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## CHRISTMAS SPECIAL

For the rest of this year our publications are for sale at a special price:

- Sydney's Natural World \$20
- Field Guide to the Bushland of the Lane Cove Valley \$20
- Understanding the Weather \$15
- Middle Harbour Valley Maps \$10
- Lane Cove Valley Map \$5

Order your books and maps now in time for Christmas! Order form is on the website and the back page of this newsletter.

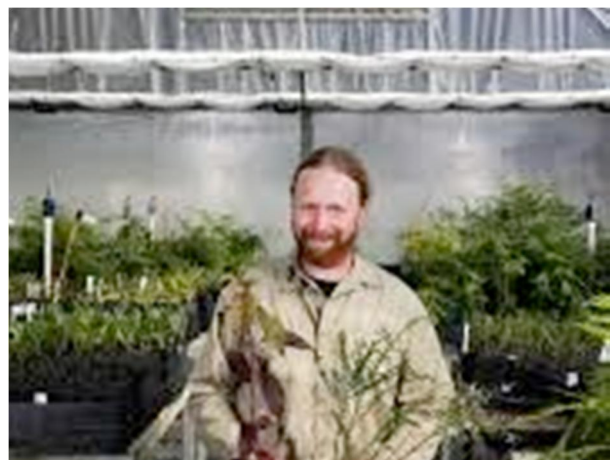
## STEP EVENTS

- **Sunday 20 September** – walk Bents Basin (see page 2)
- **Sunday 18 October** – walk Rawson Park to Bradleys Head Loop (see page 2)
- **Tuesday 27 October** – annual general meeting and talk on birds (see below)

### Annual General Meeting and Talk on Birds

Date: Tuesday 27 October  
Time: 7:45 pm  
Venue: St Andrews Uniting Church,  
Chisholm Street, Turramurra

After our annual general meeting, Ross Rapmund will give a talk about the birdlife of northern Sydney. Ross is co-ordinator of the Hornsby Council Community Nursery with a wonderful knowledge of birds as well as native plants.



### Call for Nominations of Office Bearers

Nominations for office bearers and committee members should be made in writing and received by the secretary at least seven days before our AGM. Nomination forms are available from [secretary@step.org.au](mailto:secretary@step.org.au).

## STEP Inc

Community-based Environmental Conservation since 1978

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www.step.org.au

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### Walk: Bents Basin (Wallacia)

Date: Sunday 20 September  
Time: 9:45 for 10 am start  
Meet: Bents Basin northern car park (there are two entrances); \$7 parking if you don't have a NPWS sticker.  
Bring: Lunch and walking shoes or joggers, plant ID book, bird book, camera  
Contact: John Martyn (0425 830 260, johnmartyn@optusnet.com.au)  
booking isn't essential but your mobile number is useful if you're lost or late

### How to get there

Allow roughly 1 h 15 min via M2, M7, M4 and Mulgoa Road.

Bents Basin is a huge, deep pool on the Nepean River which is likely to have formed as a plunge pool at the bottom of the rapids in the gorge when the river suffered massive floods. The escarpment of the Nepean Fault forms the backdrop creating a sheltered, east-facing hillside rich in tall eucalypts and rainforest species. We will go on three shortish walks:

- an 80 m elevation undulating climb on pathways and steps to Caleys Lookout (named after famous botanist and Banks protégé George Caley);
- we'll wander through the classic alluvial vegetation community downstream from the basin: this is one of only a handful of localities where Camden White Gum (*Eucalyptus benthamii*) grows – tall and stately;
- we'll head in the other direction to check out Little Mountain – home of rare and endangered plant species – and view the Hawkesbury Sandstone bending down steeply into the Nepean Fault.



Measuring a rare Camden White Gum (*E. benthamii*) 1.4 m x 40 m

### Walk: Rawson Park to Bradley's Head Loop (Mosman)

Date: Sunday 18 October  
Time: 1:15 for 1:30 pm start  
Length: 5 km (3 hours, easy pace)  
Grade: Mostly on well-made tracks; the climb out of Clifton Gardens is steep in parts and some wet rocks may be encountered – recommend boots with a firm grip  
Meet: Rawson Park car park off Cross Street  
Contact: Andrew Little (aalittle@optusnet.com.au)  
booking recommended

This loop is one of Sydney's iconic harbour walks through beautiful Sydney Red Gum woodland. Endangered littoral rainforest is found on some of the lower southern slopes and there are spectacular harbour views.

We will traverse the loop in an anti-clockwise direction along Bradley's Head Road which includes some of Mosman's finest homes.



### STEP TRACK HAS NEW STEPS

The spring wildflowers are magnificent this year. There is no better place to see them than along the STEP Track in South Turramurra.

Thanks partly to an Environmental Levy grant the track has been partially repaired. Now is the time to check them out.



## A GREATER SYDNEY COMMISSION?

Last year the NSW Government's planning legislation was rejected because communities were going to be left out of significant parts of the decision making process. This last week the government announced the structure of the Greater Sydney Commission that could be just as bad.

The Greater Sydney Commission will take responsibility for implementing the metropolitan strategy and local district plans. It is designed to cope with the massive demands of accommodating the population growth imposed by the Australian Government.

The structure of the Greater Sydney Commission will include a chair appointed by the Minister for Planning; independent environment, economic and social commissioners; six district commissioners nominated by councils and three government heads from planning, transport and treasury.

In the view of the Better Planning Network the structure reinforces government decisions, with key planning decisions made outside the democratic process. The announcement also appears to align with the government's proposed council amalgamation agenda.

## UNIQUE GEOLOGY IGNORED IN HORNSBY QUARRY PROJECT EIS

Prior to the state election in March, Matt Kean, the member for Hornsby, announced an agreement between Hornsby Council and the state and federal governments to share the financing of a plan to fill the void left by the Hornsby Quarry using spoil from the NorthConnex motorway tunnel. The filled void would then be converted to 40 ha of open space.

This seems to be an ideal solution. Hornsby and nearby suburbs have become a forest of apartment buildings. All these new residents need more recreational space close to public transport.

The Environmental Impact Statement (EIS) was released in August with a closing date for submissions of 4 September.

The filling process will take two to three years starting in early 2016. It will be a nightmare for the local community with up to 70 truck movements per hour entering and leaving the access point via Bridge Street, Monday to Friday (7 am to 6 pm) and Saturday (8 am to 1 pm). Mysteriously, the size of the open space has shrunk to 35 ha.

The EIS is the usual massive document – over 400 pages plus appendices. However there is a glaring omission that has been highlighted in the submission from the Geological Heritage

Subcommittee of the NSW Division of the Geological Society of Australia (GSA) and STEP. This is consideration of the volcanic diatreme that has been excavated and exposed by the quarry.

As pointed out in the GSA submission:

... the significance of the geological phenomenon uniquely exposed in the quarry wall at the eastern end of the site has been overlooked and disregarded, leading to formulation of a plan for infilling the quarry which will largely obliterate this feature of state, national and arguably global significance.

The GSA argues that the benches cut into the eastern wall to a depth of 40 m must be retained clear of loose rock and spoil for ease of future access for researchers, students and the general public. The rocks and other materials in the diatreme provide information that is essential for an understanding of the creation of the Sydney Basin.

In summary the GSA states:

The existing report is inadequate, incorrect and appears to have been undertaken by consultants with limited (or perhaps no) geological knowledge. Furthermore, information readily available in the scientific literature has been ignored or misinterpreted.

The GSA strongly recommends that the geological aspects of the EIS should be revised with the assistance of a geoheritage specialist.

STEP is also concerned about the loss of more bushland. The bushland is acknowledged to be degraded but it contains tree species that are part of the habitat of the endangered Gang-gang Cockatoo. Some biodiversity offsets will be funded by the project but these usually involve the restoration of existing bushland that has been allowed to deteriorate, not the creation of new areas.

View GSA's submission on [www.gsa.org.au](http://www.gsa.org.au).



## **CHANGES MADE TO 10/50 LEGISLATION BUT BASIC PROBLEMS REMAIN**

The report on the review of the 10/50 bushfire clearing legislation was released in August. The NSW Government is implementing all 30 recommendations of the review. However the fundamental problem with the legislation remains. Residents of urban areas that are defined as bushfire prone land can chop down trees within 10 m of their house or attached structure without obtaining expert advice on whether this will reduce bushfire risk. This is the reason over 95% of the 3,579 submissions received called for repeal of the legislation.

Prior to the introduction of the new clearing code residents had to obtain approval to remove vegetation for bushfire protection. In the process expert advice was provided on vegetation management by the local council or Rural Fire Service. The government claims that this was too much red tape and too costly.

Now residents are left on their own to assess their bushfire risk and it appears that often convenience and water views are more important.

Some of the faults of the legislation have been recognised. The fact there are 30 such faults is a damning indictment of the government in enacting such poor legislation that has already led to the destruction of over 5,000 trees in the Sydney region alone, many of which were vital habitat for wildlife and not a bushfire risk.

Most of the amendments are to exclude areas that should have been recognised in the first place, for example:

- world heritage areas, Ramsar wetlands, national parks and nature reserves
- core koala habitat
- critically endangered communities and plants such as Blue Gum High Forest
- wetlands, mangroves, saltmarshes and littoral rainforest
- land within 100 m of coastline and estuaries
- Lord Howe Island

The anomaly that excluded protection for riparian zones in most of Sydney has been removed.

Land near category 2 classified bushland will now be excluded from the legislation and councils can classify small urban reserves as category 2 even if they contain category 1 vegetation.

The 10/50 metre rules no longer allow measurements from a neighbour's house unless the neighbour gives written consent.

As can be seen from the amendments, the original legislation ignored some ridiculous situations where vegetation could not possibly be a bushfire hazard.

The code still overrides the bulk of the Threatened Species Conservation Act and local council tree preservation orders.

The fight continues ...

## **WILL THERE BE A BAN ON PLASTIC BAGS?**

The issue of waste and litter from single use plastic bags handed out by supermarkets and other stores has been discussed for many years. For example a detailed research paper was produced by the NSW Parliamentary Library Research Service back in May 2004. This paper recommended that these plastic bags be phased out within five years (see [www.parliament.nsw.gov.au/prod/parliament/publications.nsf/key/ResearchBf052004](http://www.parliament.nsw.gov.au/prod/parliament/publications.nsf/key/ResearchBf052004)).

So far the main tactic has been various campaigns to *Say NO to Plastic Bags*. Several retailers discourage the use of plastic bags by charging for their use. Overall the outcome in NSW in volume of bags used and litter levels has been minimal.

An example of the damage caused by plastic litter occurred in Sydney Harbour recently. Some fishermen returning from a fishing trip noticed a Southern Right Whale in the upper reaches of Middle Harbour. The whale 'had a big scar on his back and had some fishing line and two plastic bags on his head'. The distressed whale swam alongside their boat allowing the men to remove the life-threatening bags from its head.

In the words of Jeff Angel, Convenor and Director of the Boomerang Alliance of 32 allied groups:

We estimate that at least 16.5 million plastic bags enter the litter stream in NSW every year. Just 8.7 plastic checkout bags contain enough embodied energy to drive a car 1 km. We need to stop this waste and environmental damage.

An Omnipoll survey conducted in July showed that 64% of NSW residents support a total ban on single use plastic bags given out at supermarkets and stores. Where a ban is already in place as in SA and NT the support rises to 81%, demonstrating public acceptance once the measure is established.

The NSW Parliament held a debate on banning single use plastic bags on 13 August in response to a petition signed by 12,472 people. Following the debate the NSW Environment Minister, Mark Speakman, declared the government was committed to accepting the challenge and will discuss options at a further meeting of environment ministers.

Past experience has shown little action at a national level. As with the experience of the container deposit legislation, NSW will have to act on its own and follow SA and NT.

## WHAT PLASTIC IS DOING TO MARINE LIFE

The impact on marine life from plastic may be most obvious in coastal regions, but in August CSIRO released the results of the first analysis of the threat posed by plastic pollution to pelagic bird species worldwide. The report is published by the National Academy of Sciences of the USA ([www.pnas.org/content/early/2015/08/27/1502108112](http://www.pnas.org/content/early/2015/08/27/1502108112)).

The study examined scientific research since the 1960s into seabird deaths. The analysis of published studies showed that the amount of plastic in seabirds' stomachs has been climbing over the past half-century. In 1960, plastic was found in the stomachs of less than 5% of seabirds, but by 2010 this had risen to 80%.

The researchers then used a statistical model to predict that by 2050, more than 90% of the world's seabird species will be accidentally eating plastic, unless action is taken to clean up the oceans.

Why so much more plastic? Global plastic production is increasing exponentially, with a current doubling time of 11 years; thus, between 2015 and 2026, we will make as much plastic as has been made since production began.

What damage does plastic do to seabirds?

The research team had previously found nearly 200 pieces of plastic in a single seabird. These items include a wide range of things most of us would recognise: bags, bottle caps, bits of balloons, cigarette lighters, even toothbrushes and plastic toys. Seabirds can have surprising amounts of plastic in their gut.

Working on islands off Australia, the study found birds with plastics making up 8% of their body weight. Imagine a person weighing 62 kg having almost 5 kg of plastic in their digestive tract. And then think about how large that lump would be, given that many types of plastic are designed to be as lightweight as possible.

The more plastic a seabird encounters, the more it tends to eat, which means that one of the best predictors of the amount of plastic in a seabird's gut is the concentration of ocean plastic in the region where it lives.

Surprisingly, CSIRO study found that the area with the worst expected impact is at the northern boundary of the Southern Ocean and the Tasman Sea, between Australia and New Zealand. This region is far away from the subtropical gyres, dubbed 'ocean garbage patches' that collect the highest densities of plastic. Although this area has low anthropogenic pressures and concentrations of marine debris it also has a diversity ingestion prone seabird species.

Ingestion is known to have many effects, ranging from physical gut blockage to organ damage from leaching toxins. There is a vicious circle. Birds lose condition because the weight of the plastic in their gut creates the impression they have eaten enough. They don't receive the nutrition needed to travel the long distances necessary to find sufficient food.



Kuta Beach, Indonesia, strewn with plastic litter, *The Guardian* 19 March 2015

A possible example of the impact of plastic ingestion is the experience in spring 2013 of a high level of short-tailed shearwater (mutton birds) deaths (known as a wreck). Large numbers of dead or dying birds were found washed up on beaches from the Gold Coast to Tasmania.

These birds migrate 15,000 km from the Bering Sea, between Alaska and Japan, to Australian shores in late September to nest. Seabird biologist, Dr Jennifer Lavers from Monash University has studied these birds. In a *Sydney Morning Herald* report she said they had eaten little on their journey and were exhausted by the flight.

She said it was normal for wrecks to occur every 10 years, and this usually indicated a particularly poor year for the birds with storms or no fish available on arrival. However, major wrecks had occurred every second year since 2007, pointing to a wider problem with implications of a future major reduction in the population. She wondered if the ingestion of plastic was another factor.

Dr Lavers has also studied flesh-footed shearwaters (*Puffinus carneipes*) on Lord Howe Island and found that 90% contain plastic. In 2011, one chick was found to have more than 275 pieces of plastic in its stomach (equivalent to an average human ingesting 10 kg of plastic). Chicks that ingest large amounts of plastic have poor body condition and are likely to suffer reduced juvenile survival. Not surprisingly, flesh-footed shearwater populations on Lord Howe Island and in New Zealand have declined significantly over the past few decades.

## **TIME FOR THE 'GREEN TAPE' DEBATE TO MATURE: JOBS AND THE ENVIRONMENT ARE NOT IMPLACABLE FOES**

Alan Dale (Professor in Tropical Regional Development, The Cairns Institute at James Cook University) originally published on *The Conversation* on 25 August 2015

The highly charged debate over the proposed Carmichael coal mine, which culminated in Attorney-General George Brandis's decision last week to propose winding back environmental legal protections, has exposed the simmering tension between 'jobs' and 'the environment' on Australia's political landscape.

On one hand, those seeking to invest in the development of Australia's natural resources and jobs growth have been making a clear case that Australia's system of assessment and approval for major projects is riddled with procedural uncertainty.

On the other, environmental advocates and local communities feel that the current system does not adequately protect the environment – correctly pointing out Australia's less than stellar record in preventing species from going extinct.

As a nation, however, we need to lift our game on both fronts.

Investors in the Australian economy and those seeking jobs and growth need certainty with regard to where and how they invest.

Equally, to avoid warfare (or 'lawfare') on a project-by-project basis, Australia's environmental advocates and local communities need certainty too. They need clarity about where and how economic development can occur without harming our environmental heritage.

### **A Self-defeating Conflict**

I have written previously on *The Conversation* about the reforms Australia should adopt to avoid a self-defeating choice between jobs and the environment. There is no silver bullet, but the right reforms could see the economy continue to grow while also reducing the pressure on Australia's unique biodiversity.

Such reforms could actually be cheaper for governments and industry in the long run, but they do require leadership and commitment in their design, deployment and continuous improvement. This leadership needs to come not just from the three levels of government, but also from industry and environmental advocates too.

The alternative is that the nation will increasingly be seen as a serious risk for investors, while biodiversity values continue to decline.

The government's bid to wind back third-party appeal rights by repealing all or part of section 487 of the Environment Protection and Biodiversity Conservation Act aims to deny non-local environmental groups the automatic right to mount a legal challenge against environmental approvals, while reserving that right for local landholders and communities.

This distinction ignores the fact that in many cases, the environmental impacts of major proposals extend well beyond the project boundaries. It also ignores the fact that local communities and farmers often rely on regional, state or national environmental advocates to support them in disputes over development impacts.

The political fallout from any moves to reduce these rights will cut deep in both the city and the bush. But it could herald legal uncertainty for industries seeking to invest in development – precisely the opposite effect to what was intended. The reason is that if the political uncertainty oscillates across three-year political cycles, it is likely to hamper the planning, development and operation of major development projects, which take place over much longer timescales.

### **Change the Culture, not the Law**

Instead of working to reduce legal environmental protections and appeal rights, there is a need to change the culture of the nation's major project assessment and approvals processes. At the moment there is an incredible tension between governments seeking to champion major new economic ventures while at the same time being responsible for ensuring that environmental regulations are met.

What's more, most regulation within governments is focused on technical aspects of the environment (such as the impact on skinks and snakes in Carmichael's case), rather than recognising that disputes about projects are effectively a socio-political issue (that is, they reflect wider community concerns about species loss or climate change). This means the project assessment process needs to deal more fundamentally with these social impacts.

Assessment needs to be able to identify major social conflicts associated with projects, and to facilitate (as far as possible) acceptable and socially agreed solutions. One approach may be to encourage the use of independent, third-party facilitators acceptable to governments, project proponents and affected communities, rather than continuing with the current situation which often sets the government itself up as one of the protagonists in the conflict.

Another useful change would be to identify and deal with conflicts early in the process – something that Commonwealth and state/territory governments don't currently do. The current system simply defers conflict until the final project approval stages, leading to legal challenges late within the process. But changing laws to close down the opportunities for appeal will only succeed in shifting these conflicts into ever-higher legal challenges, or even into the political arena (as we saw last week), making our development assessment processes even more unstable.

Ultimately, this state of affairs doesn't benefit anyone – by playing off Australian jobs against the environment, it is actually harming both.

## **ABBOTT GOVERNMENT'S VENDETTA AGAINST THE ENVIRONMENT CONTINUES**

### **Tax Status of Donations to Environment Groups**

The Australian Government is reviewing the tax deductibility status of donations to environment organisations. Those members of parliament who initiated the inquiry evidently have no problem with groups that do 'on the ground' activities such as planting trees but apparently they hate the idea that there are some groups that criticise government policies. Isn't this what democracy is all about?

Industry is able to fund lobby groups that promote their vested interests and they have deep pockets when it comes to their advocacy and advertising. The humble environment organisation usually depends on tax deductible donations from individuals to sustain their work.

These organisations employ people with expertise to facilitate constructive reviews of government policies. They also provide a vital role in informing the public about decisions that may not be generally publicised. Usually environmental protection measures are introduced in response to community pressure.

Ultimately the objective of green groups is to promote public welfare by trying to prevent actions that will harm current and future generations.

### **Plan to Limit Challenges to Government Decisions under the EPBC Act**

The Australian Government is already in the process of handing over to the states most powers for decision making in matters of national environmental significance under the Environment Protection and Biodiversity Conservation (EPBC) Act. In the meantime the decision of the Federal Court to set aside the Carmichael coal mine approval has generated a hysterical reaction from the Attorney General George Brandis who called the challenge 'vigilante litigation' and said 'the people who

challenged this are determined to wipe out Queensland's biggest industry.'

The decision was simply that the government did not do its job properly in omitting to consider the impact on threatened species, the yakka skink and ornamental snake. Sadly this does not mean that the decision is final but in the meantime it looks likely that other forces such as the decline in the coal price will stymie the project.

However the government acted swiftly in trying to severely limit access to the courts to challenge approvals given under the EPBC Act. Existing rights to challenge EPBC Act approvals are already strictly limited so that only 27 out of a total of 5,500 projects referred for federal approval have been challenged. The government has submitted a bill into parliament that will restrict the right to challenge to those 'whose interests are adversely affected by the decision'. The common law has taken this to require a 'special interest'. The bill is now being considered by a Senate Committee.

## **IT'S LIKE SHAZAM, FOR PLANTS**

Ever heard of Shazam? It's an app that tells you the name of that song you just can't remember. Well now there's promise of an app to identify plants.

There are more than 250,000 flowering plants on earth, but until now the only fool-proof way to identify them was to ask your friendly, neighbourhood botanist.

A project by a computer science researcher at Edith Cowan University, WA aims to automatically identify plants using high-tech image recognition software. School of Computer and Security Science PhD candidate Oluleye Hezekiah Babatunde has developed a computer program which can identify the species of a plant based on a digital photo of a single leaf.

'The program uses a combination of highly complex mathematical algorithms and artificial intelligence to identify leaves based on their colour, shape and texture' he said. 'In testing so far, the program correctly identifies leaves more than 93% of the time.'

The software could have extensive applications in the agricultural sector. The same processes used by the software to distinguish between different species could be used to monitor damage to crops by pests, weather and herbicide according to Mr Babatunde.

'There's potential for farmers to use this tool in an app form to get real-time updates on their crops with a simple smartphone image,' he said.

## RESTORATION OF AN ENVIRONMENTAL JEWEL

The article below has been written by Frances O'Brien, Group Administrator at Wahroonga Waterways Landcare. The site is part of SAN Wahroonga Estate redevelopment that was approved in 2010 after three years of consultation.

STEP was actively involved with this process which, together with submissions from Ku-ring-gai Council, other environment groups and 160 individuals, led to a significant reduction in the number of proposed residential dwellings, and relocation of parts of the school. The development footprint was scaled back so that the amount of conservation land was increased from 18 ha to 34 ha.

STEP's submission is on our website. As the article below highlights, the Wahroonga Estate contains some magnificent bushland including endangered ecological communities such as Blue Gum High Forest and Sydney Turpentine Ironbark. The original plan that was modified included residential development on the east side of Fox Valley Road. This area has one of the finest examples of vegetation transition from shale to sandstone in northern Sydney.

### Following Coups Creek through Wahroonga

Between the busy thoroughfares of Pennant Hills Road and The Comenarra Parkway, in a valley carved by the tributary of the Lane Cove River, lies a 34 hectare stretch of E2 Environmental Conservation zoned bushland. From the slender headwaters in Nanowie Reserve to the rush under the Comenarra Parkway into the Lane Cove National Park, Coups Creek has some remarkable characteristics.

It is home to some of the best remnants of Sydney Turpentine Ironbark Forest and Blue Gum High Forest, whilst the banks of Coups Creek are lined with Kanooka (*Tristaniopsis laurina*) and Bleeding Hearts (*Homalanthus nutans*).

The land is privately owned by the Seventh-day Adventist Church, but is open to the public and maintained by the Grounds Team of Adventist Aged Care (AAC) Wahroonga and the volunteer group Wahroonga Waterways Landcare.

Every week, the many walking trails that wind between the Angophora, over secret creeks and through orchards of Kangaroo Apple (*Solanum aviculare*) are patrolled and re-laid with mulch so that local walkers may enjoy the natural environment.



Crimson Rosella (*Platycercus elegans*) are a common sight

Humans are not the only visitors. A pair of Powerful Owls (*Ninox strenua*) have taken up residence in some of the tallest trees and may occasionally be seen glaring sleepily down at walkers during the day. Coups Creek reverberates with the knocking of Striped Marsh Frogs (*Limnodynastes peroni*) and creaking of Eastern Dwarf Tree Frogs (*Litoria fallax*). The surrounding eucalypts ring with the varied whistles of the Australian King Parrot (*Alisterus scapularis*), and Variegated Fairy-wrens (*Malurus lamberti*) and Eastern Yellow Robins (*Eopsaltria australis*) chirp from Pittosporum.

The bushland did not always enjoy such good health. Colonial logging of Scented Satinwood (*Ceratopetalum apetalum*) for flooring, furniture and building of coaches (hence the other common name, Coachwood), allowed weeds such as Lantana, Privet (*Ligustrum spp.*), Heartseed Vine (*Cardiospermum grandiflorum*) and Asparagus to infest the bush, pushing aside native species.

It is through the efforts of Wahroonga Waterways Landcare and AAC's Grounds Team that the condition of the bush has been vastly improved. The walls of Lantana have been pushed back to give space to native raspberry (*Rubus spp.*) and over 20 species of tiny orchids, including the Dainty Bird Orchid (*Chiloglottis trapeziformis*), the delicate Pixie Orchid (*Acianthus fomicatus*) and the Slender Hyacinth Orchid (*Dipodium variegatum*).



Slender Hyacinth Orchid (*Dipodium variegatum*)



Aside from clearing weeds and mulching the walking tracks, the AAC team has installed small educational signs along the tracks to inform walkers of a particular species or location. Wahroonga Waterways Landcare has installed a community noticeboard near Elizabeth Street, which displays a map of the site and notices for upcoming events.

Wahroonga Waterways Landcare is most active through education. The group frequently runs educational tours for the community and for local schools on topics of climate change, environmental management, stormwater control and ecology. This program has been popularly received by schools, Duke of Edinburgh participants and Scouts for the hands-on approach and diversity of the surroundings.

Establishing the group was simple. Landcare Australia is always open to new groups and individuals keen to take on bushcare, streamcare, cragcare, trackcare, and all the other varieties of environmental care that can possibly be thought of. After speaking with locals walking through the bush and promoting AAC's work, several parents approached the team, asking for supervision for their children undertaking the Duke of Edinburgh program. A volunteer group was established to focus on this community work, and to formalise its activities the regional Landcare group (in this case, what is now Greater Sydney Landcare) was contacted, and Wahroonga Waterways Landcare was registered.



School students at a National Schools Tree Day event organised by Wahroonga Waterways Landcare

Members of the public are always welcome to visit Coups Creek, as long as they keep to the trails, take their rubbish with them, and leave the natural habitat undisturbed; as they say – 'take only photographs, leave only footprints'.

Those interested in volunteering or more information can contact the Group Administrator, Frances O'Brien, at [francesobrien@adventist.org.au](mailto:francesobrien@adventist.org.au).

## AUSTRALIAN PLANTS SOCIETY – WALKS AND TALKS PROGRAM

The North Shore Group of the Australian Plants Society hosts a talk followed by an easy walk at the Ku-ring-gai Wildflower Garden (Mona Vale Road, St Ives) every Monday except during school holidays.

Meet at Caley's Pavilion at 9:45 for a 10 am start. Finish at approx 12:30 pm. Bring water, hat and walking shoes. Cost is \$5 per person or \$3 for members. Upcoming talks cover:

- Waratahs (12 October)
- Callistemons, Kunzeas and Melaleucas (19 October)
- Grasses (26 October)

See [www.blandfordia.org.au](http://www.blandfordia.org.au) for more details.

## POPULATION SEMINAR

The Nature Conservation Council and Sustainable Population Australia are organising a seminar titled *Population and Consumption – the Sustainability Dialogue*. The purpose of this seminar is to encourage dialogue about sustainable human population and consumption, leading to wider understanding that these are critical and fundamental issues for the conservation of nature.

Speakers include:

- Bill Ryerson (US Population MediaCenter). Bill is one of the most respected and effective population campaigners in the world today and his innovative organisation has an excellent record of reducing birth rates in developing countries through the use of cleverly scripted soap operas.
- Mark O'Connor is the author of the important books, *Overloading Australia* (co-author William Lines) and *This Tired Brown Land*.
- Representatives of the main state political parties.

Date: Saturday 21 November

Time: 9 am to 5 pm

Venue: Sydney Mechanics' School of Arts, 280 Pitt Street, Sydney

Cost: \$30 or \$20 concession

Register by going to [www.nature.org.au/campaigns/sustainable-population](http://www.nature.org.au/campaigns/sustainable-population).

## RESEARCH SUGGESTS NATURE WALKS ARE GOOD FOR YOUR BRAIN

From the *Washington Post* (29 June)  
[www.washingtonpost.com/news/energy-environment/wp/2015/06/29/fixating-or-brooding-on-things-take-a-walk-in-the-woods-for-real](http://www.washingtonpost.com/news/energy-environment/wp/2015/06/29/fixating-or-brooding-on-things-take-a-walk-in-the-woods-for-real).

In the past several months, a bevy of studies have added to a growing literature on the mental and physical benefits of spending time outdoors. That includes recent research showing that short micro-breaks spent looking at a nature scene have a rejuvenating effect on the brain – boosting levels of attention – and also that kids who attend schools featuring more greenery fare better on cognitive tests.

And Monday, yet another addition to the literature arrived – but this time with an added twist. It's a cognitive neuroscience study, meaning not only that benefits from a nature experience were captured in an experiment, but also that their apparent neural signature was observed through brain scans.

The paper, by Stanford's Gregory Bratman and several colleagues from the United States and Sweden, was published Monday in the *Proceedings of the National Academy of Sciences*. In it, 38 individuals who lived in urban areas, and who had 'no history of mental disorder' were divided into two groups – and asked to take a walk.

Half walked for 90 min through a natural area near the Stanford campus. The other half walked along a very busy road in downtown Palo Alto, California (along El Camino Real, for those who know the area). Before and also after the walk, the participants answered a questionnaire designed to measure their tendency toward 'rumination', a pattern of often negative, inward-directed thinking and questioning that has been tied to an increased risk of depression, and that is assessed with questionnaire items like:

My attention is often focused on aspects of myself I wish I'd stop thinking about,' and 'I spend a great deal of time thinking back over my embarrassing or disappointing moments.

Finally, both before and after the walk, the participants had their brains scanned. In particular, the researchers examined a brain region called the subgenual prefrontal cortex – which the study calls:

an area that has been shown to be particularly active during the type of maladaptive, self-reflective thought and behavioral withdrawal that occurs during rumination.

The result was that individuals who took the 90 min nature walk showed a decrease in

rumination – they actually answered the questionnaire differently, just a short period of time later. And their brain activity also showed a change consistent with this result. In particular, the scans showed decreased activity in the subgenual prefrontal cortex, the region of interest.

'This provides robust results for us that nature experience, even of a short duration, can decrease this pattern of thinking that is associated with the onset, in some cases, of mental illnesses like depression,' says Gregory Bratman, the lead author of the study.

What's particularly valuable is that the brain scans allowed for the examination of a potential cognitive mechanism by which nature experiences help our mental states. Without such evidence, psychological research can in effect only speculate on occurrences within actual regions of the brain. 'That's why we wanted to push and get at neural correlates of what's happening,' said Bratman.

In other words, the new research provides a new kind of evidence that is not only consistent with – but also strengthens – the growing body of research on the benefits of nature exposure.

Granted, brain scan research can be controversial – and it's not as if conditions like depression have a single, simple cause. So as with all research, this work will need to be extended and verified by future studies.

The researchers set their study in the context of modern trends toward ever larger numbers of people living in cities – and an already demonstrated link between urbanization and mental health problems, such as depression and anxiety.

'We just passed the halfway point recently where 50% of humanity lives in urban areas,' said Bratman. 'Along with this trend comes a decrease in nature and nature experience.' And the urbanised percentage of humanity is projected to be 70% by the year 2050, the study said.

But a key question raised by this is, precisely how would an urban environment worsen – or at least, fail to protect against – a mental behaviour like rumination?

The idea seems to be that living in an urban area 'is associated with many kinds of stressors, whether it be noise, increased social interactions, traffic,' said Bratman, which in turn increases rumination and anxiety – though he admits that this link in the study's chain of logic needs further demonstration.

Still, it makes sense. Just think of waking up to the sound of a garbage truck in the morning outside your window – and how the accumulation of things like this can lead to

negative repercussions on our psyches. Meanwhile, the authors speculate, nature environments allow for 'positive distractions' that block or counteract these negative mental processes. Rumination is 'this inward focused, maladaptive choice of where you direct your attention,' said Bratman, and nature gives an alternative opportunity for attentional focus.

The researchers also tie their results to a large literature on so-called 'ecosystem services' – valuable benefits, such as carbon sequestration or water purification, provided by natural environments. The work suggests that on top of these benefits, there may also be 'psychological ecosystem services' as well.

That's a mouthful – but the underlying thought that it captures is pretty simple. Spending time outdoors, in nature, is good for you. The new study just adds – in a new way – to a growing body of evidence that demonstrates that.

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