



# The Green Challenger

Official Newsletter  
of the  
Willunga Hillsface  
Landcare Group

**Willunga Hillsface Landcare Group**

Working towards a healthy, vibrant and sustainable Willunga Basin

Winter 2014

## Probiotics: a Gut Feeling

*The term 'probiotic' has become a household name in recent years, with extensive research into its health benefits for humans.*

*Scientists in Queensland are looking into how probiotics might benefit animals. Early results are looking promising for cattle, sheep and poultry producers...*

*Inside a 1950's fermenter is a bacterial broth that's cooking up a special probiotic that could lead to a breakthrough in animal health and production.*

*Prof. Wayne Bryden, University of Qld. said: "If you look at the mechanisms of the way these probiotics work, what they're basically doing is improving gut health. One of the things that we, I think, underestimate, both in terms of human health and animal health, is the importance of the gastrointestinal tract.*

*So if you can keep that more balanced, you get all sorts of improvements that improve the overall efficiency with which an animal grows or in the way we react and the way we behave...*

*The final product will be turned into a paste that isolates bacillus amyloliquefaciens, or a strain of bacteria more easily referred to as H57.*

*Thirty years ago, University of Queensland professor Peter Dart was asked by an American company to work on a bio-control system to prevent mould in hay. Scientists realised that the animals were gaining weight faster and after months of research, it became apparent that the inoculated*

*feed wasn't just stopping mould from growing, but was actually working like a probiotic.*

*"When added to feed, it made animals perform and grow better. So, that is what the probiotic effect is all about. It's changing the metabolism of the animal in order to help it to use feed more efficiently or to grow quicker. So if you can give it with feed, then it's a simple way of adding it" Professor Dart said.*

*Probiotics are good bacteria that help with digestion and general gut health. The advantages of taking them have been proven in recent years in humans, and are most commonly consumed through yoghurt or specialised milk.*

*The main game for researchers now is to figure out exactly how the gut changes influence animals and what probiotic use could mean for producers the world over. Sheep were the first to be trialled on the specially made feed - pellets laced with H57, containing around one million bacteria per gram of feed.*

*Their intake and weight was monitored, as well as urine and faeces output and general well-being. The two most interesting results - nitrogen emissions from the animals eating the treated feed were significantly down and their appetite went through the roof.*

*"Sheep themselves liked the feed that was incorporating the probiotic. We don't know why or how. But it's a very interesting angle that we're going to follow up. Of course, that meant that they ate more of the feed and they put on*

*more weight. The lambs themselves grew much better in the first three weeks, which is the danger period for lambs, after they were born."*

*The same rang true in some early trials on cattle. Now the research team is looking specifically at dairy calves.*

*Researcher David McNeill from the University of Queensland's School of Vet Science says: "To put it most simply, we're hoping to see that this probiotic stimulates appetite. So one of the must-dos of good ruminant nutrition - cattle and sheep nutrition - is to get them to eat more than you would hope. We think that's the special aspect of this additive. It improves the health of their gut and it drives appetite.*

*We also think that this probiotic can actually get calves to more happily eat feedstuffs that are otherwise less than palatable. They tend to be the cheaper feed-stuffs.*

*So we're looking at that aspect in particular. Can we widen the variety of feedstuffs that we use in calf pellets to make a cheaper but still effective pellet?*

*Ruminants run on microbes. To add another little subtle addition of yet another microbe meant that, to me, it was going to be much harder to find a result.*

*I was expecting to see more obvious results in monogastrics with a simpler digestive system, like chickens and pigs."*

*To an extent, he was right. While the trials on ruminants - sheep and cattle - had strong outcomes, it was*

*Continued on Page 5*

## Editorial

I have been reading a working paper entitled “*The People’s Food Plan*”... a common sense approach to a fair, sustainable and resilient food system. This paper was first published in August, 2012 and revised following community input in February, 2013.

I joined a small group of locals reading this paper and so far we have only covered the first four chapters. We’ve done a lot of talking and are making an effort to take action on some of the things that we consider most important to us.

An area that we are looking at is helping with school gardens. School curriculums need changing so that there is a regular supply of teachers with training and interest in growing plants.

In the US, the National Farm to School Network has begun to meet this objective through a highly practical program that:

Connects schools and local farms with the objectives of serving healthy meals in school cafeterias, improving student nutrition, providing agriculture, health and nutrition education opportunities, and supporting local and regional farmers.

In little over 10 years the Farm to School Network has expanded from pilots in a few schools to now having a presence in more than 10,000 schools across 50 states.

Demonstrated benefits include the following:

- Educating children about agriculture, food, nutrition and the environment
- Increasing children’s consumption of fresh fruit and vegetables
- Supporting local economic development and job creation
- Expanding market opportunities for farmers and food processors
- Shortening food supply chains and reducing the carbon intensity of the food system.

In Australia, the Stephanie Alex-

ander Kitchen Garden program has been the driving force behind kitchen gardens in 600 Australian schools. Whilst acknowledging these achievements, some financial constraints of this program meant that it was not accessible to all schools. Hence there is a need to explore alternatives outside this model.

Moving on... I also attended a gathering outside Minister Koutsantonis’s office this month to deliver a letter protesting against the proposed mining on Yorke Peninsula.

**“The food you eat can be either the safest and most powerful form of medicine or the slowest form of poison.”**

*Ann Wigmore*

Unfortunately, the mining looks very likely to go ahead, although it’s not certain yet.

On Saturday, 2nd August, a rally and march was held in Adelaide to help support and protect our agricultural, viticultural and ocean communities.

Most of us are well aware that we NEVER own the land. We are its custodians! That doesn’t mean that the mighty dollar should take precedence over all else. Food production and farmers’ lives are vitally important and our Government needs reminding of this occasionally.

Meanwhile, Landcare’s 25th Anniversary has passed with a big whack from this Government cutting its funding drastically. The environment obviously rates very poorly in terms of this Government’s priorities. With the Australian Landcare Council axed, Gerry

Butler, Chairman of the Landcare Association of South Australia has been holding meetings around the state. He came to Willunga last Monday and made a presentation to our group. I advertised the meeting locally and a few extra people turned up.

Gerry spoke about many things including the Community Landcare Plan and Response form which are available on line at [www.landcares.asn.au](http://www.landcares.asn.au)

In brief, the Community Landcare Plan aims to contribute to improving sustainable production and resources by:

- Active and resilient Landcare groups and networks
- Collaboration and partnerships with stakeholders
- Engagement with Landcare at state and regional levels
- Connection of Landcare activities across S.A.

**Responses to the plan are requested.** Community involvement gives meaningful ownership and pride in its completion, giving individuals the chance to do their own personal bit for the planet.

*We do only have one planet!*

*Brian*

## Landcare measures up

Everybody involved in Landcare knows the Landcare approach has benefits beyond the agricultural and environmental domains – and now there is research to prove it.

The Multiple Benefits of Landcare and NRM report – commissioned by the Australian Landcare Council – explores the social, education, cultural, health, resilience and economic benefits of Landcare. With this evidence base established, the council is passing the baton to the Landcare community to expand on the research to further strengthen the case for investment in Landcare.

See the *Multiple Benefits of Landcare and NRM report*, [www.daff.gov.au/alcs/submit](http://www.daff.gov.au/alcs/submit)

# Regreen The Range Report

The planting program for the Landcare Group this winter is quite significant. Over 10,000 seedlings and 8,500 direct seeding spots will be planted across 3 properties stretching from McLaren Flat to Willunga.

One of the properties will have nearly 4,500 seedlings of a nationally listed threatened vegetation association re-instated on the hillsface. One of the other properties will have the remnant vegetation on the property significantly expanded while the remaining property will have the revegetation planted a number of years ago significantly increased.

The rainfall the district has received this winter has been encouraging but it has been the disappointing spring and summer rains over the past two years which have had a detrimental effect on the revegetation. An El-Niño event has been forecast for later this year so the Landcare Group made a decision to get the plants in the ground as soon as possible. The planting should be finished over the next week so hopefully this will give the plants a head-start for the coming dry months, if they eventuate.

The Landcare Group has also constructed another 10 enclosures within previously revegetated areas to re-establish small herbaceous and grass species. Over 1,000 will be planted into these enclosures. The enclosures are proving to be quite successful at this stage with kangaroos and rabbits unable to graze on the plants and some of the plants flowering and setting seed already. Hopefully these species will naturally regenerate into the surrounding revegetation and once again be established across the escarpment.

The Landcare Group is always looking for properties to undertake

revegetation programs on, so if any landholders are interested in participating in the Regreen The Range project please get in contact with the group and the project officer can meet with you to discuss the project.

## National Landcare representatives visit

The Willunga Landcare Group recently played host to national Landcare representatives who were in Adelaide for the national Landcare volunteers' conference. The national Landcare representatives were drawn from all over Australia to discuss issues which affect the volunteers of Landcare groups.

The Landcare organisation is undergoing fundamental change at the moment with the Federal Govt. changing how environmental funding is to be distributed to the local groups. The conference discussed how these changes will impact on the organisation as a whole and what opportunities will be available at a group level.

Representatives from the south coast of N.S.W. and from Victoria visited Willunga to see first-hand a sample of the projects the Willunga Landcare Group has been conducting across the escarpment. The Landcare group took the representatives up Old Sellicks Hill Rd. to see a property which was given over entirely to revegetation and to one of the farming properties the Landcare Group works on to see the large scale revegetation the group has been conducting and the restoration of some of the creek systems which flow off the escarpment.

This was an excellent opportunity for the Willunga Landcare group to showcase the works conducted across the escarpment for nearly 20 years and to receive feedback from representatives

across Australia about the Regreen The Range project.

The representatives were amazed at the work the group were able to achieve over a long period of time. Many community groups fade away over the years, as has occurred to many groups in the surrounding area, so for the Willunga Landcare Group to be as active as it has been for 20 years and achieve what it has done, they thought was a great achievement.

The representatives travelled back to Adelaide late in the afternoon and attended the rest of the conference over the next two days. The talking point of the conference was the work the Willunga Landcare group have conducted across the escarpment and the dramatic changes which have occurred across the hillsface since the Regreen project began.

Then Landcare made a point that the works could only be conducted with the help and co-operation of the local community and the landholders across the hillsface. The Landcare group wishes to thank all the people that have helped transform the hillsface over the past 20 years, from the landholders which have set aside sections of land to the contractors and volunteers who have tirelessly worked to get the trees in the ground, without whom the project would not have been possible.

WAYNE LAWRENCE

## Bushcare's major day out

**Sunday, September 7th, as part of Landcare Week 2014.**

A fun day out for all the family, where anyone can get involved in helping to protect and repair their local bushland. Get involved with your local community and take part in Bushcare activities. Dates range from 31st August to 20th September.

You can join in with any one of many different groups that are taking part, visit:

[www.bushcaresmajordayout.org](http://www.bushcaresmajordayout.org)



# Forget 'saving the Earth' – it's an angry beast that we've awoken

Environmentalism is undergoing a radical transformation. New science has shown how long-held notions about trying to “save the planet” and preserve the life we have today no longer apply.

Instead, a growing chorus of senior scientists refer to the Earth with metaphors such as “the awakened giant” and “the ornery beast”, a planet that is “fighting back” and seeking “revenge”, and a new era of “angry summers” and “death spirals”.

Whether you consider yourself to be an environmentalist or not, the warnings from Earth system science have far-reaching implications for us all.

## Nature fights back

In its early days, the science of ecology showed how easily complex ecosystems could be degraded and species obliterated. In 1962, by observing the damage to humans and nature caused by factories and industrial agriculture, Rachel Carson in *'Silent Spring'* presented nature as highly vulnerable to destruction by the power of synthetic chemicals.

The early view of nature as fragile, that is, easily disrupted and unable to repair itself, has been tempered somewhat by evidence that many ecosystems are more resilient and can adapt to new circumstances.

But whether fragile or robust, the Earth has been understood as unresponsive, neutral and essentially benign.

This understanding has various expressions, including “Mother Earth” as nurturing, feminine and easily damaged entity. The notion of living harmoniously with nature took hold, inspired by images of pre-industrial peoples living close to the natural world.

Underlying these conceptions is

a view that, while humans can cause a great deal of damage, nature is passive and always our victim.

Yet now we see that the planet has been disturbed from its resting state, jolted out of the providential era of climatic stability characteristic of the last 10,000 years, and is now on a new and largely uncontrollable path that is creating conditions dangerous for human life.

## Seeing the bigger picture

The rise of Earth system science – which has brought together many different fields of science so that we can better understand how the Earth's atmosphere, oceans, land and other systems work together – has changed the way we see the world.

Now, the Earth is understood as a dynamic system with strong feedback effects, which can suddenly shift it to a new state when critical points are crossed.

So profound has been the influence of humans that scientists have proposed that the Earth has entered a new geological epoch, the Anthropocene or the Age of Humans, defined by the fact that the “human imprint on the global environment has now become so large and active that it rivals some of the great forces of Nature in its impact on the functioning of the Earth system”.

NASA explains the basics of Earth systems science.

As *Earth scientist James Syvitski writes*: At some point, we graduated from adapting to our environment to making it adapt to us... But now we regularly decelerate and accelerate natural processes, focus energy in extraordinary ways and alter, destroy or create ecosystems.

That means we must no longer see the Earth as the submissive repository for supplying our resources or taking our wastes, nor

as the docile victim of our rapacity or carelessness.

This newer understanding of the Earth has been vividly expressed by palaeoclimatologist Wally Broecker:

The palaeoclimate record shouts out to us that, far from being self-stabilizing, the Earth's climate system is an ornery beast which over-reacts even to small nudges.

When the Earth is understood this way, the task of environmentalism can no longer be to “save” or preserve the planet, for the planet we wanted to save has already become something else. Our task now is to do what we can to pacify, or at least not aggravate further, something vastly more powerful than we are.

If we have awakened the slumbering beast by poking and prodding it, the prudent course is firstly to stop. But we cannot put it back to sleep.

There is no return to the peaceful conditions of the Holocene, at least not for thousands of years; but to provoke it further, as we still are, is foolishness on an epic scale.

## Respect, not love

Yes, the Earth still demands our respect, but it is a respect founded on trepidation rather than love. If we are inclined to think of the planet as Gaia, we would do better to regard it not as the all-loving, all-nurturing Mother Earth of the romantics, but more like the half-crazed, bloodthirsty and vindictive goddess of the original Greek tales.

Some like French philosopher Michel Serres have argued we must negotiate a new contract with nature. Under the terms of this natural contract humanity would reject mastery “in favour of admiring attention, reciprocity, contemplation, and respect”. The contract would grant nature rights and make reparations.

## Probiotics: a Gut Feeling *Continued from Page 1*

the poultry trial that really got scientists excited.

David McNeill confesses he was sceptical when he was first told about the research and even pushed to build in other perspectives to the experiment, as he was so sure that the probiotic element wouldn't foster anything of much note.

Prof. Wayne Bryden said "What we've found is when you add these to diets at the recommended levels, you get improvements in bird performance, most noticeably feed conversion efficiency and growth rate. The significance of improved feed conversion efficiency is that it relates to the largest cost of intensive animal production and that's feed costs. By doing that you can reduce the amount of feed that you require and you reduce production costs.

"I think the farming industry is always looking for things that will improve animal health, wellbeing and productivity – but the industries are also looking for things that demonstrate to the public at large that what they're doing is not unnatural, it's a

---

### Angry beast – Continued

Twenty years ago, that kind of thinking seemed to make sense but today we must ask whether the Earth, roused from its slumber, is in any mood to sign a contract with us.

Earth system science now teaches us that the planet to which we might have hoped to graciously offer a peace deal – the receptive, predictable object of our exploitation and neglect – existed only in our imaginations.

The Earth does not want our love. Instead of talking restitution, would we perhaps be wiser to be preparing for retribution?

*This article is based on a speech at this year's Sydney Writers' Festival*

AUTHOR, CLIVE HAMILTON  
Vice Chancellor's Chair, Centre For Applied Philosophy & Public Ethics (CAPPE) at Charles Sturt University

<http://theconversation.com/forget-saving-the-earth-its-an-angry-beast-that-weve-awoken>

very natural way to do things because it's what we do to ourselves. We vaccinate ourselves, so we vaccinate birds. We feed probiotics, as we also consume probiotics. So it's that thing of saying, "What we're doing to birds is no different than the way that we normally lead our own lives."

"The big thing is that if the birds are growing quicker, they can be processed faster. It means that it uses less feed. When you consider that feed is something like 60-70 per cent of his costs, if he can reduce that by a couple of per cent it's a major windfall."

*The first round of trials with poultry have shown an improvement in growth of up to 8 per cent. While the University of Queensland investigates the hard science of the effect of probiotics on farm animals, anecdotal evidence is being collected daily by vets across the country.*

*At a clinic on the outskirts of Brisbane, probiotics are starting to form part of treatment plans for cats, dogs and horses.*

Charlie Eggers, Veterinarian said: "We are getting more and more clients that are wanting an alternative to conventional-type medicine. Probiotics, I guess, are indicated for some of our breeders and some of our equine people. Most of the time, they're something that can be used in addition to or as an alternative option to some antibiotics and they're basically aimed at improving the gut modality and things like that."

*Most common reason for vets recommending probiotics is diarrhoea. Animal breeders have also found it significantly helps during the weaning process.*

"The veterinary and human medicine side of things are moving pretty parallel in the way of probiotics. They've certainly been using them, like, for the last 15 years they've been gaining popularity. I think that's definitely stemming a lot from human medicine and seeing that there are those alternative options that are proving to be beneficial."

*It's this common understanding of*

*probiotics that has led to commercial farm group Ridley AgriProducts getting involved in the UQ project. They've committed more than \$250,000 to the experiment.*

Matt Callaghan, Ridley Agriproducts said: "There's a lot of consumer pressure around where food comes from these days, and this is potentially one of those - an additive that can improve productivity and animal health and the consumer can feel good about it because it's not an antibiotic, or there's no negative consequences.

From a feed perspective, most additives are generally relatively species-specific, because they're targeting a particular pathway or a particular organism. Whereas this one, in the work conducted so far, seems to have positive effects in ruminants - in sheep - and also positive effects in poultry. So I suppose the potential net benefit for the investment in looking at this can carry across potentially more species and it allows the end user one package for all...

There aren't a lot of points of intervention from a management perspective, because property sizes are large, there's low labour, capital infrastructure for feeding mechanisms is often low. So people are genuinely looking for the next thing that can fit in with their current feeding systems and give their operations a boost."

A trial on weaners in drought-affected areas of North Queensland is on the cards for later this year and further testing on animals of different ages is also planned. The research project is due to be completed the year after next, with a shelf product marketed soon after. In the meantime, the scientists involved have a gut feeling they're onto something good.

Reporter: Megan Woodward

Broadcast: 28/07/2014. I HAVE EDITED THE ABC TRANSCRIPT FOR THIS NEWSLETTER. IF YOU MISSED THE PROGRAM IT'S WORTH LOOKING AT VIA IVIEW.

<http://www.abc.net.au/landline/content/2014/s4055488.htm>

**A Senate inquiry into the National Landcare Program is currently underway.** The inquiry will look at the history, effectiveness, performance and future of the National Landcare Program. We have been invited to provide a written submission addressing the issues that may be of relevance to us follows:

## Willunga Hillsface Landcare Group Case Study

The Willunga Sellicks hillsface is the eastern boundary of the notable McLaren Vale/Willunga Districts grape growing area, known as the Willunga Basin. It is steep, exposed hills country, an area of approx. 12,000 hectares which was almost entirely cleared by the early settlers for cropping, grazing and firewood harvesting.

It's a major catchment area for the Willunga Basin and is noted for its high storm water run-off, and also for sheet and gully erosion. Other key natural assets of the Basin are its fresh water aquifers, fertile soils, sandy beaches, the Aldinga Reef, the Aldinga Scrub and a coastal wetland known as the Washpool.

In 1991, a number of hillsface farmer neighbours and landowners came together to form the Willunga Hillsface Landcare Group. The following aims were agreed upon.

- To develop farm plans of their own properties and other landowners on the hillsface.
- To prepare a catchment plan for the whole of the Willunga-Sellick's Hillsface Scarp. This plan came to be known as 'Regreen the Range'.
- To integrate this Plan with the plains and coastal/marine environment. This came to be known as 'Reef to the Range'.
- This farmer/landowner committee, even though knowledgeable about many hillsface issues, realized that it needed to deepen its skills and knowledge, thus grew close connections and partnerships with the Uni. of Adelaide Geography Dept., Flinders Uni., CSIRO, SARDI, and Primary Industries. The Group also un-

derstood the need to strongly connect with the hillsface landowners, local community and district council.

*It did this by:*

- Opening a shop front office in Willunga, the 'Willunga Community Landcare Centre' which is now known as the 'Willunga Environment Centre'.
- Holding well attended bi-monthly speaker evenings for over 10 years.
- Preparing an eight page group newsletter, 'The Green Challenger' between 4 to 6 times a year. This paper is ongoing and now 20 years old and distributed to over 250 local and wider community.

### The following are foundational achievements of the Group

- **1994**, developed a 200+ page manuscript, 'Environmental History of the Willunga Basin'.
- **1994**, Established the first **community** Landcare/Natural Resource/Environment Centre in S.A. (perhaps Australia)
- **1995**, developed the state of art, 'GIS of Willunga Basin'
- **1996**, '**Healthy Hillsface**' Project made up of seven demonstration sites
- **1998**, Innovated the use of GIS, GPS and forestry practices in the establishment of conservation vegetation.
- **1998-2000**, Planted out 400ha Agroforestry woodlots. At current firewood value is **worth over \$8million or approx. 50,000t of Carbon.**
- **2000-2014**, planted out over 2000ha conservation vegetation of which 1600ha have been

successful. Project is known as '**Regreen the Range**'. Apart from biodiversity value, has grown so far approx. **30,000t Carbon**

- '**Regreen the Range**' also includes:
- Woody weed control in 600ha of remnant vegetation.
- Fenced off kilometres of waterways and grazed areas.
- Contracted and trained many in local community in planning, weed control, use of ag. chemicals, planting seedlings, direct seeding and seed collection.

### Factors contributing to our project success

- National Landcare's preference of encouraging farmers, landowners and individuals to form community groups with all the skills, innovation, intimate on ground knowledge and co-operation it brings to a project.
- Appeared to be trusted and had good co-operation from farmers and landowners in the Landcare movement. This appears to partly stem from the Landcare organization evolving out of the Dept of Primary Production, a department with long, strong and close relationship with farmers.
- General overall co-operation for on ground activities due to the formation of a group where many in the group and on the committee were farmers, landholders and neighbours with similar issues.
- Critical leadership development within the group, strongly supported by Landcare officers and strategic long term resourcing.
- Our Committee understood

that it needed additional skills, knowledge and consultation to develop a clear plan. In addition it needed partnerships and community/landowner education, co-operation and also resources to carry it out. The Landcare model was flexible enough to encourage these things to take place.

- The Landcare organization in those earlier times of NLP and NHT had a competitive funding model that was not over prescriptive in exactly defining the various funding compartments and allowed our community group in areas of on-ground works, monitoring, public awareness, etc. to fine tune expenditure so that it could be spent in the most efficient and effective manner.
- In summary, **the National Landcare Model exhibited a high degree of respect and trust in the community's ability to rise to the occasion to manage funds, to complete a project and to effect change.** This may have occurred by default because of the difficulty in launching such a large, complex and innovative organization. Whatever, *it contributed to our group's longevity, bonding and loyalty and to community co-operation, acceptance, ownership and warmth to Landcare ideals.*

### **Some aspects that placed Stress on Groups**

- Members in some groups became over committed to tasks and perhaps there was a low level of resources, and over a period of time became 'burnt-out'. Our solution was to form a Community Landcare office where members could meet, chat and relax over coffee and discuss issues.
- Developing funding applications often needed more 'one on one' expert assistance. That is, groups require more help in this area.
- Funding was never received on time and was often 3 to 6 months over due.

JOHN CAMPBELL, PRESIDENT, WILLUNGA HILLSFACE LANDCARE GROUP

## **Catch-22: big trees fight climate change but suffer in the heat**

Clearing forests is a major contributor to carbon dioxide emissions... Recent research suggested that we could get the most out of forests by conserving big, old trees, which absorb and store more CO<sub>2</sub> than younger trees.

Research now shows that big old trees suffer reduced growth as temperatures climb, making the task of carbon storage considerably more difficult. This compounds the effects of premature tree death from bushfires and heatwaves in reducing carbon storage.

### **Carbon sinks**

Plants are able to transform gaseous CO<sub>2</sub> into organic matter through photosynthesis. It follows that trees, being the largest plants, play a crucial role in the global carbon cycle by absorbing and fixing carbon on a huge scale.

Deforestation has contributed to around one tenth of the CO<sub>2</sub> emissions since pre-industrial times. Reducing forest clearance and restoring forest cover are therefore obvious ways to reduce anthropogenic greenhouse gas pollution and slow global climate change.

Recent research has also revealed that as well as storing more carbon, big old growth trees absorb more CO<sub>2</sub> than smaller trees, making them particularly important carbon sinks.

### **Big trees suffer under the heat**

Plants absorb CO<sub>2</sub> through photosynthesis, but it's important to remember that they also produce CO<sub>2</sub> through respiration to create energy, just like animals do.

High temperatures reduce water availability by increasing evaporation. At the same time, the rate of respiration increases with higher temperatures, faster than the rate of photosynthesis. This produces more CO<sub>2</sub> than at cooler temperatures.

...Testing tall trees we found that eucalypt tree growth declines with warmer climates, and this effect is most pronounced for larger trees.

An increase in temperature from 11C to 21C was found to correspond to a 57% reduction in growth for tree with a 58 centimetre diameter trunk, but only 29% lower for trees with an 18 centimetre diameter trunk...

Restoration planting may need to incorporate species that have higher tolerance for warmer temperatures than current native species. But really, the take home message is we must reduce CO<sub>2</sub> emissions — forests can't solve that problem alone.

Authors: Lynda Prior and David Bowman.

Edited. The full article is available from: <http://theconversation.com/catch-22-big-trees-fight-climate-change-but-suffer-in-the-heat>



Supported by Adelaide & Mt. Lofty Ranges Natural Resources Management Board  
18 High St., Willunga. Phone: 8556 4188  
Open Mon.–Fri. 10 am–3 pm,  
Sat. 9.30 am –1.30 pm.

**COMING EVENTS**

**Tuesday, 26th August @ 7pm.-Biogas Opportunities from Organic Waste** presented by Dr. Jayant Keskar

**Monday 8th September @ 7pm. Sustainable Housing Day,** speaker Ken Long  
**Free supper provided**

*We are using the notice board on the outer Eastern side of the building and public and community groups are invited to use the board. Please drop your pamphlets, etc. into the centre for display, and start looking to see what is there!*

Registration essential:  
[info@willungaenviro.org.au](mailto:info@willungaenviro.org.au) to register



**Willunga Hillside Landcare Group**

P.O. Box 215, WILLUNGA, S.A. 5172

Meeting dates vary, but are usually held on Mondays monthly at 5 p.m. in the Willunga Hub, cnr. St. Peters Terrace, Willunga.

*All members are welcome to attend these meetings.*

If you would prefer to receive your copy in PDF format (via email) please let me know at this address: 2garfy94@gmail.com.

- President: John Campbell ..... 8556 2916
- Chairperson: Kate Parkin ..... 8323 9275
- Treasurer: Margaret Morris..... 8556 2535
- Secretary: Brad Smith ..... 0432 599 053
- Regreen the Range Manager:  
Wayne Lawrence . 0423 283 043
- Publicity: Brian Visser..... 8556 4292
- Committee members:  
Ben Heyward ..... 8186 1607  
Paul McKenzie ..... 0429 095 314



**Willunga Hillside Landcare Group**

IF UNDELIVERABLE, PLEASE RETURN TO:  
PO Box 215  
WILLUNGA SA 5172

**PRINT  
POST  
PP No. 12**

**POSTAGE  
PAID  
AUSTRALIA**

Views expressed in this newsletter do not necessarily represent the views of WHLG

**LANDCARE WILLUNGA  
HILLSFACE GROUP**  
Willunga Environment Centre  
18 High Street, Willunga  
**MEMBERSHIP FORM**

Name:.....

Address: .....

.....

Phone number: .....

Mobile:.....

email: .....

Property size/type: .....

Occupation: .....

Signature: .....

Date: .....

Joining/renewal fee **due now** \$11.00

**Please return this form together with your joining or renewal fee to:**  
The Treasurer,  
Willunga Hillside Landcare Group,  
P.O. Box 215, Willunga, S.A. 5172.

*Do you wish to continue receiving the "Green Challenger" (Y/N)*