



*fostering research into
the biology and cultivation
of the Australian flora*

Newsletter

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New Series

July 2009

President's Message

The April meeting of the Council of the Foundation had as its main line of business short-listing the preliminary applications for grants. We had 18 applications in all, covering as usual areas as diverse as for example regeneration strategies, working on the origins (outside Australia) of what have been regarded as native Australian plants, to using market forces to aid conservation. Support for research on alpine plants has been encouraged by a grant of \$5,000 from the ANPS Canberra Regional Council, and this was borne in mind during the deliberations. In the end six applicants were asked to submit full proposals. These will go to the Scientific Research Committee, and their recommendations will inform the final decision as to which applications can be funded. This decision will be made in August. I should like to personally thank each of you for making it possible to 'Foster research into the biology and cultivation of the Australian flora'.

Peter Goodwin

Bequest

The Foundation belatedly acknowledges with gratitude a generous bequest to the Research Fund from the Estate of the late Mrs Eileen Croxford.

Eileen Croxford was a well-known lover of Australian plants and an environmental campaigner in the Albany area of WA. In 1963 she convened the first meeting of the Albany Branch of the Wildflower Society of Western Australia. She was extremely active in the Branch, serving as President, Vice President, Treasurer/Secretary, Branch Delegate and Herbarium Coordinator. Her efforts led to the establishment of the Albany Regional Herbarium in 1979 – the first Regional Herbarium in Western Australia. One of Eileen's legacies is the 8,000 plus flora specimens collected by her and housed in the herbarium. She also discovered several new species of plants.

Eileen Croxford's community and environmental work has been recognized by the bestowing on her of a number of awards, including Life Membership of the Wildflower Society of Western Australia, Quiet Achievers Award, Parliamentary Medal, Town of Albany Citizens Award, CALM Volunteers Appreciation Certificate, and the Australian Plants Award (Amateur Section).

Young Scientist prizes for 2008

The Australian Flora Foundation awards prizes each year to encourage young scientists to further their interest or careers in biological science relating to Australian flora. Two prizes are awarded at each annual meeting of the Ecological Society of Australia, and two at each biennial meeting of the Australian Society of Horticultural Science. At each meeting, one prize is awarded to the under or postgraduate student who gives the best talk, and one to the under or postgraduate student who presents the best poster, provided the Society considers the presentations are of suitable merit

The Ecological Society of Australia Young Scientist prizes for 2008 were:

Talk: Christina Czembor, University of Melbourne. "Can we be certain? Using expert models to manage Box-Ironbark forests".

Poster: Tanya Bailey, University of Tasmania. "Use of fire, cultivation and coarse woody debris as restoration techniques in Tasmanian dry forests".

Thank you to our donors

Without the generous support of our donors and benefactors the Foundation would not be able to carry out its research objectives. Donations of \$2 and over are tax-deductible.

The Council would like to sincerely thank the following people and organizations who have recently made donations to the Research Fund:

Australian Plants Society Newcastle Group NSW; Australian Plants Society NSW Region; Australian Plants Society Sutherland Group NSW; Australian Plants Society SA Region; Australian Plants Society Wangaratta Branch Vic; SGAP Mackay Branch Qld; Mr Philip Cameron; Prof. H. Clifford; Mr Ian Cox; Mr Rodney Cragie; Mrs Hazel Dempster; Mr Phillip Esdale; Margaret Esson; Mr Frank Gleason; Dr Peter Goodwin; Alan and Jan Hall; Dr Margaret Johnston; Mrs E. King; Mr Patrick Laher; Mrs Margaret Lee; Dr Paddy Lightfoot; Dr Geoffrey Long; Dr Peter McGee; Shirley Pipitone; Dr M. Reed; Mr W. Reed; Mr Gordon Rowland; Mr J. Scown; Mr Abe Segal; Judith Smith; Mr Ross Smyth-Kirk; Mrs Diana Snape; Prof. Acram Taji; Dr A. Wheeler; Dr Tim Wood.

Scientific publications from research supported by the Foundation

Abstracts of the following publications based on work funded by the Foundation have recently been added to the website:

M. Tibbett, M.H. Ryan, S.J. Barker, Y. Chen, M.D. Denton, T. Edmonds-Tibbett & C. Walker. *The diversity of arbuscular mycorrhizas of selected Australian Fabaceae*. An abstract can be found [here](#). It appeared in *Plant Biosystems*, 2008, Vol. 142, No. 2, pp. 420–427

A.K. Ahmed, K.A. Johnson, M.D. Burchett and B.J.Kenny. *The effects of heat, smoke, leaching, scarification, temperature and NaCl salinity on the germination of Solanum centrale (the Australian bush tomato)*. An abstract can be found [here](#). It appeared in *Seed Science & Technology* (2006) **34**: 33-45

Summaries of Final Reports

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 research into Australia's flora. This work is only made possible by the generous support of donors and benefactors.

Presented here are brief summaries of completed projects. Full reports of these and other projects can be accessed on the Foundation's website www.aff.org.au

Cultivation of Native Potatoes (*Platysace spp.*).

Woodall G.S.(1), Moule M.L.(1), Eckersley P.(2), Boxshall B.(1) and Puglisi B.(1)

1: Centre of Excellence in Natural Resource Management, The University of Western Australia, Albany WA

2: Eckersley Rural Consulting Bunbury WA



Tubers of *Platysace deflexa*, collected north-east of Albany WA.

The flora of Western Australia contains an extraordinary number of species that form root tubers. Over 85% of 153 tuberous species recorded in Western Australia occur in the south west of the state. This diversity provided an unparalleled resource from which new horticultural crops could be developed.

Field observation and available information were used to make an assessment of species in regard to their unambiguous history of consumption, vegetative vigour, reproductive vigour and likely ease of propagation. Attributes such as size, colour, flavour, texture and abundance of the potential product were also assessed. This approach suggested that a target group comprised of *Platysace deflexa*, *Ipomoea calobra* and *Haemodorum spicatum* were worthy contenders for further study.

Propagation systems for all three target species were developed and a commercial field production system developed for *I. calobra*. *Platysace deflexa* is in pilot production trials, and both *I. calobra* and *P. deflexa* have been readily accepted by consumers. *Haemodorum spicatum* has been less readily accepted, because of its fibrous texture and bitter taste.

Land-use legacies in the Woohlpooer State Forest: The potential for recovery of herbaceous vegetation after release from a long history of sheep grazing in a species-rich woodland

Jodi N. Price, Nathan Wong and John W. Morgan

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We examined the response of understorey plant communities to the removal of sheep grazing in a herb-rich *Eucalyptus camaldulensis* (Red Gum) woodland in western Victoria. Impacts of stock grazing on native grassy ecosystems in temperate southern Australia are well documented. However, less is known about the potential of ecosystems to recover after a long history of stock grazing and, in particular, whether the removal of stock will have positive, negative or neutral impacts on biodiversity.

Using a space-for-time chronosequence, woodlands were stratified into groups based on their time-since-grazing removal; these were long-ungrazed (>20 years), intermediate-time since grazing (9-14 years), recently grazed (5 years) and continuously grazed. We found significantly higher species richness in long-ungrazed sites (>20 years) relative to sites with a more recent grazing history. No differences were found in species richness between continuously grazed sites and those grazed in the previous 14 years. Species composition differed with time-since-grazing removal and indicator species analysis detected several native species associated with long-ungrazed sites that were absent or in low abundance in the more recently grazed sites. Continuously grazed sites were significantly associated with several exotic species. Removal of sheep grazing in Red Gum woodlands can have positive benefits for understorey diversity but it is likely that recovery of key indicators such as native species will be slow.

***Epacris impressa* Labill.: Inoculation of cuttings with ericoid mycorrhizal fungus and DNA fingerprinting of floral races**

Melanie Conomikes, Cassandra McLean, Dr Gregory Moore
Department of Resource Management and Geography
University of Melbourne



Tagged plant of *Epacris impressa* in the field at Cranbourne. Cutting material was obtained from the tagged plants for propagation and DNA fingerprinting experiments. Photo: Melanie Conomikes

Epacris impressa Labill. is an attractive heathland shrub endemic to the state of Victoria, parts of South Australia and Tasmania and southern New South Wales. The plant has showy red, pink or white flowers for most of the winter and has potential markets in landscaping and revegetation, as well as a cutflower. Flower colours fall into three general flower colour races: red, pink and white (Stace & Fripp 1977a, 1977c, 1977b). Like all members of the Ericaceae, *E. impressa* forms a symbiotic relationship with fungi that colonise its hair roots. It is

primarily an outcrossing species with some examples of selfing occurring in each population (Fripp 1982; O'Brien, S. P. & Calder 1989)

Few nurseries propagate *E. impressa* since it has proved difficult to grow from cuttings or seed. Strike rates are often as low as 10% for cuttings and seed germination often fails. Selection of propagation material for revegetation purposes is usually determined by local anecdotal information and provenance delineation is not based on genetic traits.

This study examined the use of ericoid mycorrhizal fungus as an inoculum to stimulate root and shoot production from cuttings. The fungus did not provide any benefits to root and shoot growth or health, but methods for improved propagation success rates were developed during the experiments.

Genetic fingerprinting techniques were also used to examine relationships between geographic sites and flower colour populations and to aid in provenance determination. Results indicated that *E. impressa* has a high level of both inter-site and intra-site genetic diversity. The red and white floral races had a high level of shared genetic traits while the pink-flowered race had a more distinct genetic identity. The results suggested that the pink-flowered populations have developed into a separate floral colour race rather than an F1 hybrid between red and white races.

The Australian Flora Foundation is a not-for-profit voluntary organization with the sole objective of fostering scientific research into Australia's flora.

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