

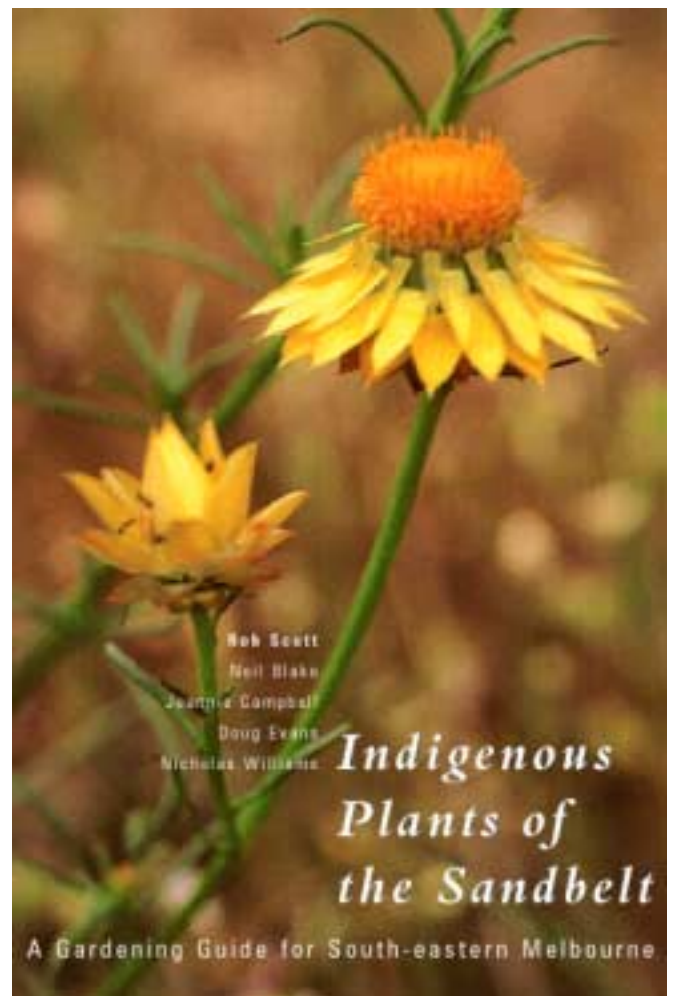
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provide help with choosing plants that will thrive in particular areas of the garden and introduce colour throughout the year. The region's natural history – geology, plant communities and fauna – are explained, and a chapter on attracting fauna to the garden highlights another rewarding and fascinating outcome of gardening with indigenous plants.

INDIGENOUS PLANTS OF THE SANDBELT

Nick Williams and Jeannie Campbell of ARCUE, together with Rob Scott, Neil Blake and Doug Evans, are authors of a new book about gardening with indigenous plants. Published by Earthcare St Kilda, *Indigenous Plants of the Sandbelt: A Gardening Guide for South-eastern Melbourne* explains the benefits of choosing indigenous plant species for the garden and offers practical advice in planning, planting and maintenance. Over 180 indigenous plants currently available in nurseries are described and illustrated. Planting tables and flowering diagrams



Indigenous Plants of the Sandbelt is the result of a co-operative effort between Coastcare, ARCUE, City of Kingston, Parks Victoria, City of Port Phillip, City of Bayside, City of Glen Eira, and Excell Corporation.

It can be purchased from the Royal Botanic Gardens Shop (phone 9252 2431) and indigenous nurseries in the sandbelt area or ordered from Earthcare (phone 9209 6491). rrp\$25.00

ARCUE MOVES TO NEW FACILITIES

On 22 July 2002, ARCUE staff and students made the much-anticipated move to their brand new offices and laboratory in the School of Botany at the University of Melbourne. ARCUE occupies just part of the building, with the remainder providing office, laboratory and storage space for staff and students working on the fields of ecology and molecular biology. The building also has meeting and conference facilities. If you need to contact ARCUE, our address, phone and fax numbers have not changed.

ARCUE was able to move to these new facilities thanks to the generous support of the Baker Foundation.

RESEARCH UPDATE

Brushtail Possums in Melbourne

Melbourne's urban landscape provides a range of resources for the common brushtail possum in addition to those available in natural vegetation. The increase in resources such as food and den sites in the suburbs

has resulted in an increase in possum density and brought the animals into conflict with local residents, particularly in suburban gardens dominated by exotic plants.

The exploitation of resources available to possums in urban areas is the focus of a PhD study being undertaken by Michael Harper. In September 2002 a large-scale survey of south-east Melbourne's remnant bushland indicated that the availability of tree hollows, and the inability of brushtail possums to survive solely on Eucalypt leaves may be limiting the density of possums in such areas.

In August 2003, the tree hollow and food resources at a number of urban remnant patches will be manipulated through the addition of artificial hollows and food dispensers. Any changes in the denning and foraging behaviour of brushtail possums, in relation to resource availability, will give an insight into how urbanisation is changing the behaviour of the possum.

Bunnings Warehouse Scoresby has generously provided materials that will be used to construct the nestboxes.



Above: Mike Harper presents Maria Harman of Bunnings Warehouse with a certificate of appreciation.

Grey-headed Flying-fox Studies

During the last week of January 2003, the Grey-headed Flying-foxes roosting in the Royal Botanic Gardens (RBG) numbered over 28,000 individuals. The ongoing presence of these animals poses a threat to Fern Gully and its many significant tree specimens. Substantial areas of the Gardens could be damaged if the number of flying-foxes is not reduced. In a collaborative trial, the Department of Sustainability and Environment, Parks Victoria, the RBG (including ARCUE), Zoos Victoria, Banyule Council, scientists and conservation groups have been working to establish an alternative roosting site at Horseshoe Bend on the banks of Yarra River in Ivanhoe. Caged animals and other treatments are being used in an attempt to coax the flying-foxes from the Gardens to this new site.

For ARCUE's part in the trial, Dr Mark McDonnell and Dr Rodney van der Ree have led an effort to characterize stimuli that are likely to deter the flying-foxes from roosting in Fern Gully and attract them to the new camp. The team of researchers have found that, much like us, flying-foxes dislike loud, grating noises, with chainsaws, leaf blowers and dropping metal were among the most effective deterrents. Playing pre-recorded sounds of flying foxes from the Fern Gully camp over a PA system at the Horseshoe Bend site helped attract flying-foxes to the new site.

In addition to audio stimuli, the team tested visual deterrents including flags and large helium-filled balloons. These also worked well, as long as they could reach the flying-foxes in the canopy. The team was surprised to find that the flying-foxes had little or no response to the call of their natural predator the powerful owl, or to various high frequency tones. The program to disperse the flying-foxes began in March. At this stage the results look promising and the Gardens is

hopeful of achieving its aim of protecting the rare and significant plants in its collections.

The Ecology of Melbourne's Saltmarshes

Marty Gent is a University of Melbourne student undertaking a Masters with ARCUE under the supervision of Assoc. Prof. Mark McDonnell. She has been studying the coastal saltmarsh communities of Port Phillip Bay.

It has been estimated that at least 50% of Victoria's saltmarshes have been lost or severely modified. The saltmarshes in the Melbourne region have a complex history of land use ranging from salt production to 'land reclamation.' Saltmarsh communities are extremely valuable and beautiful but they have long been undervalued and under-appreciated. They provide extremely important habitat for coastal bird populations and are under serious threat from a wide range of disturbances and human impacts.

Marty's study sites are located on Port Phillip Bay from Williamstown to Point Wilson. This area supports a diverse range of bird life and during summer between 48,000 and 65,000 birds feed on these marshes. The critically endangered Orange-bellied Parrot also remains on the marshes over winter. A number of other endangered and vulnerable species such as the Intermediate and Little Egrets and the White-bellied Sea-Eagle also use the area as part of their greater habitat.

Marty's project aims to identify the plant species composition and structure of Melbourne's saltmarshes and to explore the processes threatening their conservation. The past distribution of marshes on Port Phillip Bay will be estimated using data collected from historical maps and documents, aerial photos and physical characteristics of the coast. A detailed vegetation survey of the sites has recently been completed and Marty is in the process of analysing the data in

order to identify the species composition and vegetation structure at the different saltmarsh sites, and the physical and chemical factors influencing species distributions.

It is hoped that this study will result in the development of an ecologically sound management strategy for the saltmarshes of Port Phillip Bay that maintains biodiversity by reducing the threats to these critical ecosystems.



Above: Typical saltmarsh vegetation - a dense mat of *Sarcocornia quinqueflora* with scattered rushes and small shrubs.

VISITORS

Manon Bordet

Manon Bordet recently arrived in Melbourne to undertake a six-month internship with ARCUE after completing a Bachelor of Life Sciences with Honours at the Agro Montpellier in France. She has already begun work on a project comparing recent plant survey data with historical flora records of the 'Sandbelt' region of Melbourne.

The Sandbelt stretches from the mouth of the Yarra River in the north to Dandenong in the east and Frankston and Cranbourne in the south. It was a popular region with naturalists in the late 1800s and early 1900s, and many reports of excursions in the area were published in *The Victorian Naturalist*. Often, these included mention of the plant species that were observed. From these reports, other historical documents and early herbarium records, it has been possible to compile a list of plant species that occurred in the Sandbelt prior to 1930. Manon is currently in the process of creating a GIS layer showing the locations of each sighting from the historical literature. By comparing these data with data from recent surveys, it will be possible to determine which, if any, species have been lost from the area in the past seventy years. This research will aid revegetation efforts in the Sandbelt and possibly lead to the reintroduction of locally extinct species.

2002 HONOURS GRADUATES

Lauren Edwards

University of Melbourne student Lauren Edwards completed honours with ARCUE in November 2002. Under the supervision of Dr Kirsten Parris, she undertook a study of the variation in calling activity between urban and rural populations of frogs to determine optimal conditions for calling.

In order to do this, Lauren placed audio tape recorders beside ponds and wetlands at two urban sites (Royal Botanic Gardens Melbourne and Burnley Gardens) and two rural sites (Royal Botanic Gardens Cranbourne and Healesville). The recorders were set up with timers to record for thirty-second blocks at regular intervals throughout each evening over a period of six months. She then listened to the recordings and was

able to identify each species of frog by its call. By comparing the times each species was heard to call with climate data for each site, Lauren has been able to determine the conditions under which several frog species from urban and rural habitats are most likely to call. For example, optimal calling conditions for the Southern Brown Treefrog (*Litoria ewingii*) are a maximum daily temperature below 17°C in urban areas and low barometric pressure at rural sites.

This study has provided information that will be valuable for future research involving surveys of frogs in the Melbourne area, such as environmental impact assessments. It will allow surveys to be designed to reduce the likelihood of missing species that are present at a site but have not called during the survey period as the weather conditions have deterred them from doing so.



Above: Lauren at one of her survey sites – a stone-walled pond at Burnley Gardens.

THE COMPARATIVE ECOLOGY OF CITIES AND TOWNS AROUND THE WORLD: OPPORTUNITIES AND LIMITATIONS

Over the past decade, research into the ecology of cities and towns has received increasing attention. The cities where this research is based display different characteristics in terms of their human population, history of development, cultural makeup, spatial extent, and physical location. This variability raises the questions: Can we compare the ecological patterns found within cities with patterns found in other urban areas? Would such comparative research contribute to our understanding of the ecology of cities and towns?

To begin to address these questions, Assoc. Prof. Mark McDonnell and Amy Hahs have been planning a suite of three meetings that serve the researchers, the science and the general public. They are: 1) a Symposium to be held as part of the International Association of Landscape Ecologists (IALE) World Congress in Darwin; 2) an International Workshop for invited urban ecologists to be held in Melbourne; and 3) a Public Open Forum to be held in Melbourne.

Symposium at IALE World Congress, Darwin

The IALE World Congress is to be held in Darwin from 13 – 17 July 2003. Assoc. Prof. McDonnell, Amy Hahs and Dr Jürgen Breuste (University of Salzburg, Austria) have invited 15 International Scientists to participate in a Symposium entitled “Comparative Ecology of Cities and Towns: Opportunities and Limitations”. The speakers have been invited to present their particular research approach and comment on the issues they consider as important when comparing ecological research between different cities and towns. More information regarding the IALE World Congress can be found at

<http://www.iale.ntu.edu.au/index.html>.

International Workshop, Melbourne

Funding has been obtained from the Baker Foundation and the U.S. Geological Survey

to host two follow-up meetings in Melbourne which will run for three days between 19 –22 July 2003. Fifty leading urban ecologists from around the world have been invited to attend this International Workshop. The aims of the workshop are to identify generalities from our research results and discuss how we can begin to facilitate comparative research between countries, and even between different types of cities and towns. The outcome of this workshop and the IALE symposium will be compiled into an edited book so that the knowledge presented at the meetings is available to a wider audience. Due to the limited time and funding available, this workshop will be confined to fifty invited participants.

Public Open Forum, Melbourne

The final event is to be a Public Open Forum with the goal of raising awareness in Australia on the contribution that urban ecology can make to sustainable development. This event will be held at the University of Melbourne on Thursday, 24 July 2003. The aim of the Public Open Forum is to disseminate to students, policy makers and the general public, the role of ecological science in contributing to sustainable development.

To communicate this aim, a small subset of the International Workshop participants have been selected to present a range of aspects of urban ecological research, and to demonstrate how this information is incorporated into planning processes in different areas around the world. Examples of the topics to be covered include: the management of wildlife and plants in urban areas, mitigating the effects of roads on urban wildlife, and the impacts of artificial night-lighting on flying insect communities.

Further information regarding the Public Open Forum can be obtained by contacting Amy Hahs at ARCUE on a.hahs@pgrad.unimelb.edu.au.

ARCUE ADDITIONS

Rachelle Meyer

Rachelle Meyer joined ARCUE in late 2002 after completing a degree in Wildlife Biology at the University of Montana.



At ARCUE she will be working under the supervision of Dr Mick McCarthy on an MSc investigating optimal management strategies for the Helmeted Honeyeater.

ARCUE GRANT SUCCESS

ARCUE staff and students have received over 1.3 million dollars in grants over the past year including a 100% success rate with Australian Research Council (ARC) grant applications. An ARC Discovery Grant was awarded to Dr Mick McCarthy and collaborator Prof Hugh Possingham to study optimal management of ecological systems. Along with five collaborators, Mick also received an ARC Linkage Grant to study methods for monitoring sustainable forest management. In addition, Dr Kirsten Parris was awarded an ARC Post-Doctoral Fellowship to study the impact of noise and vibration from road traffic on the community composition and communication in birds and frogs.

Dr Rodney van der Ree, with Dr Andrea Taylor of Monash University, received a grant from the former Department of Natural Resources and Environment (NRE), the

NSW National Parks and Wildlife Service and State Forests of NSW to fund research into conservation genetics of the Squirrel Glider. NRE also funded ARCUE to study of food resources and deterrents of Grey-headed Flying-foxes. ARCUE staff, with colleagues from the University of Melbourne and CSIRO, received funding from these organisations for a project investigating the relationships between biodiversity and socio-economic factors in public open space.

Postgraduate students Tom Browning and Mike Harper were awarded grants from the Holsworth Wildlife Research Fund to assist with their projects studying urban heathlands and the ecology of Melbourne's possums respectively.

UPCOMING EVENTS

11th International Symposium on Biological Control of Weeds

April 27-May 2, 2003. Canberra, Australia

Phone: (02) 6246 4001

<http://www.ento.csiro.au/weeds2003/>

Urban and Remnant Bushland: Toolkit for a Sustainable Future

June 19-20, 2003. St Leonards, NSW

For information contact Craig Morrison

phone: (02) 9279 2466

email: cmorrison@nccnsw.org.au

International Association for Landscape Ecology World Congress 2003

July 13-17th 2003. Darwin, N.T.

phone: (08) 8946 6046

<http://www.iale.ntu.edu.au>

National Environment Conference 2003

July 18-20, 2003. Brisbane Convention & Exhibition Centre, Brisbane, QLD.

phone: (07) 3844 1138

<http://www.eesq.com.au/nec/index.html>

National Herbarium of Victoria 150th Anniversary Conference

29 September-3 October, 2003. The University of Melbourne, Vic.

phone: (03) 8344 6389

<http://www.conferences.unimelb.edu.au/150years/>

ESA2003 – Conference of the Ecological Society of Australia

December 8-10, 2003. University of New England, Armidale, NSW

<http://www.ecolsoc.org.au/conferences.html>

Royal Botanic Gardens Melbourne Conservation Series 2003

Mueller Hall, Royal Botanic Gardens, South Yarra All lectures 6.00-7.30pm

30 April - De-tox your Garden

28 May - Sustaining Biodiversity in the Suburbs

25 June - Garden Thugs: From Backyard to Bush

For bookings phone (03) 9252 2300

Greening Australia Victoria Training Programs

Topics include revegetation; native plant propagation; identification of Acacias and Eucalypts; and habitat conservation and management.

phone Greening Australia: (03) 9450 5300

<http://www.gavic.org.au/training.htm>

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