fostering research into the biology and cultivation of the Australian flora

Newsletter

No. 20 *New Series*

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Student Awards

For many years the Foundation has been awarding prizes to encourage young scientists to continue studying Australia's flora. At each annual meeting of the Ecological Society of Australia and at each biennial meeting of the Australian Society of Horticultural Science we give two AFF prizes to undergraduate or postgraduate students. One prize is awarded to the student who gives the best talk, and one is awarded to the student who presents the best poster.

The prizewinners at the Ecological Society of Australia's meeting at EcoTas13, a joint conference between the Ecological Society of Australia and the New Zealand Ecological Society held at Auckland in November 2013 were:

Anthony Manea, Macquarie University
Talk: *Soil water availability mediates woody plant seedling growth to elevated CO_2 in a model grassland system*, and

Ruth Mallett, University of Tasmania
Poster: *Density and assemblage influences on the species richness-productivity relationship in Australian dry sclerophyll species*.

New Publication

The abstract of a research paper resulting from an AFF grant has been published in the prestigious Botanical Journal of the Linnean Society, London.

The abstract is titled *Can seed characteristics or species distribution be used to predict the stratification requirements of herbs in the Australian Alps?* The researchers are Karen Sommerville, Amelia

Martyn and Cathy Offord of The Australian Botanic Garden, Mount Annan.

This project is one of several we have approved to investigate possible effects of climate change on our flora. It was funded with the help of a special donation from the Australian Native Plants Society Canberra Region.

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.

The Council sincerely thanks the following supporters who have recently made donations to the Research Fund:

Australian Plants Society Newcastle Group; Australian Plants Society NSW Region; Australian Plants Society SA Region; Australian Plants Society Sutherland Group; SGAP Mackay Branch Queensland; Warnambool and District Society for Growing Australian Plants; Dr Tina Bell; Ms Ruth Bouckley; Ms B. Buchanan; Mr Phillip Cameron; Dr Roger Carolin; Professor H. T. Clifford; Mr Ian Cox; Dr Rhonda Daniels; Mrs Hazel Dempster; Mr Ian Dyer; Ms J Edwards; Mr Phillip Esdale; Mr Frank Gleason; Dr Peter Goodwin; Ms Elspeth Jacobs; Dr G. C. Kirby; Mr Patrick Laher; Mrs Margaret Lee; Dr Paddy Lightfoot; Dr G. and A. Long; Professor Angela Moles; Dr Peter McGee; Mr Don Perrin; Dr M. L. Reed; Mr W. E. Reed; Mr John Scown; Ms Judith Smith; Mr Ross Smyth-Kirk; Mrs Diana Snape; Dr Greg Unwin; Dr Robert Vickery; Dr Annabel Wheeler; Professor Richard Williams; Dr T.J. Wood;

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A New Botanical Garden for Regional Victoria

Neil R Marriott[1]
Honorary Leader WAMA Site Development Project Team

WAMA, which stands for the Wildlife Art Museum of Australia, is set to become one of our great regional botanic gardens. It will be unique, by being established in a spectacular native garden setting just outside Halls Gap, at the foot of the Grampians/ Gariwerd Ranges in western Victoria.

WAMA wetland looking towards Grampians and protected bushland

The site, which has been gifted to WAMA, is superb; it roughly divides into three parts, the first supports the natural Grampians Heathy Woodland and includes an ephemeral creek that flows out of the ranges, the second is a large man-made wetland; these two areas are permanently protected by conservation covenants with Trust for Nature, Victoria. The third part is an open undulating paddock and this is where the galleries and the Botanic Gardens will be developed. In the covenanted areas we will grow only Grampians indigenous plants, and I am currently urging the WAMA Board to call the gardens the Gariwerd Botanic Gardens because of our location and these links with the superb Grampians/Gariwerd Ranges.

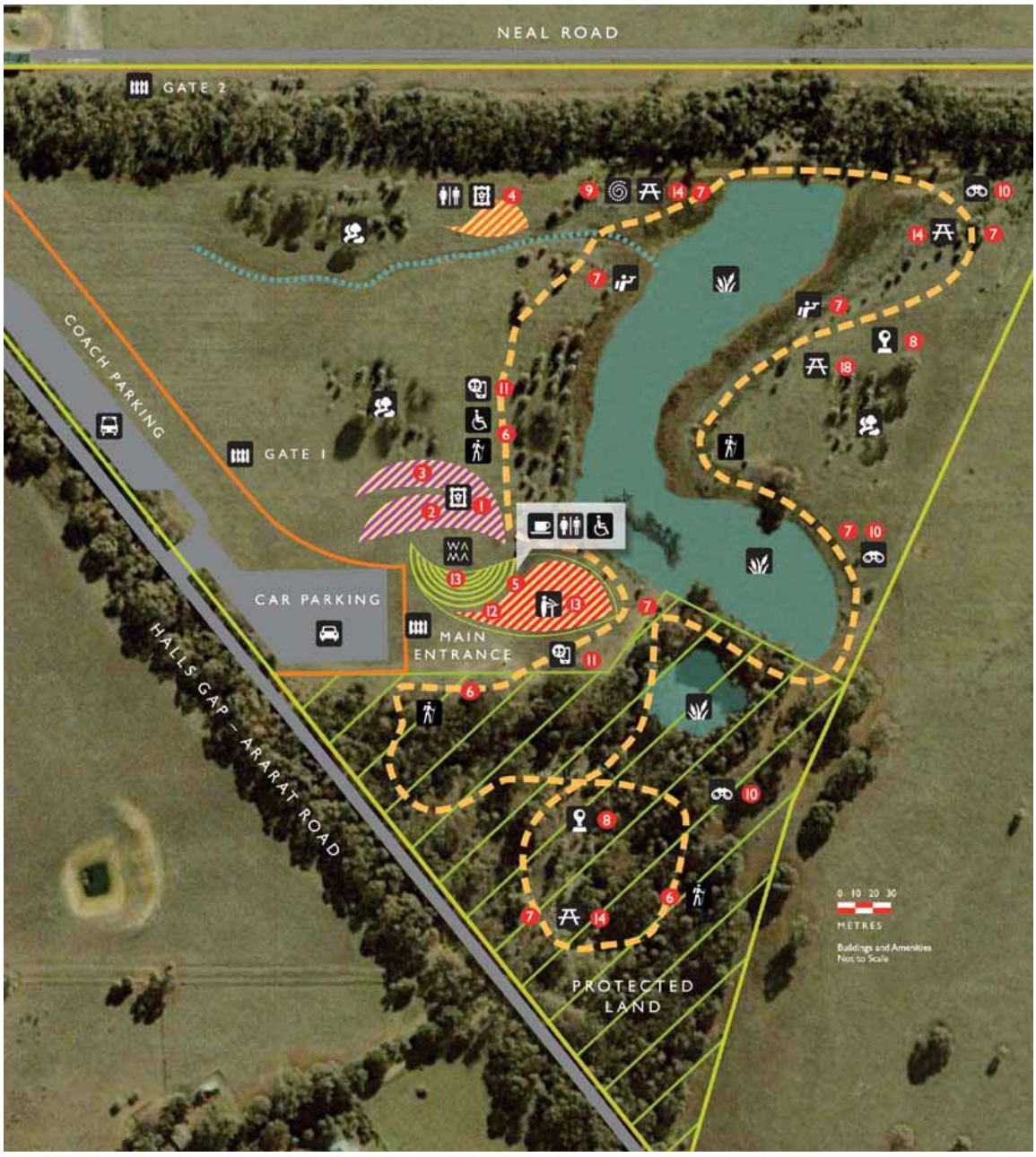
The following are some excerpts from the WAMA Vision Statement:

“WAMA is a project of international and national significance. It will recognise and showcase the work of outstanding wildlife artists, from the early accomplishments of our first inhabitants through to the present day. Their artistic work will be displayed in a national iconic purpose-built museum and gallery on a site in the northern Grampians Ranges (Gariwerd) Victoria, Australia.

As a major arts and cultural destination, WAMA will complement other tourism attractions in the region, sharing the spectacular backdrop of the Grampians Ranges.

The museum with its supporting studios and conference facilities will be surrounded by wetlands and Australian native gardens on 15 hectares of natural bushland.

The site in its entirety will be an educational, training and interpretative centre for wildlife art in all its forms. It will be developed to create a botanical landscape featuring the best of Australian flora, with a covenanted area dedicated to Grampians species. The grounds will incorporate sculptures and carvings reflecting Australia's diverse natural history."



Aerial Photo of WAMA showing potential Site Plan.
All the open land in top left corner will become the Botanic Gardens.
Open land in top right will become Grampians flora gardens.

The WAMA concept arose out of discussions with local artists and founding members of the Grampians Wildlife Art Society when it conducted the first Grampians Wildlife Art Festival in 2009. The vision has rapidly progressed as a result of the involvement of diverse local groups and commitment from prominent wildlife artists, botanists, conservationists and tourism operators. Significant progress towards the vision has already been made.

Milestones

These are some of the milestones that have been achieved since the launch of the vision in April 2011:

- WAMA vision statement released to local Grampians community at gala launch in Stawell.
- Halls Gap site acquired through donation from private benevolent contributor.
- Victoria's Governor Chernov visits site with Mayor and Chief Executive of the Northern Grampians Shire Council.
- Concept development plan presented to Chief Executive Tourism Victoria.
- Northern Grampians Shire Council commits to Heads of Agreement.
- Grampians Tourism recognises project as a strategic priority for the region.
- Prominent wildlife artists and major galleries publicly support WAMA vision.
- Support continues to flow in from prominent artists and galleries in the wildlife art field from Australia and overseas.
- Taxation Commissioner grants WAMA Deductible Gift Recipient and tax exemption.
- In September 2012 WAMA releases updated Vision Statement and Project Plan.
- Audit commences to record existing flora and fauna on site.
- Preliminary site works begin to protect indigenous species and consolidate wetlands.
- Commitment by the Royal Botanical Gardens Cranbourne to advise and support the development of the WAMA botanical gardens.
- Support from the Faculty of Architecture and the Faculty of Landscape Architecture of the University of Melbourne for the design of the WAMA Museum, Gallery and gardens.
- Support from local conservation groups to assist with the restoration and bio-diversity enhancement of the site.

It is most exciting to have John Arnott and Jill Burness from Cranbourne Botanical Gardens as strong supporters. John and Jill have already written up a Site Design paper for us, and facilitated a Collections Planning Workshop. The outcome of this is that we now have Rodger and Gwen Elliot as well as John and Jill and a number of other talented members in our Collections Planning Team. Once soil testing and site analysis has been completed we will meet and formulate our collections plan. This will become the template for just what we plant on the site.

At our first Collections Planning Workshop facilitated by John Arnott at Cranbourne Botanic Gardens, we put up a number of potential feature planting collections for WAMA. These included a collection of rare and endangered members of the *Proteaceae* family, particularly *Grevillea, Dryandra* and *Banksia*. The *Grevillea* collection will be

actively supported by the Grevillea Study Group which is part of the Australian Native Plants Society.

The Grevillea Study Group has an extensive living collection of the genus *Grevillea*, and has offered to supply plants and propagation material of any species that WAMA requires for their collection. There are many *Grevillea* that are close to extinction in the wild. For example *Grevillea scapigera*, the Corrigin Grevillea, was all but lost to the world, but was saved from extinction by the efforts of members of the Grevillea Study Group, who sent cutting material to Mt Annan Botanic Gardens, NSW after the last known plant at Corrigin airport died. Mt Annan staff soon had *Grevillea scapigera* in tissue culture, and were able to send cultures back to Kings Park in Perth. Kings Park grew on many plants and before long had developed a highly successful ex-situ cultivation scheme which established many hundreds of plants back into bushland in the Corrigin area where the species used to grow. By collecting seed from these initial plants they have now built up a reasonable gene pool of the species and have many thousands of plants growing in the wild.

We have also been offered support from the Dryandra Study Group, the Royal Botanic Gardens Cranbourne, staff from Parks Victoria, Grampians National Park, as well as numerous individuals and collectors from across Australia.

It is also wonderful that we have the honours students from Melbourne University Faculties of Architecture and Landscape Architecture, headed by Professor Phillip Goad and Ginny Lee, working on the site, with guidance from two top Melbourne aarchitecture and landscape architecture firms, developing in tandem designs for the buildings and gardens. It will be very exciting to see the outcomes of these folios.

It would be good to have members of the Australian Flora Foundation and ANPSA visit the site and become involved. Please feel free to contact me at neil@whitegumsaustralia.com if you would like to inspect the property or help out in any way. We will soon be setting up a 'Friends' group and I will keep readers informed of this for those of you who are interested.

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1. We welcome Neil Marriott as a guest contributor. Neil is an environmental consultant who lives near the Grampians in western Victoria. He is joint author of *The Grevillea Book* (3 Volumes) and *Grassland Plants of South East Australia*. He has authored many professional publications and reports, and numerous articles in journals and newspapers. He has conducted countless flora surveys and assessments of natural areas. Neil has published descriptions of over 30 new species and subspecies of *Grevillea* (jointly), a new species of *Banksia*, and a new species of *Callistemon*. He owned and operated a large native plant nursery for 12 years, and was Regional Manager for Wimmera for the Trust for Nature for 18 years. He has held many office-

bearing positions within the Australian Plants Society, including Victorian President for four years. He is currently the APS federal body's representative on the Australian Cultivar Registration Authority, having served in this position since 1994.

Hunter Wetlands Centre

Paddy Lightfoot[1]

The Hunter Wetlands Centre Australia (HWCA) celebrates its 29th anniversary in June this year.

Professor Max Maddock, an educationist at Newcastle University, was instrumental in founding the Centre. He is a keen bird watcher and ardent environmental advocate.

New education building.

The HWCA was originally the property of a local rugby club. In 1981 the club was forced to close owing to financial problems. In 1983, the site was earmarked for an extension of the Newcastle City Council Astra Street dump and the site was also the preferred location for Motorway 23 to bypass some congested local roads.

Max was agisting his horses on the abandoned Rugby site with its vandalised clubhouse and realised that all four species of Australian Egrets were nesting in a remnant Melaleuca swamp. It was amazing that this swamp had survived relatively intact in spite of fires,

dumping, motorbikes and having had Rugby Union played over some of the wetland. Having travelled the world looking at education centres, Max felt that the club house within its wetland environment would make an ideal environmental education centre for Newcastle and would lead Australia in this education field.

Max with a small committed group of Novocastrians formed themselves as the Hunter Wetlands Group and then successfully lobbied and persuaded the NSW Government to purchase the site for an environmental education centre.

In 1985, a Landscape Committee was introduced to oversee the re-vegetation of the Shortland Wetlands as it was then called. Since those early days this has morphed into the Site Management Committee (SMC) of the HWCA. I have been on both committees since their inception as a representative of the Newcastle Group of the Australian Plants Society (APS) – my brief being to ensure that only Australian plants were to be planted over the 45 hectare site. The current committee consists of Australian Plants Society members together with other interested HWCA volunteers and staff.

In 2002 HWCA was gazetted a Ramsar site. This listing indicates that the wetlands are of international importance under the Ramsar Convention – an international treaty for the protection and wise use of wetlands. Our Wetlands Centre now exists as a complete ecosystem for the passive and active education of people who visit the area, as well as being a refuge for Australian plants and animals.

As a Ramsar site we, as managers, are obliged to remove weeds including those declared as noxious by local government regulations. Weed removal has been underway since 1985. We have never clear felled as we leave adequate un-cleared areas adjacent to weeding sites to provide refuge for small birds and animals. Where, for example, Lantana or Blackberry is cut and pasted the dead material is mounded so these piles form a sanctuary for birds, such as the small wrens, which make good use of these dead plants.

Only local Australian plants are planted in re-vegetation sites. Around the man-made ponds, plants from the lower Hunter are used. Close in to the buildings, plants from anywhere in Australia are planted to demonstrate which species are suitable for growing in Newcastle gardens, for aesthetics and for bird attraction.
All plantings have been recorded on data base – species, numbers, who planted and in which zone.

For practical purposes tree planting has been completed and our focus is now on replanting understory shrubs plus reeds, sedges and grasses for small animal habitat. Our total planting number at this stage stands at over 200,000.

Long stem rainforest plants ready for planting - volunteer Steve Wisniewski

One of our new series of birdhides

We have a demonstration rainforest adjacent to Ironbark Creek and our outdoor classroom. Rainforest plants here are from anywhere on our east coast, useful for education purposes. Flight paths have been left to the main ponds to be used by those avian jumbos, the swans and pelicans.

Tracks have been constructed for visitors to experience the interface between themselves and the local fauna, for their passive education as well as for their relaxation. The main tracks are wide enough for maintenance and emergency vehicle access as well as for disabled visitors. The tracks also are required to be wide enough to accommodate a group of students moving as a group with their teacher and not of necessity in single file. The perimeter predator restraining fence, designed to keep feral animals out of the wetlands is mowed on both sides as a fire break and to enable easy maintenance.

There are many locations on site left as wildlife refuges, especially for birds and small mammals, where visitors cannot access. Visitors can easily see 50 species of birds on a walk around the 45 hectare site. With re-vegetation there are many bush birds to be twitched as well as the water birds.

With the shrinking of Government financial support we are keen to increase our visitation to become financially self-sustaining. Two teachers are currently employed by the NSW Government in our new Education Centre and they act as resource teachers for 8000 students visiting annually. The teachers work from a state of

the art education building which nestles beside the main “BHP Pond” and was completed two years ago.

The APS and HWCA manage adjacent nurseries. The APS grow Australian plants suitable for Newcastle gardens. They sell at local shows and to the public on a Thursday morning. Funds raised are used to support the Australian Flora Foundation, the Hunter Region Botanic Gardens and the Wetlands. They are promoting our wonderful Australian flora.

APS propagators enjoy elevenses

The HWCA nursery grows plants used in our re-vegetation work. Without our volunteers the HWCA could not continue as a viable concern. Volunteers feel they are making an effort for the future of the City of Newcastle and its citizens. Their volunteering gives each one a sense of personal achievement and a feeling of enjoyment in performing community service alongside others who hold similar environmental interests and concern.

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1. Dr Paddy Lightfoot is an AFF Councillor. He is a retired medical practitioner and resides in Newcastle. He has been involved in the development of the Hunter Wetlands Centre since its inception in 1975. Paddy has served on the committee of the APS Newcastle Group since 1976. For his work in promoting Australian native plants in the Newcastle area he was elected a life member of APS NSW in 1992. He was awarded the Newcastle Medal in 2006 for services to the City and Community of Newcastle.

Creating a hedge with Australian plants

Angus Stewart

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Callistemon 'Perth Pink'

One of the principal defining features of many of the great gardens of the world is their hedges. European gardens long ago elevated the hedge to an art form with centuries old plantings forming the backbone of gardens such as Versailles in France and Hidcote in England. All sorts of interesting trees and shrubs are used for hedging and topiary, but several species dominate, namely English box (*Buxus sempervirens*), Yew (*Taxus baccata*) and Hornbeam (*Carpinus betulus*). Many other species are used of course, but there are millions upon millions of plants of the three species I have mentioned, and these are used all over Europe as hedges.

The reason for such lack of diversity is the adaptability and sustainability of the species mentioned, as they will grow for centuries and thrive on the constant cutting that is demanded of them. Understandably early Australian gardeners relied on these tried and trusted options, particularly in southern Australia where the climate is conducive. However, the further north you go the less amenable they become. Some of the other more adaptable plants introduced for hedging, such as privet, have now become environmental weeds of significance in very damaging proportions. Wouldn't it be good if there were Australian plants that are better adapted to our conditions to fill the bill?

Many of the shrubs found in the understorey of eucalypt forests around Australia are adapted to regular scorching from bushfires. Thus, many have the capacity to rise again when razed to the stump, whether it is by fire or the human hand via the pruning shears. Thus it is eminently possible to design a hedge from an Australian native plant no matter where you are, from the tropical north to the cool temperate climes of Tasmania.

Callistemon hedge

The bottlebrush (*Callistemon* species and cultivars) is without doubt my favourite option as a hedge plant for a variety of reasons. Not only do they cope with serious pruning, but also they are adaptable to the extreme range of climates and soils that Australian gardeners face. There are also so many different species and cultivars to choose from, ranging from the very compact Callistemon ‘Little John’ and ‘Matthew Flinders’, to the head high ‘Great Balls of Fire’ or ‘Captain Cook’, then on up to several metres and beyond with sturdy cultivars such as ‘Perth Pink’, ‘Kings Park Special’ and ‘Endeavour’. They are rarely seen clipped into formal hedges but this is something that can easily be made to happen.

Lilly Pillies (*Syzigium* and *Acmena*species) have also become extremely popular with the hedging fraternity due to their glossy foliage, fluffy white or pink flowers and colourful, bird attracting fruits. As they have become more common, however, their pest problems have increased and the one which worries many Lilly Pillies is the pimple psyllid (*Trioza eugeniae*) which causes masses of unsightly ‘pimples’ on the new growth of plants. It can be kept at bay through two easy strategies, the first is to simply prune off affected growth when you prune your hedge; the second is to plant cultivars and species that are less susceptible such as *Acmena smithii* and *Syzigium australe*.

Syzygium australe hedge

Cultivars of Lilly Pilly that I would recommend for all round performance and tolerance of pests are the various forms of *Acmena smithii* with the stand out in my mind being 'Allyn Magic' and to a lesser degree *Syzygium australe* and its cultivars such as 'Tiny Trev'.

Acmena 'Allyn Magic'

Westringia longifolia

The various species of *Westringia* are also fantastic hedge plants with coastal rosemary (*Westringia fruticosa*) already well established with the gardening public as a reliable hedge and screen

plant. There are other species worth considering such as *Westringia longifolia* and *Westringia glabra* as they all have the attributes to make great hedge plants.

Another group that is underutilised is Grevillea, with the ones to consider being the many small-leafed species and cultivars of Grevillea such as *Grevillea rosmarinifolia* and *Grevilllea juniperina*. Even the blue leafed eucalypts such as *Eucaluptus cinerea* can be used to make a very novel hedge if you are prepared to religiously prune it every few months. If it can be done with yew trees in Europe why not eucalypt hedges in Australia?

Coppiced *Eucalyptus cinerea* hedge

Big old trees grow faster, making them vital carbon absorbers

Adeshola Ore

Reproduced from http://theconversation.edu.au/

Large trees don't slow down with age.

Large, older trees have been found to grow faster and absorb carbon dioxide more rapidly than younger, smaller trees, despite the previous view that trees' growth slowed as they developed.

Research published in the journal *Nature* shows that in 97% of tropical and temperate tree species, growth rate increases with size. This suggests that older trees play a vital role in absorbing carbon dioxide from the atmosphere.

William Morris, a PhD candidate from the University of Melbourne involved in the study, says that prior to the study, the common assumption was that as trees aged, their growth rate and carbon absorption decreased. Morris explained that the belief came from two different lines of evidence:

"First, it has been shown that at the whole forest level, young forest acquires mass faster than old-growth forest. Second, studies have shown that the leaves of older trees are less efficient at photosynthesising than the leaves of younger trees."

But the new study, which involved 403 tree species and was led by authors from the US Geological Survey, examined carbon storage at the level of individual trees rather than forests.

The findings highlight the value of large, older trees, which have been declining in number, as important carbon sinks.

“Previously we thought of big old trees as simply carbon stores. But now we know that not only are they storing lots of carbon, they are also sequestering more carbon and faster than smaller trees,” said Morris.

David Lindenmayer, a professor of environment at the Australian National University, described findings of the study as “immense”, with implications of global significance.

“It highlights another reason why it is really important that we grow as many areas of forest through to being old growth forests as possible,” he said.

“The more carbon we can store in forests, the more chance we have of reducing the mega-effects that are going to arise from massive climate change. Storing large amounts of carbon in forests is absolutely critical to that and the way you do that is you have big, old trees.”

Bill Laurance, a professor at James Cook University’s Centre for Tropical Environmental and Sustainability Studies, agreed that the study reinforces the importance of large, older trees for absorbing carbon.

“That underscores the importance of saving old-growth forests, which harbour most big old trees, if we want to have the maximum benefit for slowing climate change,” he said.

The findings of the study highlight the importance of older trees for forest management programs

The study is also expected to have implications for forest management plans. Morris explained that the new findings can change how individual trees are managed.

“As we now know that the biggest trees are the most valuable as both carbon stores and carbon sinks. If a manager’s goal is to maximise carbon uptake, then maintaining larger trees may be an efficient way to do so,” he said.

Lindenmayer said that the study highlights flaws in forest policy in Victoria and Tasmania, where old-growth forest is often cleared for pulp and timber purposes.

“Native forests, in terms of their value as carbon storage, significantly outweigh their value as pulp and timber. When you add that to the value of biodiversity and water, it’s pretty clear what forest policy should be,” he said.

The Australian Flora Foundation is an Australian non-profit non-government organization dedicated to fostering scientific research into Australia’s flora. We are totally independent, and all office bearers are volunteers.

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- Dr Trevor Whiffin (LaTrobe University)

Email Contacts

Peter Goodwin (President): petergoodwin@internode.on.net
Ian Cox (Editor and Secretary): itcox@bigpond.com

Australian Flora Foundation Inc.
ABN 14 758 725 506
PO Box21
Dulwich Hill NSW 2203
http://www.aff.org.au/