December 2012

Grassy Groundcover Gazette

News, updates and on ground action

Greening Australia

Paul's Piece

Dr Paul Gibson-Roy, Senior Restoration Ecologist, Greening Australia, NSW

Another hearty hello to our readers. It's a pleasure to again have this opportunity to engage with those passionate souls involved in the conservation, restoration and management of wonderful grasslands and grassy woodlands. Looking back at our first issue which came out in May 2006 with the primary purpose of keeping a rather dispersed group of participants involved with the Grassy Groundcover Research Project in touch with each other, to something that now reaches much broader group, I'm convinced that the various developments in technologies and methods that our and the many other groups working in this area have achieved have built to a point where some wonderfully tangible outcomes are now in evidence across south-eastern Australia. For our part I'd certainly cite GA's largest reconstructed 14ha Moolapio grassland as one of these tangibles. We recently hosted about over 150 people to the Moolapio site over two days for our annual Grassland Discovery Days and the expressions of outright delight from those visitors wandering the site was really amazing. I've always dreamt of having a restored grassland that was big enough to take several hours to walk through, and our Moolapio site is certainly that (more from the Discovery Days later).

The Werribee Open Range Zoo site is another GGRP site that I also visited recently. Here Rod White and the GGRP crew with Zoo staff (thanks to Head Horticulturalist Peter Sullivan for years of support) have achieved great things. A 3ha grassland has been reconstructed for an Eastern Barred Bandicoot breeding program in a paddock previously totally covered in *Galenia pubescens* (Blanket Weed). However, I think the vegetation itself is real show stopper, with a beautiful sward of native grasses and wildflowers such as the *Podolepis jaceoides* (Showy Podolepis) and *Pycnosorus globosus* (Drumsticks) throughout. I hope Zoo visitors will be as taken with the Basalt Plains grassland as they are with the critters. There have even been guest 'Huts' built overlooking the grassland for people wanting an overnight Zoo experience ... I'd never dreamt of a thing like that before we started 'building' grasslands, but I'll happily take it!

GGRP Werribee Open Range Zoo Bandicoot enclosure's lovely big sign and even lovelier big grassland (P.S note the huts overlooking in the distance!)

Recently I attended the Australian Network for Plant Conservations National conference held in Canberra. It was a great event with a wonderful bunch of people attending. For my presentation I focused on the

achievements of those many people and groups associated with grassy restoration. I'd relied on images gathered from those I had come into contact with doing wonderful work in the Southern States (and I'm certain to have missed many others). It was very satisfying to be able to report to the conference that exciting things really were being achieved from a broad range of people on the herbaceous front. These include researchers, restorationists and mangers, all toiling away to create a viable restoration sector that is capable of conserving, restoring and managing complex vegetation at increasing scales. Among those overachievers I mentioned were Ian Chivers from Native Seeds, Martin Driver and Tom North from the Murray CMA, Chris Findlay and Graeme Hoxley from Flora Victoria, David Franklin from Grassland Flora, Steve and Rhonda from Wail Nursery, Tim Barden from Ko-Warra Grasses, Owen Whittaker from Natural Capital, Tim Berryman from Cumberland Plain Seeds, Tim Zwierson and the Salisbury Council in SA, Sally Mann from the Euroa Arboretum and Liz Fenton from Larapinta Native Nursery.

Finally, one of the other wonderful things to report in this issue of the Gazette is the spread of grassy work being undertaking by Greening Australia in other regions. In addition to the wonderful works that Rod White, Jess Gardner and other members of the Victorian GGRP crew are achieving, this edition sees reports of exciting activities in both the Capital Region (Bindi Vanzella, Steve Bruce and Graham Fifield) and NSW (Sam Craigie, Erin, Chris and Dave). So on this note, I'll leave you to read and hopefully enjoy our final edition of the Grassy Gazette for 2012.

Rod's GGRP Update

Rod White – Grassland Restoration Officer, Greening Australia VIC

Cool temperate grasslands of South Eastern Australia, particularly those of the Victorian Volcanic Plains continue to face enormous challenges and threats to their very existence. The relentless urban expansion west of Melbourne to Werribee and beyond is putting extreme pressure on the small amount of critically endangered grasslands that have managed to hang on against all the odds since Europeans first utilized them for grazing. Weeds such as Chilean and Cane Needle Grass, Serrated Tussock and Phalaris are also continuing to encroach into these last remaining bastions of grassy ecosystems, displacing native species and compromising the floristic integrity of Grassland communities.

Perhaps due to these threats and challenges facing Grasslands, 2012 has been another busy and productive year for the GGRP. The following is a brief overview of the projects that I have been involved with over the past 12 months.

Moolapio

The largest of the GGRP restoration sites 'Moolapio', on the western outskirts of Geelong is continuing to establish and evolve into a resilient, functioning and complex grassy ecosystem. The area represents approximately 14ha of reconstructed wildflower grasslands on land previously used for cropping and is living proof that it is in fact possible to re-establish complex grassland communities in areas where they once existed but have long since been removed from the landscape. It is great to observe the changing dynamics of this substantial grassland from year to year and begin to manage it as you would any remnant. From biomass removal to addressing serious weed threats (a keen observer at our last field day spotted a Serrated Tussock hiding in amongst some native Spear Grass). This restoration site is quickly becoming recognised as a real asset to the region and due to it containing a number of threatened and critically endangered species is ecologically significant nationally. Also, the Moolapio grasslands have been assessed independently for Habitat Hectare value, a first for any GGRP sites. This assessment has revealed that restored grasslands can in fact be worth money and potentially entered into the offset market. Watch this space!

An ephemeral wetland in stage 2 - 2009 seeding

The critically endangered Hoary Sunray in Grassland Establishment Area 3 – 2010 seeding

Werribee Open Range Zoo

The restored grassland area at Werribee Open Range Zoo (WORZ) has now been expanded to approx 3ha after another hectare was seeded this year. Stages 1 and 2 have exceeded all expectations and are looking fantastic. So much so, the Zoo is planning to introduce the critically endangered Eastern Barred Bandicoot into the grassland area early in 2013. This restoration project will also appear on Gardening Australia on the 1st of December (ABC 1 – 6:30pm). Check it out!

Stage 2 (2011 seeding) at WORZ – great Bandicoot habitat!

Pinkerton Link – Grey Box Grassy Woodland restoration

Greening Australia are working with Western Water and the Friends of Pinkerton Forest to link up some of the last remaining stands of threatened Grey Box grassy woodlands in the Mt Cottrell region south of Melton. So far the GGRP has seeded 3ha of predominately Spear Grass, which is then planted out with Grey Box seedlings by dedicated members of the friends group.

This year's seeding at Pinkerton Link

Southern Farming Systems

The GGRP have seeded three grassland demonstration plots at Southern Farming System trial sites in the west of the state at Inverleigh, Lake Bolac and Dunkeld. These 30m x 30m plots will serve as examples to farmers and land managers to assist in identification of grassland remnants on private properties and to also aid in the discussions around the important role grasslands can play in the whole farm system, for example in relation to integrated pest management (IPM).

Site at Inverleigh post seeding in September 2012

Quandong

Above: The Quandong site post seeding – September 2012

Below: Plenty of *Austrostipa spp.* (Spear Grass) seedlings appearing

This project at Quandong, an old grazing property north of Werribee, has offered the opportunity for Greening Australia to assist in important research being carried out by Debbie Reynolds of Victoria University into the critically endangered *Pimelea spinescens.* We have seeded a number of wildflower species into a 50m x 30m trial plot in which the Pimelea's will be transplanted in 2013. This is one of the few times the GGRP has seeded wildflowers only into an area (also done at the Great Western Winery) so we wait in anticipation for the results.

Installed sign at the Quandong property, these signs will be appearing on all our restoration sites

VicRoads Hamilton Highway

Greening Australia has had a long and rewarding relationship with VicRoads and this project on the Hamilton Highway just west of Cressy is another example of how these two organisations work constructively together to reach a positive outcome. We are now midway through a complex task of reinstating a community of the critically endangered Hoary Sunray into an area of roadside that experienced a high degree of disturbance some years ago. Through careful planning and with the assistance of David Franklin from Woorndoo (growing seed producing plants) we are hopeful of a spectacular outcome for VicRoads and the Hoary Sunray.

SP AusNet / Select Solutions – Bannockburn

Select Solutions on behalf of SP AusNet are trailing restored grasslands as means to reducing the cost associated with maintaining vegetation under high tension power lines. The grassland establishment project at Bannockburn is small scale (500 m2) and it is hoped that this project will demonstrate the benefits of establishing grassland vegetation beneath powerlines.

SP AusNet at Bannockburn – small scale but useful as a demonstration site

Jess's GGRP Update

Jess Gardner - Wimmera Project Officer, Greening Australia, VIC

African Orchid - Now is the time to eradicate this species!

When out monitoring over the last few spring seasons, at Greening Australia's Nurcoung property in the Wimmera, I have been alarmed to come across an African Weed Orchid *Disa bracteata* or (*Monadenia bracteata*). These self replicating asparagus-looking orchids strike terror into the heart of any grassland enthusiast. Listed as a 'new and emerging weed in the Wimmera', they are quite controllable at the early stages of infestation. In 2010, I found a patch of eight and another two isolated plants on our property. Using a garden trowel, I immediately dug them out, taking care to dig a large enough hole to capture all of the tubers, tied them in a plastic bag to be left in the sun before disposal. Using a GPS I marked the location and over the subsequent two spring seasons I found one plant last year and this year none. Now is the time to eradicate this weed before they set seed. Quite unmistakeable with a thick main stem, they really stand out from our delicate Australian orchids. For more information please follow the link below.

www.dpi.vic.gov.au/agriculture/pests-diseases-and-weeds/weeds/other-declared-weeds/south-african-weed-orchid-identification

Nhill Truck and Trailer Exchange Grassland Establishment Managing expectations - The challenges of a very public site.

In 2011, Greening Australia in partnership with the Hindmarsh Landcare Network committed to a three and a half year program to establish 5 hectares of native grasses across the new Nhill Truck and Trailer Exchange site. The site is significant due to its proximity to a Grassy Buloke Woodland remnant containing a known population of *Synemon plana* (Golden Sun Moth) and the equally environmentally significant Nhill Swamp.

We know that establishment of native grasses can be achieved over time with good (and sometimes intensive) management involving the use of selective herbicides and timely mowing. We also know that compared to planting, the use of direct seeding (although not guaranteeing instant results) combined with patience is a far more cost effective alternative. However, despite considerable time and effort spent explaining the long-term nature of reaching these goals and that instant results are seldom achieved, we sadly find ourselves less than halfway through the restoration program with an unsatisfied client.

The GGRP, now in its seventh year, has a great many sites to showcase the success of our establishment methods; however, most were not under the scrutiny of the public eye in their initial stages. I remember very well the concerns I had for our first GGRP sites, which now look fantastic, when in the initial two years seemed to be over-run with weeds.
Give it some time. It is a work in progress .....

At the southern end of the Nhill Truck Exchange - native grasses were sown over 12 months ago and are now setting seed. Although it may look 'untidy', and yes there are weeds, it is important at this stage of the game to hold off on mowing the site to allow native seed set and drop.

At another part of the site, due to different soil conditions, native grass seedlings are a lot smaller than their competitors (in this photo Rye Grass), and so are not obvious at first glance.

Once they are fully established a selective herbicide can be used to control broad-leafed weeds. But at the one year stage we don't want to risk losing the already established native grasses and want to allow them to set seed.

This plot contains 23 young *Danthonia* seedlings. Application of a broadleaf herbicide at this stage is known to be harmful to young grass seedlings. We need to wait until they are more established to begin management.

We still have a long way to go in regard to raising awareness and understanding amongst the public and corporate clients who are obligated to reinstate grasslands. Often these groups underestimate the length of time that must be invested into grassland restoration projects; from obtaining appropriate seed, site preparation and sowing through to long term site management.

However, as many of us know in the grassland establishment game, the end results are definitely worth it. In the meantime, much of my time is spent

defending the site from criticism in such a public location.

At least this pair of swans didn't seem to mind and 'untidy' site to make their nest in!

Moolapio Grassland Discovery Day

Lyn Willcock – Moolapio Project Co-ordinator, Greening Australia VIC

Grassland Establishment Area 1, looking south towards the marquees during the Moolapio Grassland Discovery Day

Once again the Moolapio project has conducted two successful Grassland Discovery Days attracting interested community and industry personnel to the 14 hectare site located on Alcoa of Australia land in Moolap, Geelong. The days were made possible through generous sponsorship from the Corangamite Catchment Management Authority and Greening Australia extends their appreciation for their ongoing support. Each day supported over 50 visitors who walked and toured their way through the four established areas of the grassland. The grasslands were in beautiful form with the wide variety of grasses and wildflowers blooming and seeding. Many members of the community who participated in last year's Moolapio Grassland Discovery Day were astounded at the evolution and growth within the grasslands. There were many new faces at this year's Discovery Days and it indicates the inescapable interest, and community and industry passion that exists for Victoria's endangered grasslands.

The day commenced at the Moolapio Seed Production Area with an introduction to the plight of grassland in Victoria and the benefits of growing seed for restoration purposes in a containerised and controlled (ensuring sufficient water, correct nutrients and weed free) environment. Upon arrival at the Moolapio grassland, Dr Paul-Gibson Roy and Rod White, with the assistance from Melbourne University's John Delpratt, and other Greening Australia staff - Candice Parker and Lyn Willcock toured the visitors through the four grassland establishment areas discussing the history of the grassland restoration project, identifying specific grass and forb species, restoration techniques, positive and negative aspects of the site, and how over time Greening Australia has learnt from setbacks and applied the knowledge to the Moolapio grassland and other project sites.

Participants make their through the grassland establishment areas while being guided by Dr Paul Gibson-Roy and Rod White

The Moolapio grassland supports a number of regionally threatened or endangered grass and wildflower species and Greening Australia's work as supported by Alcoa of Australia at Point Henry is vital in bringing an entire eco-system back from the brink.

Grassland field day participants pose for a photo

Greening Australia NSW's Cumberland Plain Seed Production Facility

Dr Paul Gibson-Roy – Senior Restoration Ecologist, Greening Australia NSW

The Cumberland Plain (CP) is one of Sydney's fastest growing and populous areas and ensuring the long-term survival and protection of biodiversity to Sydney's west has been cited as one of the most challenging issues facing natural resource management in this state. Land on the Cumberland Plain, which occupies most of western Sydney, is being converted for urban and business development and there is an increasing requirement (and demand) for effective methods to restore the once highly diverse grassy woodland communities of this region. Based on the learning's of our Victorian colleagues and their GGRP successes we believe direct seeding offers viable way to reconstruct or enhance these communities (in a cost effective manner). However, as was found in Victoria, seed limitation in highly fragmented and degraded communities is a major constraining factor to restoration actions. For this reason, we must begin by establishing horticulturally-based Seed Production facilities to secure reliable quantities of high quality seed from a diverse range of Cumberland Plain species.

During 2012, the first steps in this plan have taken shape. With early support from Jonathon Sanders from the Office of Environment and Heritage, we received start up funding to develop limited Seed Production Area (SPA) capacity to produce seed for trial restoration works at the Scheyville National Park. For this we are also working in tandem with Tim Berryman of Cumberland Plains Seeds. However, the OEH project has led to an expanded set of goals on our part and the development of a broader partnership with the University of Western Sydney at their Richmond campus (working closely with Prof Charles Morris and Dr Paul Rymer). In recent months we have established an initial 0.8 ha of in-ground Seed Production, with hopes this will eventually increase to 4 ha. With the assistance of a range of GA staff (Sam, Robert, Tracey, Chris, Courtney), UWS Richmond farm manager Steve Clarke and incredible support from our long time Victorian GGRP stalwart, Dave Franklin, 15 local grass species have been seeded, while plants from a number of forb species are nearly ready to plant into in-ground production beds. We'll also be setting up a smaller '600 box-system' as well at the GA production nursery for a much broader range of species.

We've also been successful in securing funds to set up two experimental projects with Charles and Paul (loosely aligned to the SPA) looking at restoration techniques and genetic issues which is really exciting and put GA in the picture with local applied research activities that seek to investigate questions of importance in restoration. I'm sure I'll have more to report on this in the future.

The UWS Hawkesbury Campus is one of the most high profile agricultural/horticultural institutions in NSW and it's a great thrill that our SPA is to be established there within the University's high profile Yarramundi Paddock research precinct. We are also harnessing existing capacity of GA's Production Nursery based within the campus. Our primary goal will be to grow a broad range of herbaceous Cumberland Plain species as seed crops for on-ground restoration. We also hope the facility will in the longer term offer a range of community, educational and training opportunities for the Western Sydney region. I'd really like to thank my colleagues up in NSW (especially Sam Craigie and Rowan Wood) for their support in getting this project started. I believe it presents a great opportunity for our GA team locally and nationally building on the great work already done by our Victorian and Capital pals in this area.

Dave Franklin and Sam Craigi seeding grasses

Caring for Our Country Regional Seed Production Project

David Taylor - Curator Living Collections, Australian National Botanic Gardens

Hi folks,

This year is an exciting year for Seed Production Area (SPA) development in the Canberra region. We have embarked on a Caring for Our Country partnership project '*Producing essential seed for the restoration of threatened grassland communities'.* It is combining the unique combination of experience and expertise from the Australian National Botanic Gardens (ANBG), Greening Australia Canberra Region, 'SPA Icon' Paul

Gibson-Roy and CSIRO/Centre for Australian National Biodiversity Research (CANBR), to produce local native seed to help restore two EPBC Act listed natural temperate grassland communities in the Canberra region.

SPA's are under construction at the ANBG and Greening Australia (Canberra) using Paul Gibson-Roy's experience, combined with locally unique use of materials, structures and new ideas.

Some important genetic questions regarding the species used in the program and the Seed Production systems being utilised is underpinned by CSIRO research undertaken by Dr. Linda Broadhurst. This will focus on assessing chromosomal variation within the species used to ensure that the foundation plants in the SPA will not produce sterile seed through inappropriate mixing of different genomes. This data is relevant to guiding the process of creating self-sustaining and evolutionarily adaptive communities and restored landscapes.

The project is also focused on collecting information and data for refining future endeavours. The ANBG is well set up for this using existing systems and protocols to capture information such as field collection parameters and plant origin (in partnership with the Australian National Herbarium), germination and viability testing results, as well as species production outputs throughout the project.

Seed Production is well under way for up to 5000 foundation crop plants for six regionally significant grassland species. In light of Greening Australia's experience with a wide range of grassland species and the ANBG and CSIRO's extensive work on threatened species we have deliberately targeted a range of species from the more commonly occurring *Chrysocephalum apiculatum, Bulbine bulbosa* and *Dichopogon fimbriatus* through to regionally and nationally rare species such as *Rutidosis* leptorrhynchoides*, Lepidium ginninderense* and *Swainsona recta.*

Chrysocephalum apiculatum growing on in cells (Photo: David Taylor)

As the project unfolds we will keep you updated with its progress and discoveries. We anticipate the outcomes will be useful reference and addition to the great work being done around Australia with herbaceous communities as we attempt to better understand and tackle grassland management and restoration.

A special thanks must go to the following key players that have worked hard to bring this project to reality: Bindi Vanzella, Dr. Paul Gibson-Roy and Stephen Bruce from Greening Australia; Dr. Linda Broadhurst and Prof. Andrew Young from CANBR/CSIRO, Tom North, Dr. Judy West, Joe Mcauliffe and Phil Hurle from the ANBG.

Cheers

David Taylor

Green Team volunteers pricking out *Bulbine bulbosa* for the Seed Production Area currently being set up at Greening Australia Aranda. (Photo: Stephen Bruce)

Understorey plants 'growing on' in the newly constructed Seed Production Area. These plants will then be planted out into raised garden beds at Greening Australia. (Photo: Stephen Bruce)

Embarking on a three year journey, Canberra Airport and Greeninga Australia are working together on innovative grassland resoration trial techniques

Bindi Vanzella
Business Development Coordinator
Greening Australia Capital Region

Since mid-2011 Canberra Airport and Greening Australia have been trialing techniques to restore areas of native pasture to Natural Temperate Grassland.

Within the area known as Eastern Grassland on the Airport, four 20m x 20m quadrats and six 150m long strips have been established for trialing various planting, seeding and maintenance techniques for native herbs and forbs.

Weed spraying was undertaken in August 2011 to control Serrated Tussock (*Nassella trichotoma*) and Chilean Needle Grass (*Nassella neesiana*), followed by dethatching and mowing of the quadrats in September. African Lovegrass (*Eragrostis curvula*) was sprayed in October.

Dethatched grass from a single plot is removed off site

These treatments were very effective in reducing the dominance of grasses and thatch, and creating the conditions necessary for seeding and planting. Within the four quadrats, smaller areas were marked where a mix of hand seeding and hand planting was used.

Hand seeding was undertaken after creating a seed bed with a rake hoe, and Hamilton tree planters were used to remove soil cores beforehand planting.

Inter-tussock planting by hand after the site has been dethatched of dense grass tussock growth and vegetative litter

Observations to date have shown early success with hand planting, as illustrated below with images of Hoary Sunray *(Leucochrysum albicans)* and Yam Daisy (*Microseris lanceolata)* in September 2012.

Hand sown seedlings were also beginning to appear in September 2012. Future management will consider mowing height, type and frequency, as well as weed control and litter removal.

Direct machine seeding following the hand sowing techniques of 2011 direct machine seeding was trialed in the adjacent area to sow both ‘fluffy’ and hard coated seeds in May 2012

Graham Fifield, Greening Australia

Dethatching, mowing and vacuuming were undertaken in May 2012 to prepare six 150m native pasture strips adjacent to the quadrats for machine sowing. These strips were sown with grassland species using a modified tree seeding machine.

"Fluffy" seeds sown include: Common Everlasting (*Chrysocephalum apiculatum);* Hoary Sunray *(Leucochrysum albicans);* Scaly Buttons *(Leptorhynchos squamatus);* and Blue Devil *(Eryngium ovinum).* Hard seeds sown include Bulbine Lilly (*Bulbine bulbosa*); Variable Plantain (*Plantago varia*); Chocolate Lily (*Dichopogon fimbriatus)*; Cut Leaf Goodenia (*Goodenia pinnatifida*).

Direct seedling

By August 2012 germination of these seeds was evident, as shown in the image below.

Direct seeding germination

These trials and research are contributing significantly to the body of knowledge about restoring Natural Temperate Grassland.

The seed of herbs and forbs sown into this landscape via mechanized direct seeding is now germinating and emerging. This represents a huge step forward in both the scale and efficiency of our grassland restoration….and to my knowledge; this is a first in south eastern Australia.

Want to know more about the GGRP?

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