fostering research into the biology and cultivation of the Australian flora

Newsletter *No. 19* *New Series*

January 2014

A happy new year to all our dear readers!
In this issue of the AFF Newsletter we are fortunate to have Rodger and Gwen Elliot as guest contributors. In their article the Elliots tell us how volunteers (including themselves) help with the smooth running of a world-class botanic garden. We also have our President Peter Goodwin's annual report to members delivered at the AGM, and an article by Tina Bell about the devastating bushfires in the Blue Mountains that rained ash on Sydney for many days during October 2013.

About the authors – Rodger and Gwen Elliot

Rodger and Gwen Elliot are recipients of many awards and honorary life memberships too numerous to list here, for their huge contribution over several decades to the horticulture of Australian plants. They were both awarded membership of the Order of Australia (AM) in 2001 in recognition of their outstanding roles in the promotion of our flora.

Very few people (if any) in this country would know as much about propagation and cultivation of native plants as Rodger and Gwen. They owned and operated both wholesale and retail nurseries specializing in native plants from 1963 to 1992, and are authors of a number of books featuring Australian plants.

Rodger and Gwen are always willing to share their vast knowledge of native plants in their usual unassuming manner. They have done this for many years during appearances on radio and television gardening programs, and as guest speakers, lecturers and educators, workshop presenters, tour guides, office bearers, and contributors to local and overseas horticultural publications.

Rodger and Gwen have supported the Australian Flora Foundation on numerous occasions, and Rodger served as an AFF Councillor in 1986.

Now, as you will see from their article, the Elliots are continuing to contribute their unique expertise and valuable time by working as

volunteers at the Royal Botanic Gardens Cranbourne. They are so serious in pursuing their passion for plants that they even moved house to be closer to their volunteer workplace! I know you will enjoy reading their article.
Ian Cox - Editor

Following plant passions by being garden volunteers - and the Australian Garden at the Royal Botanic Gardens, Cranbourne, Victoria

Rodger and Gwen Elliot

The brilliantly coloured Sand Garden with its circles of *Rhagodia spinescens* and North Line of *Chrysocephalum* 'Golden Buttons' contrasts with the displays of variously coloured Kangaroo paws, *Anigozanthos* hybrids and other shrubs.

The Australian Garden at the Royal Botanic Gardens Cranbourne, designed by Taylor Cullity Lethlean (TCL) with Paul Thompson has been named 'World Landscape of the Year' at the prestigious World Architecture Festival Awards for 2013.

The World Architecture Festival Awards are regarded by many as the "Olympics of Architecture" and this was one of three major awards announced at a gala dinner in Singapore on October 4th, 2013.

The jury commended the project, saying "This garden brilliantly summarises the great variety of Australian flora, as well as the large part of the country which is arid desert. Like a botanic garden, it is a collection of difference, but with a strong unifying set of journeys through the various landscapes. This landscape stood out with its originality and strong evocation of Australian identity without having to use any signs or words - just the beautiful flora of Australia's countryside!"

The Australian Garden occupies an area of 15 hectares, in what was previously an old sand quarry. It is set within the Royal Botanic Gardens Cranbourne which has a total area of 363 hectares, the majority of which is superb native bushland, now surrounded by housing developments. The Royal Botanic Gardens Cranbourne was established in 1970 and is the younger sister garden of the Royal Botanic Gardens Melbourne.

Stage 1 of the Australian Garden was opened to the public in May 2006 and Stage 2, which completed the construction, was opened in October 2012.

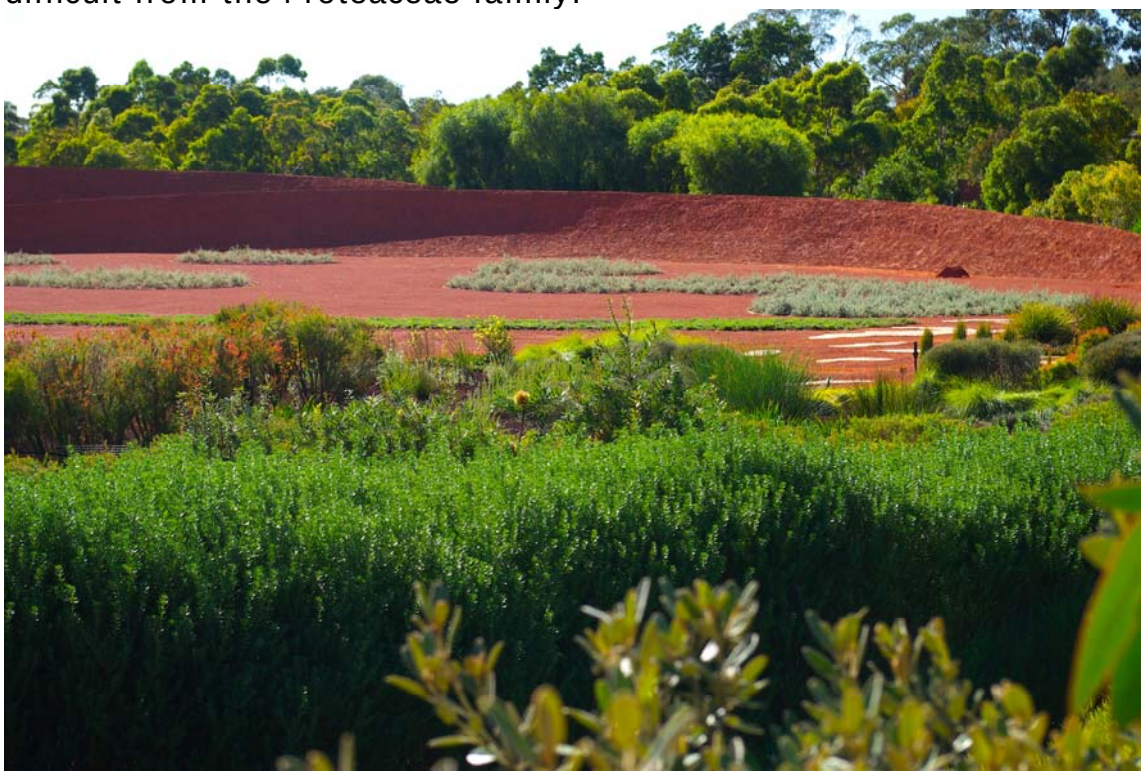
In the recently opened section the Lily Pad Bridge leads people from the Gondwana Garden to the Northern Exhibition Gardens. The Gardens Explorer transporter does circuits of the Australian Garden about every 30 minutes and there are six stops en-route allowing passengers to get on and hop off wherever they select.

As with all Botanic Gardens around Australia, and indeed the world, their success is dependent to a very significant extent on the contribution of volunteers.

This is not a one-way street however. Involvement in gardens as volunteers offers rich rewards by means of enhancing lifestyles and the forming of many valuable friendships. When a garden is filled with Australian plants this is a further enticement for all native plant enthusiasts.

It is not necessary to have extensive plant knowledge to be a volunteer in Botanic or Community Gardens. There are plenty of tasks for all and opportunities to learn so much as we share with other enthusiasts. Many public gardens have their own plant nurseries and here we can learn how to propagate both easy to grow plants and some of the more challenging ones. Volunteers can

start by perhaps sowing seed or doing cuttings of the many easy-to-propagate plants in groups such as the daisies. As we learn from others who are more experienced we will be ready to tackle the more challenging species including many that are regarded as difficult from the Proteaceae family.



Angophora costata and *Acacia salicina* form a backdrop to the lunettes of the Sand Garden with a range of shrubs from the Dry River Bed in the foreground.

At the Royal Botanic Gardens Cranbourne the 'Growing Friends' nursery recently needed to be demolished to make way for a new Depot and Administration Centre. They say that '*Every cloud has a silver lining'* and for the Friends at Cranbourne this has meant a new nursery site with a much larger workshed, all funded by the 'Growing Friends'. The growing area is now being set up with a sturdy overhead wire canopy to protect the plants from the numerous possums sharing the site. The members were delighted when a private donor funded this project. Some of the plants produced have been planted on site, while others have been grown specifically for the local City of Casey. Numerous school children visit the Gardens and part of the program provided is usually to give each student a plant to take home. There are also three plant sales per year and proceeds from these sales help to fund the activities of the Friends nursery and other projects within the Botanic Gardens.

If you are not into the actual growing of plants there are many other tasks in which Friends groups are always seeking volunteers, from staffing the office and perhaps an information desk, to participating in special events throughout the year, or even in the packing and posting of Newsletters.

At Cranbourne there are groups which concentrate on the collection of seed produced within the Botanic Gardens, the pressing of plant

specimens for the Herbarium, the recording the birds seen on the site, botanical art and photography, and also a sewing and quilting group with a concentration on Australian plant fabrics and designs.

Garden Ambassadors and Guides help visitors who come to the Gardens, and some members of the Friends also assist the staff in providing lectures to visiting groups. These may be on particular subjects such as plants which are indigenous to the area, native plant gardening, gardening in particular areas such as coastal regions, bush food plants, plant identification or specific workshop days on one genus such as Acacia or Grevillea, or a family of Australian plants such as Fabaceae or Orchidaceae. There is an excellent relationship between the staff and members of the Friends group and this is extremely important if activities such as those mentioned are to work smoothly and be well received. The Friends all-day workshops are held in high regard and often used by staff as part of their training and development program.

There are also opportunities for supporters of our public gardens to become involved on a number of committees and boards. Rodger Elliot was a member of the Royal Botanic Gardens Board for over 15 years and was involved with the development of the Australian Garden at Cranbourne from the early stages when a brief was prepared for landscape architects to present their designs. He is no longer a Board member, but continues as member of a number of RBG committees.

For some time the Elliots had been thinking that by living at Heathmont, a 45-minute drive from Cranbourne, they should really consider reducing their “road miles” for the sake of human wellbeing as well as from an environmental point of view. It just so happened that they had a look at a unit in Berwick in January 2013, and agreed to purchase it the next day. As Berwick is just a few kilometres north of Cranbourne the move has reduced their travelling time by more than half.

They are certainly not the first people to make such a move, and personally know two other couples who have moved to the Cranbourne area recently, primarily to be closer to the Botanic Gardens. It does make a lot of sense.

Botanic Gardens, Regional Gardens, State and National Parks all have a real need for enthusiastic volunteers, and everyone has so much to gain from being involved.

If you don’t live close to the area of your involvement, or where you would like to be more involved, it is certainly worth considering your passions and interests if you are ever thinking of moving house.

President's Report 2013

Dr Peter Goodwin

Delivered at the AGM on 25th November 2013

Research supported by the Foundation

Three new grants were awarded this year:

- to Susanne Schmidt, University of Queensland, for the project *Functional responses of Triodia in the spinifex grasslands of arid Australia*;
- to Mark Ooi, University of Wollongong, for the project *Clinal variation in seed dormancy and recruitment success of Boronia: implications for persistence under climate change*;
- and to Nathalie Nagalingum, Royal Botanic Gardens Sydney, for the project *Conservation genetics of wild populations and botanic garden collections of Australian Cycads*.

Further details can be found on the Foundation's website at http://www.aff.org.au/AFF2_Grants.htm

Four final reports were received this year:

- From Carola Kuramotto de Bednarik: *Relative importance of fire regimes and environmental gradients for the distribution of rainforests in the Sydney region* by Carola Kuramotto de Bednarik, with significant contributions from Dr Geoffrey Cary, Prof. Ross Bradstock, Dr Malcolm Gill, Dr Karen King, Dr Mike Austin and Dr Emlyn Williams. This arrived in late December 2012, but in terms of President's Reports is in this year.
- From Nicholas Paul: *"Green caviar" and "Sea grapes": targeted cultivation of high-value seaweeds from the genus Caulerpa* by Nicholas A. Paul, Symon A. Dworjanyn and Rocky de Nys. A summary was in the July 2013 Newsletter.
- From Karen Johnson: *Determining the pollinators of rare and endangered Epacris species: implications for conservation* by Karen Johnson and Peter McQuillan. You will have seen some of this beautiful report featured in the July 2013 Newsletter.
- From John Morgan: *Vegetation change in the Pretty Valley alpine grasslands from 1945 to 2003: the influence of grazing on plant community succession* by John Morgan and Pete Green.

All were of a good standard, and can be found on the Foundation's website at http://www.aff.org.au/AFF2_Res_repts.htm

Communication with members

Two new Newsletters were sent out by Ian Cox, one in January and one in July. On the website, in addition to the final reports above, Donations and Bequests pages were added. Newsletters were added to the website six months after they were provided to members.

As noted in the 2012 President's Report, the Council is exploring the potential of using social networking via the internet to make the activities of our funded researchers more immediate. The pros and cons of using Facebook for this have been discussed, as well as the alternative of developing the Foundation's own blog site. This remains a work in progress.

Finally I should like to thank all of you for your contributions over the year, most particularly our hard working Secretary Ian Cox and Treasurer Jenny Jobling, members of the Finance Subcommittee, of the Scientific Committee, and members of Council. A special thank you to all donors and benefactors of the Foundation: without you the Australian Flora Foundation could not function. Particularly noteworthy is a donation of $5,000 from APS South Australian Region.

Peter Goodwin
President
16th November 2013

Back from the Ashes

Dr Tina Bell

Dr Tina Bell is a Councillor of the Australian Flora Foundation. She is Senior Lecturer in Fire Ecology at the University of Sydney, and is currently a Project Leader in the Bushfire CRC and has been a member of this national research centre since its inception in 2002.

The fires in the Blue Mountains and Lithgow in mid- to late-October 2013 burnt an estimated area of 118,000 hectares and destroyed close to 250 buildings. Sadly there were two fatalities connected with the fires. On 18 October, at the peak of the incident, over 100 fires were burning across the state. Multiple causes have been attributed to starting the fires including strong winds causing damage to power lines, suspected arson and military operations.

These fires have been described as the worst in New South Wales since the 1960s.

According to the Bureau of Meteorology, we had the warmest September on record for the state with average daily temperatures

3.4 °C above the historical average and 0.9 °C above the previous September record set in 1965. Warm, dry weather and strong winds during September contributed to an unusually early start to the 2013-2014 bushfire season.

Residential, farming and rural land was burnt and parts of the Greater Blue Mountains Area World Heritage Site and adjacent national parks and forest reserves were also affected. The fires left forests and woodlands blackened and scorched. Some larger logs and deeper patches of duff continued to smoulder for days and the smell of smoke hung in the air long after the fires had passed through. Areas that had been 'back burnt' in a bid to contain fires and protect property may not have been charred quite as severely as adjacent areas burnt by bushfires but the effect of fire on the vegetation was still evident.

Photos taken by S. Pfautsch (28 November 2013)

But the Australian bush is resilient. It has evolved alongside fire and has adapted to it in many ways. The pictures shown were taken about 12 weeks after early season bushfires near Londonderry in western Sydney. New sprouts have already appeared on the trunks of eucalypts and are beginning to reform the canopy, and grasses and woody shrubs in the understorey have resprouted to produce a patchy green carpet. With recent heavy rains in November (i.e. 207.5 mm for the month compared to a long-term average of 75 mm for the area from which the images were taken), this emerging vegetation not only benefits from the added moisture for rapid growth but also serves to protect the soil surface from erosion. The re-emergence of some long-lived plants from seed has not yet happened but it will as soon as temperatures and levels of soil moisture are perfect for germination.

As much of the area burnt in the recent fires is close to residential and rural properties, one of the greatest challenges will be to prevent post-fire weed invasion. Areas close to habitation slowly become enriched with nutrients through wash off from roads and gardens and run-off of storm water and irrigation water. Just as native plants become re-established after fire so will non-native species. These plants must be kept in check to maintain the integrity of the bush that has temporarily disappeared.

Summary of a recent Final Report

Each year the Australian Flora Foundation funds a number of grants for research into the biology and cultivation of the Australian flora. While the grants are not usually large, they are often vital in enabling such projects to be undertaken. Many of the projects are conducted by honours or postgraduate students, hopefully stimulating their interest in researching Australia's unique and diverse plants. This work is only made possible by the generous support of donors and benefactors.

Presented here is a brief summary of a recently completed project. Full reports of this and other projects can be viewed on the Foundation's website http://www.aff.org.au/

Vegetation change in the Pretty Valley alpine grasslands from 1945 to 2003: the influence of grazing on plant community succession

John Morgan & Pete Green
Department of Botany, La Trobe University

Introduction

Between 1945 and 1947, Maisie Fawcett (later Carr) and Professor John Turner of the University of Melbourne School of Botany established permanent transects on the Bogong High Plains, Victoria to study the effects of cattle grazing on vegetation condition.

Grazed and ungrazed plots were established in grassland, short turf snowpatch, open heath and burned heath (after the 1939 fires) and these plots have been maintained and monitored regularly ever since, the most recent data being collected in January 2013. The plots established by Fawcett and Turner have had a major influence and indeed, have been pivotal, in developing the ecological understanding of alpine vegetation dynamics in Victoria.

At least five significant scientific publications have arisen directly from research on the plots. Carr & Turner (1958a, b) *Aust J Bot* examined the initial vegetation changes with fencing while Carr (1962) *Proc Roy Soc Vic* articulated the demographic responses of the key shrub species to disturbance. Wahren et al. (1994) *Aust J Bot* focused on four plots (grassland/open heath, grazed/ungrazed) and reported upon the vegetation changes observed between 1947 and 1994. Most recently, Williams et al (2008) *International J Wildland Fire* used the plots as part of a wider analysis to report on the response of alpine vegetation to fire.

In this study, funded by the Australian Flora Foundation, we proposed to (a) database all original data associated with these plots (1947-2003 inclusive) using database software capable of storing large volumes of data, (b) analyse the structural and floristic changes that have occurred in all plots over this time (an analysis that has not yet been undertaken) and place these changes in the context of grazing and plant community succession and (c) publish the work in high quality scientific journals.

We achieved aim (a), although this proved a bigger challenge than anticipated. Most of the AFF funds were used to enter data into an Access Database, and check the data that was then entered. This was a substantial task – 60 yrs of data, collected by different recorders, with changes in taxonomy meant much of our effort was used on data entry. However, we have also achieved aim (b) of analysing the Pretty Valley Grassland data, showing that both grazed and ungrazed plots have been dynamic over the last six decades, and that cattle grazing impacts are obvious in this alpine grassland. Aim (c) has yet to be realised.

Summary

The Pretty Valley Grassland Plots on the Bogong High Plains are of National Significance. Established 1945-1947, they constitute the second longest running ecological experiment in Australia. The study, to examine how cattle grazing impacts the range condition (i.e. vegetation cover, bare ground, litter) of alpine grassland, have been monitored periodically ever since their establishment.

However, data analyses have been largely restricted to analysing trends in the cover of common species. In this ambitious project, we used Australia Flora Foundation funds to help database the original data (1946-2009). Much of this data was stored as paper

copy in filing cabinets. Hence, it was no small task to database 60 years of information, collected as point quadrat data from over 80 permanent transects, and then check the data entry to identify and rectify the many errors.

Having achieved this aim, we have undertaken the first study to analyse patterns of change in the plant community over time in the presence / absence of grazing. Using non-metric multidimensional ordination techniques, we show that alpine grassland has changed substantially over time. In part this reflects the impacts of grazing – the vegetation has changed as it recovered from grazing. However, grazed 'control' plots have also changed, albeit less than the ungrazed plots. This probably reflects the underlying role that climate variation (e.g. drought, variation in snow duration) plays on plant community change.

Our database and initial analyses provide an excellent opportunity to track future change in alpine grassland in response to fire and climate change.

Financial

These statements have been extracted from the Foundation's audited accounts for the year ended 30th June 2013:-

Income	**$**
Donations	5,655
Membership fees	2,070
Interest, investment income and change in value of investments	66,492
Imputation credit refunds	3,120
Grants unclaimed/returned	7,279
Total Income	**84,616**
Expenses	
Accounting and audit fees	3,278
Grants	36,372
Young scientist awards	500
Promotions	96
Postage, printing, general expenses	581
Total Expenses	**40,827**
Surplus for year	**43,789**

Assets	**$**
Investments and bank accounts	853,724
Debtors	11,471
Total Assets	**865,195**
Liabilities	
Grant commitments	16,011
Net Assets	**849,184**
Accumulated funds	
Balance 1st July 2012	**805,395**
Surplus for year	43,789
Balance 30th June 2013	**849,184**

The Australian Flora Foundation is a not for profit organization with the sole objective of fostering scientific research into Australia's flora. We are totally independent, and all office bearers are volunteers.

The Council (*governing body*):

- Dr Peter Goodwin (President)
- Professor Richard Williams (Vice President)
- Associate Professor E. Charles Morris (Vice President)
- Mr Ian Cox (Secretary)
- Dr Jenny Jobling (Treasurer)
- Dr Tina Bell
- Associate Professor Michelle Leishman
- Dr Paddy Lightfoot
- Dr David Murray
- Mr Ross Smyth-Kirk

The Scientific Committee:

- Professor Richard Williams (University of Queensland) - Chair
- Professor Kingsley Dixon (Kings Park & Botanic Gardens, WA)
- Associate Professor Betsy Jackes (James Cook University)
- Associate Professor Peter McGee (University of Sydney)
- Dr Trevor Whiffin (LaTrobe University)

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