana. Signifiant labour reductions were gained with this method compared to standard foliar spraying or manual removal, especially in remote areas.

NPWS and EnviTE estimated costs for primary work using different techniques, for a 1 ha site similar to those described in this article. It is assumed that the site is prepared, and tracks cut for ease of access.

Cost comparison

Splatter: gun	$450
Quickspray	$780
Backpack	$2400
Manual hand removal	$6000?

Volunteer Gerard Nolan crushing lantana, six months after primary treatment 2012. Photo: L Rees

2a, before work on lantana 2009/10.

1a, before splatter gun control.

2b, after treatment 2010/11.

1b, after splatter gun control. Photos: M Webb

2c, current condition 2011/2012.

The results

The efficacy of this method was increased when plants were actively growing with good soil moisture and in full foliage during summer months. Leaves were not sprayed when they were wet from rain or dew. Follow up treatment and integrated techniques were critical in ensuring best results were achieved after initial primary splatter application.

For further information on the use of the splatter gun follow this link: www.weeds.org.au/WoNS/lantana/docs/65_Splatter_gun4.pdf

Some useful links

Volunteer Co-ordinators Network Manual has been updated by the The Sydney Metro Catchment Management Authority as part of a project to volunteer training and support material. It includes 39 new case studies. The new edition is available from the AABR website.

The Invasive Animals CRC's FeralScan project is now underway with RabbitScan, CamelScan, FoxScan and MynaScan now live. Anybody can use FeralScan to create a species management map for their property or local area. Any sighting reported in FeralScan will help to provide a national overview of each species problem. Visit www.feralscan.org.au/.

The Environmental and Aquatic Weeds Biological Control Taskforce most recent newsletter has the latest on agents for Madeira, Cats Claw Creeper, Lantana and several other species of weeds.

Decision Point is the monthly e-magazine of the Environmental Decision Group. The current edition has articles on resilience along with a range of other environment related pieces.

PestSmart now online. PestSmart is a toolkit of information on best practice pest animals management in Australia. www.feral.org.au/pestsmart/.

Contrarian ecology

Ross Macleay

Back in 2009 I went to a conference of the Society For Ecological Restoration in Perth, where I sat in on a session on 'novel ecosystems'. Richard Hobbs from the University of WA spoke, so did Eric Higgs, a Canadian ecologist who'd written a book called *Nature By Design*. It was on the final morning, a time for mild stimulation and slight unorthodoxy. 'Ecosystems are emerging that never existed before. It is impractical to try to restore ecosystems to some "rightful" historical state. ... We must embrace the fact of 'novel ecosystems' and incorporate many alien species into management plans, rather than try to achieve the often impossible goal of eradicating them or drastically reducing their abundance.' That was the session's theme, even though the quote itself is more recent. It's from a June 2011 article in *Nature*, by the US ecologist Mark Davis and eighteen other authors, including Hobbs.

The stimulation was mild, the novel ecosystem thesis was not quite as novel as I had hoped, and novel ecosystems themselves didn't seem all that novel. I thought of subtropical forests of queen palm and camphor laurel, riverbanks of Madeira, catsclaw and balloon vine, seasides of bitou and glory lilly, even wheat fields, gardens and golf greens, or the minimalism of motorways, and nuclear test sites. I guess now was the time to 'embrace' them and tweak them into something useful or cool or subversive by wedging in a bit of designer biodiversity. But was the thesis any more than just hyping a groovy response to the empirical surprises and philosophical challenges that had puzzled and entertained restoration ecologists and naturalists for ages?

Provide a label and you collect a body of thought, maybe even kick off a discipline. In the 1950s the 'ecology of invasions' was used to gather together a set of ecological ideas that had been around since before Darwin. *Origin of Species* mentions things like cattle going feral in Australia. Twenty years earlier John Henslow, the Cambridge biologist who had passed his place on *The Beagle* on to his younger protegé, had formulated a rudimentary theory about competition between natives and exotics. People in Australia have long been doing what, in the 1970s, they started to call 'bush regeneration', restoring the bush to something like its pre-invasion condition by removing exotic weeds.

Now we have the label 'novel ecosystems' gathering together ideas that have also been around in some form since Darwin's day. The ideas inspired the nineteenth century Acclimatisation Societies with their vision of enhancing the flora and fauna of Australia and America. And while bush regenerators have been weeding the bush since the 70s, Permaculture designers have been trying to build self-sustaining ecosystems from encyclopaedias of useful plants and animals. More recently Peter Andrews became a folk prophet of novel ecosystems by sexing up standard on-farm water management with exotic willows and contrarian weed ecology. It was only a matter of time before the novel ecosystem label registered in the media as breaking scientific news. That June 2011 *Nature* article—a summary two page manifesto that relied on references to several other papers to do the ecology—was enough to get the ABC and the SMH interested. They picked it up and ran 'novel ecosystems' as a story.

Meanwhile in America and hence the world there was science journalist Emma Marris with a new book to promote. And by December 2011 Michael Duffy was interviewing her on ABC radio's Counterpoint about Rambunctious Garden: Saving Nature in a Post-Wild World. It was clear the Anthropocene—the current epoch, so called because the big ecological changes are anthropogenic—was out and proud, and Marris's 'Nature 2.0' was the new pristine. The header on Marris's web site, a quote from the San Francisco Chronicle's Joe Christensen, leaves us in no doubt that world historical events are afoot: 'Marris is already being compared to the greatest environmental writers and thinkers of the past century, Rachel Carson and Aldo Leopold.'

With a pitch like that it wasn't going to be long before someone noticed the contrarian potential of novel ecosystems, tailor made for taking on environmentalism. I remember the editor of a scientific journal on restoration ecology predicting some such thing way back at the 2009 conference—or maybe it was just the way she raised her eyebrow.

> *Contrarianism is a seductive attitude. It has an unfortunate appeal for self-promoters, because it seems to underwrite radical intellectual originality with owlish scepticism.*

You can fancy yourself as Galileo against the clergy, plain-spoken amongst the mealy-mouthed. Richard Steele nailed contrarians three centuries ago: 'they can turn what little knowledge they have into a ready capacity of raising doubts, into a capacity of being always frivolous and always unanswerable.' Michael Duffy began an essay in the SMH with the line: 'It's been suggested that passionate environmentalism is a bit like religion. It has its own sense of original sin, the belief that the New World was once a pristine and stable wilderness that was defiled by Europeans'. The rhetoric is a give away: the passive voice, the vague 'suggested', the lines 'a bit like religion' and 'original sin' to rankle those atheistic greens. Create a straw dummy of your opposition before you blow it down

Prompted by Duffy on ABC's *Counterpoint,* Marris noted the irony that supposedly anti-racist greens tread a fine line between invasion ecology and xenophobia when they apply the native/alien distinction to flora and fauna. Meanwhile in the *New York Times* she and three co-authors let readers know that 'in fact, humans have been changing ecosystems for millenniums' and 'we have learned that ecosystems are not—and have never been—static entities.' They made it sound as if this were not textbook ecology.

Maybe I'm being too harsh. It's not easy to write one truth after another and be scrupulous about every inference and implication. We all use rhetoric. And it uses us. Me too now. Even the *Nature* article had the straw dummy trick. When it made the point that 'nativeness is not a sign of evolutionary fitness or of a species having positive effects' was that supposed to imply that all those restoration ecologists had been unable to figure out that invasive species have the evolutionary advantage and that native species are not reliably resilient under a regime of invasions? And there's the claim that 'invaders do not represent a major extinction threat to most species in most ecosystems'. Note the casual proliferation of 'most's and 'major's, the feral 'represents' replacing the native 'is', the implication that those

misguided restoration ecologists must think that invaders are a *major* extinction threat to *most* species in *most* ecosystems.

What do they think? Why remove exotic species from native ecosystems? It's a combination of post-Darwinian ecology and aesthetic passion. The science is about how long-term evolutionary processes in the absence of high rates of species invasion—e.g. in pre-1788 Australia—create ecosystems rich in species and varied in structure, even though they might be susceptible to invasions. The aesthetics is in the 'rich' and 'varied'. Restoration ecologists sometimes call the Anthropocene the Homogecene—an epoch when a few weedy and feral generalists dominate lots of ecosystems. It's not a matter of corny primevalism, religious environmentalism or native plant Nazis. The complex organisation of nature fires the great aesthetic emotions of admiration and wonder. Goethe said 'the beautiful is a manifestation of secret laws of nature, which, without its presence, would never have been revealed.' Those secret laws sound like what modern ecology is about.

The *Nature* article ends soberly, bureaucratically. 'We urge conservationists and land managers to organise priorities around whether species are producing benefits or harm to biodiversity, human health, ecological services and economies. Nearly two centuries on from the introduction of the concept of nativeness, it is time for conservationists to focus much more on the functions of species, and much less on where they originated.' Environmentalists and restoration ecologists have always argued in the same managerial terms. Environmental politics still has 'to organise priorities around' terms like biodiversity and ecological services, terms that have to do the talking for the aesthetics of nature.

But novel ecosystem ecology has its aesthetic too. It wants to be post-modern restoration ecology—original and avant garde. Defined negatively it's about not restoring some authentic pristine nature. And it's about not simply gardens and farms. The positive is mostly imagined in examples that don't yet quite live up to the dream: theme parks of the early Pleistocene; authentic Anthropocene wilderness weedscapes; bioengineered ecosystems that deliver economic and ecosystem services; meta-gardens that are wild and 'rambunctious', with their own cool, hyper-functionality. There are whole genres out there.

Note however that the old romantic aesthetic about wildness is still at work here: Let nature do its thing, but let it be the new unruly nature of the Anthropocene, and don't try to impose your old Nature on it. Let nature naturally move on. Even that schizoid division of humans from nature seems to persist. But of course it makes things very handy, almost too good to be true. Its efficient —humans can let nature do the work. It's fun—we can tweak and play around with ecosystems if we like. It's liberating—it replaces melancholy with positive thinking. And when it comes to environmental politics it's useful: any excuse for trashing a bit more of the old nature, or winding back the culture of ecosystem restoration and national parks. But for now that culture is pretty well entrenched. It remains to be seen whether or not the novel ecosystem thesis will be a successful invader.

Find more from Ross Macleay at
northbankessays.blogspot.com.au

Cat's claw creeper and Madeira vine plans—have your say

Dear weed managers,

The draft asparagus, cat's claw creeper and Madeira vine Weeds of National Significance strategic plans are now on public display!

We would like your input.

The consultation period been extended until 28 September.

For copies of the plans and to provide your feedback, please go to the Weeds Australia Website:

- Asparagus weeds: www.weeds.org.au/WoNS/asparagusweeds/
- Cat's claw creeper www.weeds.org.au/WoNS/catsclawcreeper/
- Madeira vine: www.weeds.org.au/WoNS/madeiravine/

A feedback form is provided with each of the draft strategic plans; otherwise feel free to email us directly.

Once finalised these strategic plans will set the direction for national management of the WoNS. The aspirational objectives in these plans are supported by high-level strategic actions that were identified through stakeholder consultation. Further work will be needed, in conjunction with responsible partners, to refine the actions and develop methods to implement them. Thus, it is important that the correct partners are identified in these strategic plans so that they can be part of the on-going decision making process. This will allow all partners to identify an appropriate level of participation in the strategic plan delivery.

If you have already commented, thanks, and please pass this on to others in your networks.

Kind regards,
Kym and Hillary

Kym Johnson - WoNS Coordinator (Madeira vine and cat's claw)
Biosecurity Queensland
Department of Agriculture, Fisheries and Forestry
PO Box 280, Ipswich Qld 4305
Phone (07) 3432 7704 Mobile 0450 613 730
kym.johnson@daff.qld.gov.au

Hillary Cherry - WoNS Coordinator (Asparagus weeds)
Pest & Ecological Management Unit
Office of Environment & Heritage
PO Box 1967, Hurstville NSW 1481
Phone (02) 9585-6587 Fax (02) 9585-6401 Mobile 042-710-4448
hillary.cherry@environment.nsw.gov.au

Myrtle rust in New South Wales, Queensland and Victoria

Myrtle rust is a serious fungal disease, newly arrived in Australia, affecting plants in the Myrtaceae family. The list of known hosts stands at 138, and this is expected to grow. We do not yet fully understand the potential range of the rust, nor its effect on native eco systems.

Myrtle rust is now considered to be well established in Eastern Australia. It has spread rapidly since it was first recorded on the Central Coast of NSW in April 2010. It it widespread in Queensland, and in May was reported to have established in the wet tropics. In June 2010 Biosecurity Victoria declared it an endemic disease after it had been found in over 60 sites. These were mainly nurseries in and around Melbourne, but also at public parks and private residences, and in regional Victoria.

It is now accepted that myrtle rust can not be eradicated, because it produces thousands of spores that are easily spread by wind, human activity and animals. Efforts have turned to limiting the spread, manage its impact, and research to discover its full host range and seek long-term solutions.

It is a notifiable disease in Victoria but, as of 8 August, is no longer notifiable in NSW. It has not been notifiable in QLD since October 2011.

Bush regenerators should know how to recognise the disease, look out for it, and take precautions to avoid assisting its spread.

Fact sheets are available from DPI

Sources www.dpi.nsw.gov.au/biosecurity/plant/myrtle-rust, www.dpi.vic.gov.au/forestry/pests-diseases-weeds/diseases/myrtle-rust, www.daff.qld.gov.au/4790_19788.htmv

Myrtle rust on turpentine *Agonis flexuosa* c.v. Afterdark. Photos: Dr Angus Carnegie © I&I NSW

New fungal diseases we do want: biological controls for crofton weed and mistflower

In October 2010, the white-smut fungus *Entyloma ageratinae*, was found near Lamington National Park, Queensland. Its means of entry to Australia is unknown. Field surveys in 2011 revealed it was widespread in Southeast Queensland and NSW North Coast, and present around Coffs Harbour.

White-smut fungus has been used as a biological control agent for mistflower In Hawaii, South Africa and New Zealand, with good results.

In May 2011, the fungus was deliberately released at a series of mistflower-infested sites on the NSW Central and South Coasts.

Within a few months, its damaging effects could be clearly seen. It also spread naturally to other areas.

A rust fungus from Mexico, *Baeodromus eupatorii*,. is currently being tested at the CSIRO quarantine facility in Canberra for suitability as a crofton weed biological control. Results so far are very promising, showing the fungus is highly specific towards crofton weed.

Keep an eye out for the white-smut fungus on mistflower —CSIRO would like to know how far it has spread

It produces angular-reddish brown lesions with yellow margins on the upper surface of mistflower leaves. Spores produced on the underside of lesions give them a woolly white appearance.

The first clue that the fungus is present is a die-off of the leaves and stems of mistflower, usually starting at the bottom of the plant and moving upwards. On closer inspection the upper surface of leaves have brown spots and some leaves may be brown at the tips. The key trait indicating that the damage is caused by the white-smut fungus are white patches on the underside of the leaves.

For more information or to report sightings contact:
Dr Louise Morin
CSIRO Ecosystem Sciences
GPO Box 1700, Canberra, ACT 2601.
02 6246 4355 Louise.Morin@csiro.au

Photos: L Morin

Fungi Conservation and Management Symposium

Jason Walsh

Earlier this year, I was fortunate enough to attend the Fungi Conservation and Management Symposium held in Hobart, Tasmania. The Symposium was particularly interesting to me as an amateur mycologist and ecological restoration practitioner, and I believe that the content is very important food for thought for all practitioners.

Our industry is often understood in the light of vegetation management; plants are usually the interface we directly manipulate for the purpose of positive ecological outcomes. To a lesser extent, fauna might also be directly 'toggled', through feral animal control, nest boxing or sometimes reintroduction. Both of these elements are actively taught in TAFE courses, and planned for in most natural area programs. Conversely, fungi rarely get more than broad mentions in TAFE courses and are almost never planned for in restoration plans. Most restorationists would agree that fungi are fascinating, and delight at the sight of a colourful agaric glistening in the leaf litter, but despite the fact that fungal community dynamics and ecosystem function are very active recent areas of research, the information that filters down to the grass roots level is very limited. Yet the more we uncover, the more we see how important fungal ecology is; that not only is it an absolutely essential part of the ecosystems with which we work, but is the foundation upon which the other elements depend.

The symposium, organised by Fungimap and NRM South in Tasmania was held to bring together people from all levels, from the grass roots community groups to the researchers. It provided an opportunity to get an idea of 'where it's all at', and for people to meet and exchange ideas; and asked the question; 'How do we get the study and recognition of the importance of fungal ecology out to where it belongs, where it is being legislated for and managed?' The Symposium involved hundreds of participants from around Australia including experts from 15 national and international institutions who were keen to share their knowledge and expertise. The Symposium proper, run over two days was followed by two days of workshops and forays. The following is an overview of some of the more relevant topics covered at the symposium.

Dr Tom May from the Royal Botanic Gardens in Melbourne presented an overview of fungi in ecosystems: their structures, roles and relationships in the style of a 'Fungi 101' fitting as an introduction to the symposium. Tom gave an overview of what fungi are, particularly emphasising their uniqueness as a kingdom separate from plants and animals, a point often overlooked by many, and put the mushroom firmly back in its place as an ephemeral structure subservient to the mighty mycelium that exists perennially in the soil.

Tremella mesenterica. Photo: J Walsh

Dr Mark Brundrett, of the University of WA gave a talk on Mycorrhizal fungi in natural ecosystems. To overcome the challenges of the microscopic physiology of mycorrhizae, Mark took us on a tour through the eye of the microscope, where we explored the biology of important types of mycorrhizas.

Mark explained that 92% of plants have mycorrhizas, and that these associations are as old as land plants themselves.

Those plants that don't have mycorrhizas possess alternative adaptations that have only evolved far more recently. It was interesting to learn that the plant root itself evolved, in part, to provide a home for mycorrhizae.

Assoc. Prof. Caroline Mohammed from the University of Tasmania gave a discussion parasitic fungi, in which we explored the distinction between parasites and pathogens. Parasites (who simply get a free ride) often fill important roles in ecosystems, and only become pathogenic (disease-causing) when there is a disturbance to the host, the parasite or the environment. This point was the main focus of the talk, and we explored the nature of the change from parasite to pathogen. Familiar to most bush regenerators are the roles of disturbances which tend to tip the balance and result in pathogenesis such as changes in abiotic factors, the cultivation of monocultures and the introduction of species that in their own environment are kept in check by natural processes.

Dr Melissa Danks talked about the interactions between fungi and fauna. We learned the importance of animals from reptiles to insects in fungal ecology, which serve important roles as vectors or even germination triggers for fungal spores. A high level of mycophagy (fungi-eating) occurs amongst Australian mammals, with some relying completely on fungi for their food. Interestingly, truffles have no other way to be dispersed, and similar to flowers, have evolved scents that attract mammals. Where fragmentation limits mycelial growth, such mammals are vital to these fungi and the ecosystems in which they occur, especially when we consider that many truffle fungi are actually mycorrhizal, and so many plants are likely to need them.

Dr Genevieve Gates from University of Tasmania provided an interesting discussion of the diversity and ecology of saprotrophic fungi in the ecosystem. The importance of fungi in nutrient cycles was once again highlighted by the role

saprotrophs play in the decomposition of organic matter. Indeed fungi are amongst the very few organisms that break down certain organic matter (e.g. lignin and cellulose). Without fungi, plants would quickly exhaust carbon compounds which became locked up in dead wood which never broke down.

Saprotrophic fungi are often very substrate specific. Different fungi will be associated with different kinds of rot. On wood, some break down lignin, others cellulose, and some only where the rot has already been initiated by others, resulting in successional stages analogous to that which we see in plant community dynamics. In the leaf litter there are different fungi associated with not only different types of litter but also different layers.

Dr Richard Robinson of the Department of Environment and Conservation WA gave a very interesting discussion on fire and fungi. Again there seems to be a lot of parallels in responses between vegetation and fungi. There are certain species that occur only shortly after a fire which fruit and spore profusely, and those that are only associated with communities that have been unburned for some time, particularly those that require a well-developed leaf litter, and in between these two phases are ephemeral species which come and go. Species have many adaptations, including underground structures called sclerotia that enable fungi to survive even high intensity fires. He discussed the important roles that fungi play post fire, including vital food sources and the improvement of soil structure.

Dr Sapphire McMullen-Fisher from University of Tasmania asked the question of whether managing vegetation communities is a sufficient surrogate for the management of fungi. Her study of four broad plant community types found significant correlations with fungal communities, suggesting that there is a lot of similarity. However, when taken individually, particular remnants of one vegetation type often only represented 50% of the fungal community that had been identified for that vegetation community. She identified the huge lack of data on distributions and the importance of learning more, and identified interim strategies for the management of fungal communities.

Dr Teresa Lebel gave a very interesting discussion about weedy fungi, explaining that we have a similar situation to animals and plants as weedy species, but that fungi pose several unique challenges, including their cryptic nature (some fungi fruit only once every 25 years!), and the great dispersal distances possible in propagules designed to be wind-dispersed. Many insects and other animals can be vectors for weedy fungi propagules. Teresa gave interesting examples of where native fungi have become weedy in new environments both at home and abroad, of latent fungi that have not yet become a problem here but that have in other countries, and of weedy mycorrhizas introduced into plantations that have jumped host to grow with native plants.

Dr Magali Wright of NRM South in Tasmania gave an overview of fungi in restoration and management. Most of us recognise that after 10 or 20 years, although plant structure is restored, ecosystem function is greatly lacking. In this discussion, Magali implicated the fundamental role that fungi play in many ecosystem functions and identifies ways in which they may be used in the broader ecological restoration field, including bioremediation, pest and disease control, influencing plant succession and for the management of recalcitrant plants such as orchids.

Walter Jehne, soil microbiologist and ecologist discussed the need to promote the critical, essential role that fungi play in ecosystems to engage policy makers in decision-making processes. He explained that in natural ecosystems, it is fungi that are the interface for nutrient uptake. A cubic metre of healthy soils can contain up to 25 000 km of hyphae, providing prodigious surface areas through which nutrients are solubilised and actively and selectively taken up. Compared to this, it has been said with some legitimacy that plants in nature do not take up nutrients. With ignorant land management systems we have sidestepped this natural order, growing plants in sterile media and going to great and expensive lengths to do with artificial fertilisers what the fungi once did for free. These methods are unsustainable in agricultural and ecological contexts, and so there needs to be improved understanding and recognition of the complex ecology of fungi.

The symposium offered many insights into fungal ecology and posed many interesting questions. There are certainly many parallels between plant dynamics and fungal communities, but there are also dynamics that are completely unique, and so far poorly understood. It was certainly striking to me just how important and diverse the roles of fungi are in our ecosystems, and how fundamental they are in different aspects of nutrient cycling. I firmly believe that fungi should be taken into account in any sort of land management practise.

Those inclined can easily learn more. Several websites including Sydney University and the Royal Botanic Gardens Melbourne, as well as Mycorrhizas.info/ provide a wealth of information on fungal roles and diversity. Fungal studies groups exist across the country with members often organising forays during the peak seasons, and are always looking to share their knowledge and provide advice. Fungimap, one of the organisers of the symposium are an excellent group. They have produced a field guide and an interactive database of common fungi across Australia to help develop the much needed citizen science, and members are encouraged to contribute. Become a member or email them for advice. Finally, simply take note of the fungi that you see while working on your project, and ask yourself what role the fungi is serving the ecology you work with.

Hygrocybe graminicolor.

Lysurus mokusin.

Coral fungi. *Photos: J Walsh*

What's happening

3-5 September

The National Landcare Conference

Landcare—the future in our hands

Where Sydney Exhibition and Convention Centre Darling Harbour.

Contact *www.daff.gov.au/landcareconference*

Sunday 9 September

Bushcare's Major Day Out

Where Australia wide.

Contact *bushcaresmajordayout.org/*

A National Day to promote regeneration of native bushland through awareness and engagement of local communities in an enjoyable and sociable way.

Bushcare's Major Day Out is a day specifically designed to give of us the opportunity to find out what is being done and what can be done in our own neighbourhood. It's a fun day where anyone, young and old can work alongside and learn from experts and experienced volunteers. There are a range of activities depending on the location; walks, planting, weed removal, photography workshops as well as native plant identification and well celebrated morning teas.

17-21 September

Coast to Coast 2012 Living on the Edge

Where Brisbane Convention and Exhibition Centre.

Contact *www.coast2coast.org.au/*

The renowned and only National Coastal Management Conference when all with interest in coastal, estuarine and marine matters get together to celebrate Australia's coasts and share knowledge and experiences on management, science, policy, governance, activism and many other topics.

Provides an excellent forum for Australian coastal workers and managers from councils, universities, consulting companies, community organisations and all levels of government.

8-12 October

18th Australasian Weeds Conference

Where The Sebel, Albert Park Melbourne.

Recent advances in weed science, extension and policy across Australian and international communities and landscapes.

Valuable information and networking opportunities for anyone with an interest in aspects of weed legislation and development of practical solutions to evolving weed problems.

Contact *www.18awc.com*.

29 October-2 November

Australian Network for Plant Conservation's 9th National Conference. Plant Conservation in Australia—Achievements and future directions.

Where Canberra

Contact *www.anpc.asn.au*

The ANPC marks its 21st year in 2012. To celebrate the occasion, the 9th ANPC National Conference will:

- review and highlight plant conservation achievements in Australia over the last two decades,
- evaluate the strengths and weaknesses of our existing approaches to plant conservation,
- highlight current major issues facing plant conservation in Australia, and
- identify plant conservation directions in Australia for the coming decades.

The main four days will include plenary sessions from experts in plant conservation, presented papers, workshops and field trips. The conference will open with a welcome reception with guided tours at the Australian National Botanic Gardens.

Registration closes 12 October

Tuesday 30 October

Linear Reserve Environmental Management Forum

Where Maritime Museum Darling Harbour, Sydney

Contact Neil Dufty *ndufty@molinostewart.com.au*

Hosted by the Roadside Environment Committee

The forum is for land managers such as local councils and government agencies. It will focus on current strategic issues and operational aspects in linear reserve environmental management. It will include guest speakers, a panel for Q&A, and a workshop session focusing on ways to manage competing and complex issues in the linear reserve environment. The forum will also provide an excellent opportunity to network with other land managers.

28-30 November

The inaugural conference of the Society for Ecological Restoration Australasia (SERA)

The leading conference for people involved in environmental restoration

Where University of Western Australia Perth.

Contact *www.seraustralasia.com*

For land managers, scientists and practitioners who work in biodiversity restoration, this will provide a critical international forum at a time of significance for the region's species, ecosystems and landscapes.

The three day conference program will feature topics of global interest, including themes on 'Our restoration capabilities within a changing world'. Topics that are relevant, of high focus and contemporary in Australia, will also be highlighted during the conference program.

Sunday 2 December

AABR AGM

Where To be advised

3-7 December

ESA12 'Ecology: Fundamental Science of the Biosphere'

Where The Sebel, Albert Park Melbourne.

Contact *esa2012.org.au/index.asp?IntCatId=14*

The Annual Conference of the Ecological Society of Australia is the pre-eminent conference on ecology in Australia, bringing together ecologists from academic, government and non-government backgrounds. Provides a valuable forum for researchers, land managers and policy makers to share advances in ecology and their implications. We encourage ecologists working in all natural systems - from terrestrial, freshwater and marine - and from the molecular to the ecosystem level, to attend the conference and showcase their science.

We will "get back to basics" and focus on the scientific inquiry that underpins our discipline. Ecology is fundamentally important to the conservation and wise management of natural resources. The outcomes of our work matter! It needs to be based on rigorous theory, survey, experimentation and modelling. We hope to facilitate greater integration of knowledge across the fields of ecology as they relate to some of the most pressing questions facing the globe.

AABR NSW

AABR News is the newsletter of the Australian Association of Bush Regenerators (NSW) AABR Inc.

AABR NSW was established in 1986 out of concern for the continuing survival and integrity of bushland and its dependent fauna in or near bushland areas, and seeks new members and friends for promoting good work practices in natural areas. The Association's aim is to foster and encourage sound ecological practices of bushland management by qualified people.

AABR NSW has regional committees in northeast NSW/Southeast Queensland and the Hunter, and a sister organisation in Western Australia: AABR WA.

AABR C/O Total Environment Centre Suite 2, 89 Jones Street Ultimo NSW 2007

0407 002 921

www.aabr.org.au

enquiries@aabr.org.au

ABN: 33 053 528 029 ARBN: 059 120 802

To keep in touch and be notified about events, subscribe to Bush Regeneration or Bushcare list servers and check out Solutions: the Bush Regeneration Bulletin Board—see website for detail.

$20:00	p.a	AABR Newsletter Subscription	(all interested people)
$10:00	p.a	AABR Newsletter Subscription	(email for 1 year for students of Certificate III CLM-Natural Area Restoration)
$25:00	p.a	AABR Membership	(appropriately qualified & experienced bush regenerators)
$50-400	p.a	AABR Contractors & Consultants List	(appropriately qualified & experienced bush regenerators)

Newsletter contributions and comments are welcome

Contact Virginia Bear newsletter@aabr.org.au 0408 468 442

Opinions expressed in this newsletter are not necessarily those of AABR NSW