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 2013

How much carbon can the world's forests absorb?

You are walking through the bush when you see an enormous tree trunk, tens of metres long, lying across the forest floor. Imagine you and several dozen friends lifting it by hand. Now you've literally grasped the significance of trees and forests when it comes to carbon sequestration – trees are heavy, and carbon accounts for almost half their dry weight, or biomass.

The world's forests are a net carbon "sink". Each year they remove more carbon from the atmosphere by photosynthesis than they return via their own respiration, decomposition of dead roots, trunks and leaves, and by forest fires.

That is how the growth and regrowth of forests around the world has slowed climate change in the past century. It has been estimated that between one-third and one-fourth of the total carbon dioxide (CO_2) emissions from burning coal, gas and petrol has been turned into wood and other plant parts through this process. Without that incredible ecosystem service, climate change would be much more extreme today than it already is.

Despite advances in satellite remote sensing and ground inventories, our estimate of the area covered by forests globally is surprisingly shaky. We are unsure how much the trunks of all those trees weigh, nor can we know for certain the weight of their roots. It is even harder to figure out how much the total global forest biomass grows from one year to the next – a key figure that tells us how much of our annual CO_2 pollution has been scrubbed out of the air by forests.

Forest ecologists like a challenge however, and there have been several attempts at estimating the forest carbon "sink". Perhaps the most internationally comprehensive approach was an assessment of forest carbon stocks and fluxes across the globe between 1990 and 2007. They assessed the carbon content of live biomass, dead wood, litter, oil organic matter and harvested wood products in tropical, temperate and boreal forests, and examined how these stocks changed over roughly two decades.

According to this analysis, intact forests and those re-growing after disturbance (like harvesting or windrow) sequestered around 4 billion tonnes of carbon per year over the measurement period — equivalent to almost 60% of emissions from fossil fuel burning and cement production combined.

This news is not as good as it seems. During the time measured, tropical deforestation resulted in the release of almost 3 billion tonnes per year. Thus, globally, the net forest carbon sink amounted to just 1.1 billion tonnes per year or one-seventh of average emissions from fossil fuel burning and cement production over the period measured.

These numbers suggest that forests, and tropical forests in particular, could play a key role in slowing the rise of atmospheric CO_2 in the decades to come.

In the tropics, growth and re-growth of forests generated a colossal carbon sink of 2.8 billion tonnes of carbon per year. This largely, but not entirely, counterbalanced the equally colossal carbon emissions associated with deforestation of other tropical forests. As a result, the tropics served as a relatively small net source of carbon to the atmosphere since 1990.

If deforestation continues unabated, and droughts and forest fires become more common, as is expected, then tropical forests could become a large net source of carbon to the atmosphere, heating up the pace of climate change. Disturbances to temperate and boreal forests from climate change-induced droughts, wildfires and windstorms could make the situation even worse.

Conversely, if deforestation was to slow in comparison to continued growth of recovering and intact forests, tropical forests could serve as a large net sink of carbon in the future and make the United Nation's Reducing Emissions

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Global warming awakens soil micro-organisms

In the ABC Radio National Science Show on Saturday, March 3rd, Robyn Williams interviewed Dr. Janet Jansen,. senior scientist at the Lawrence Berkeley National Laboratory

Earth, soil, without it you'd be dead. But what do we know about soil?

Janet Jansson: This is a quote from Leonardo da Vinci from about 1500. He said that we know more about the movement of celestial bodies than about the soil under our feet. I think the point that he was making is that we just didn't know anything about the soil.

Of course back then they didn't know as much as we do, obviously, about the celestial bodies either, but I think the main thing is, it's still the case today that we know much more about the cosmos than about Earth's biodiversity.

Robyn Williams: Imagine your container, hold it up and tell me how many creatures there might be in it.

Janet Jansson: Okay, I'm holding a container with about a cup of soil. In that cup is about 100 billion micro-organisms. So that's about tenfold more than all the stars in our galaxy.

Robyn Williams: Isn't that astounding! You take a spoonful of that, and how many in there?

Janet Jansson: In a spoonful there is approximately 1 billion microbial cells.

Robyn Williams: What variety of different species, do you think?

Janet Jansson: That varies quite a bit, but there are at least thousands, and it could be hundreds of thousands of species.

Robyn Williams: Yes, and where the soil comes from I suppose and the state it's in, if it's moist rather than desiccated or something like that.

Janet Jansson: Yes, exactly, right.

Robyn Williams: What do you do with this kind of study back in the lab?

Janet Jansson: I work with soil, so one research project is to study the impact of thaw due to climate change on permafrost soil. One thing we have done is to collect frozen permafrost and thaw it in the laboratory. Extract all the DNA, both when it is frozen and after it's thawed, and then to analyse, using sequencing based approaches, the composition before and after thaw and see how the micro-organisms and their functions shift upon thaw.

Robyn Williams: If it has been permafrost, then presumably for thousands of years it has been a block almost of ice. Do the ingredients live on?

Janet Jansson: There are some micro-organisms that can survive, they grow very slowly, probably on salt brines. There are some very salty water films. A lot of the micro-organisms that we've found that were most dominant in permafrost were things that were related to desiccation tolerant and radiation tolerant micro-organisms, like one called rubrobacter.

Robyn Williams: What generally were your conclusions, having done that exercise?

Janet Jansson: We found that there is a very rapid shift in the microbial community composition upon thaw. We didn't know what would happen before we did the experiment, but one could predict that maybe there would be a very gradual awakening of the community when it starts to thaw. But it was a very rapid shift. So our hypothesis is that these micro-organisms are in a quiescent state, they are just waiting for the opportune moment to grow and to become active again. There was a shift; some thrived and others did not.

Robyn Williams: Lots of methane given off?

Janet Jansson: Yes, there was an initial burst of methane, and this was methane that had been trapped in the permafrost, so it had been produced during these thousands of years that the permafrost was frozen by methane producing micro-organisms. Then we found that as it thawed there was a consumption of a lot of that methane by methane oxidising organisms. So they took advantage of that as a carbon source.

Robyn Williams: Yes, but was there a net emission?

Janet Jansson: There was a net emission, and this was a very short-term incubation, over a week. The next step would be to do a longer-term incubation and see what is the final net... with respect to the methane pool, if it's a source or a sink.

Robyn Williams: It's amazing to think of thousands and thousands of square kilometres of that permafrost being warmed up and having that effect on a global scale.

Janet Jansson: I know, especially because there's so much organic carbon that's there. About a third of the terrestrial organic carbon is currently trapped in permafrost and frozen there. As the micro-organisms become awakened and can degrade that organic carbon, releasing methane and CO_2, this is something that is quite disconcerting.

Robyn Williams: What other experiments have you done with soil?

Janet Jansson: Another experiment that we've done with soil is to compare land management practices. We have a huge project ongoing at the Joint Genome Institute, in fact the largest soil sequencing project that I'm aware of. For that project we took native prairie from three different states in a transect across the great prairie—Wisconsin, Iowa and Kansas—and compared it to cultivated corn. So the same soil type. Then again, using the same method, extracted all the DNA and sequenced it and looked at the microbial communities and also sequenced all the total DNA.

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Regreen The Range report

Well the rains have finally arrived and now is the time the Landcare group starts to organise the planting for this season's revegetation programme for the Regreen The Range Project. This season will be particularly busy with four properties across the escarpment having revegetation conducted on their properties along with the group re-visiting previously revegetated areas to plant ground-cover species, native grasses and harder to propagate species.

Nearly 20ha of new areas will be revegetated this season while over 30 enclosures will be established across the escarpment to plant the ground-cover and grass species. By the end of this planting season, well over fifty different plant species will have been re-established with the group's aim to increase this number as much as possible over the coming years.

We have been encouraged over the past few months with the number of landholders that wish to undertake revegetation on their properties, in some instances to revegetate their entire property.

Federal grants

We are constantly applying for Federal grants to continue the Regreen The Range programme, but of course without the willingness of landholders to participate in the programme the Landcare Group would not be in a position to be able to apply for the funding.

Funding for this programme is Australia wide and is in great demand. Our group have been very successful in the past in attracting the funds to continue the programme and whilst there are landholders that wish to undertake revegetation on their properties we will continue to search out funding and put the case that the programme is a worthwhile one to continue supporting.

One of the properties the we're involved with revegetating this year will be in partnership with the Willunga Primary School through the EnviroKids programme and National Tree Day (July 26th).

The EnviroKids have propagated trees to plant on the property and have already made a survey of the property to establish what is already there and to determine which plants are to be planted and where. We would like to thank the landholders for allowing the EnviroKids to participate, which will foster enthusiasm in the next generation of environmental stewards.

Wayne Lawrence

Do plants talk to each other?

ABC Rural. By Flint Duxfield

It sounds like the stuff of science fiction, but research from the University of Western Australia suggests plants may be able to talk.

The team, led by Dr Monica Gagliano, has found that basil plants grow better next to chilli plants, but worse next to fennel, even when cut off from physical, chemical and light-based communication.

"It looks like plants can emit their own sounds and it looks like they are actually responding to particular frequencies," Dr Gagliano said.

Dr Gagliano discovered that the roots of plants make a clicking sound as they grow, which can be detected using highly sensitive laser microphones.

The plants are even able to communicate before germination to determine how fast they need to grow.

"They can't just uproot themselves and run away if they don't like their neighbour," Dr Gagliano said.

"But one thing that they can do is to start growing really fast and to try to overtake them. We observed a difference in the rate at which these chilli seeds were germinating.

Knowing that this was a basil [plant], they decided that this was good news."

It's been well documented that plants can use chemicals to warn each other of approaching predators.

Sound communication

Dr Gagliano says it makes sense that plants would use sound if it were detectable by other plants.

"Sound travels really well and it's cheap because it's mechanical energy," she said.

A chemical would require a lot of energy to produce and to make sure you've got the right signals on the other side to be detected."

Dr Gagliano says her findings about plants communicating acoustically could have far-reaching implications for the way farmers manage and monitor crops.

"When there is a drought, the water in the trees get sucked away," she said.

"Air bubbles are created within the trunk and they make a lot of noise. The acoustics of the trees and the plants could be an interesting pre-warning for us before we lose our crops."

Italian scientists have also shown that playing music to wine grapes can improve plant growth.

"They didn't need to use any pesticide and fertilisers for the plants to grow and be healthy because different frequencies were supporting those aspects." Dr Gagliano said.

"It could revolutionise the way in which we do agriculture."

abc.net.au/news/2013-06-05/new-document/4734616

Letters, emails or feedback of any kind on anything in this Newsletter would be very welcome. If you have something you would like to see published, please contact me.

Seeds without sex

Sex without seed. Seed without sex. It's been said that the greatest gift of science to humankind would be achieving those two goals.

Effective contraceptives such as the pill have pretty much nailed the first goal. Our findings could be significant pieces of the puzzle for the second.

That's because by helping solve one of the fundamental questions in the evolution of plants, we may also have brought closer the possibility of cloning a plant with good traits through easy-to-distribute seeds, rather than cuttings.

This so-called "apomixis" is one of the holy grails of agriculture because it would make new crop varieties – ones that are resistant to drought, say – both cheaper, and more widely available.

What we — my post-doc Keiko Sakakibara and myself – have done is identify a molecular gate-keeper between the two life stages that make up plant life cycles.

Us and them

Plant life cycles are very different from our own. The "us" we are most familiar with is complex and multicellular. Our body is composed of cells that are diploid, containing two copies of each chromosome. But we also have haploid cells, containing only one copy of each chromosome: the single-celled egg and sperm.

Those haploid cells are generated from special diploid cells via a process called meiosis; conversely, fertilisation – basically a union of two haploid cells – gives rise to the diploid us. In contrast, plants alternate between haploid and diploid generations, both of which have complex multicellular bodies.

If this happened in us, it would be as if our sperm and eggs left our bodies, grew into multicellular organisms, went to the pub, met, and mated, eventually creating the next diploid generation. So seemingly disconnected and dissimilar are the haploid and diploid bodies of many plants that for centuries they were sometimes mistaken for different species.

That changed in the mid-1800s with the findings of the incomparable German biologist and botanist Wilhelm Hofmeister. Making use of some recent technological innovation – better microscopes – Hofmeister spent a decade or more observing the life-cycles of a huge variety of plant species, concluding that so-called "alternation of generations" was a universal property of land plants.

We now know that in most plants, such as mosses and liverworts, the haploid body is the complex, impressive one; while in flowering plants and ferns, the diploid body takes centre stage.

Rolling stones…

Which brings us back to our work on moss – the sort you see around the edge of ponds, or on the cracks in damp sidewalks. The moss most people would recognise as moss is the haploid body.

It spawns haploid sperm and egg, which fuse to produce the relatively unimpressive diploid version – the little stalks with brown caps. The brown caps eventually burst, releasing haploid spores, which float off to colour another path or sidewalk.

In a piece of curiosity-driven research, we removed a gene called KNOX2 from this moss. What we found was that the cells that normally produced the diploid body, instead behaved like the haploid generation and grew into those familiar moss mats.

KNOX2, it seems, functions as the molecular brake that prevents diploid moss body from generating the haploid moss body.

Feed the world

So why does this matter? For several reasons. First, we've gone a good way to revealing how the alternation of generations in plants is controlled at the molecular level – and provided genetic support for the favoured theory about its evolution.

Our findings strongly support the idea that the common ancestor of all plants was haploid – each cell having only one set of genes — with the diploid generation evolving later.

There could also one day be a practical ramification. If a single gene can control conversion from the diploid to the haploid life-form, it raises the possibility of altering that gene in flowering plants – specifically crop plants — to skip the haploid stage.

Rather than have cells undergo meiosis, and mixing their genetic contents to create new plants via pollen and ovule, seeds could be produced with the same genes as the parent – and apomixis would be possible.

This is far from a done deal: plant biologists have been trying to achieve that goal through various means for decades, and no doubt need to put years more work in. But if it were achieved it would be a truly transformative form of technology.

Modern, highly productive farming relies on crossing crop variants to produce crops with superior qualities to either parent. This carefully orchestrated "hybrid vigour" is lost if the crop is allowed to do its own thing, mixing and matching genes to create the next generation.

Apomixis would allow traits such as yield and drought-resistance to be preserved generation after generation, potentially reducing the cost of producing hybrid seeds, and the farmer's need to purchase seeds anew each planting season.

Thus, the seeds without sex could help feed the planet in the coming century.

Author: John Bowman, Professor of Genetics at Monash University

theconversation.com/seeds-without-sex

WHICH OF OUR FORESTS SHOULD BE MANAGED FOR CARBON?

Author: Rob Law, Researcher in carbon policy and science at University of Melbourne

The Australian Government has recently committed to a second round of the Kyoto Protocol to run from 2013-2020. In doing so, Australia is required to reduce its greenhouse gas emissions by at least 5% compared to 2000 levels by 2020. This target can be achieved two ways: by reducing emissions from sectors like energy, transport and manufacturing, or through increasing the storage of carbon in forests and soils.

Carbon credits can be generated by parties that increase carbon in trees and soils, in essence offsetting the equivalent amount of carbon released into the atmosphere by other activities. Previously, Australia could only count emissions reductions from planting new forests on cleared land. However the second round of the Kyoto protocol has a new rule allowing credits to be earned for managing carbon in Australia's existing forests.

Australian forest agencies could now attract further carbon market investment in forest management that maintains or improves carbon stocks. Which types of forest land will be eligible for carbon credits and debits? Traditionally, national parks are excluded from these kinds of activities. But is it time we took a "tenure blind" approach – ignoring the "type" of forest – to managing Australia's forest carbon?

Why cut ourselves off from carbon savings?

In a recent submission to the Kyoto Protocol, the Federal Government defined the area of forests in Australia that will be eligible for carbon credits and debits through forest management.

This definition is limited to forest lands managed for the purpose of wood production only. For many of Australia's states, this means state forests (those that are managed for multiple uses and available for harvesting at December 2009), private native forests and plantations.

Such a specific definition means that only 10% of Australia's total forest area would be considered for accounting, with the rest of forests excluded.

In Victoria for example, the current definition would include only approximately 1.3 million ha of the 7.5 million ha of publicly managed land. Using data the Department of Sustainability and Environment developed in its land carbon project, this covers only approximately 35% of the carbon stocks in Victoria's publicly managed forests.

However, it is possible for lands to enter the forest management accounting system once a direct human induced activity occurs. What constitutes "direct human induced activity" is not clearly defined, but it is likely to include thinning activities, or enrichment planting.

This has particular implications if thinning or replanting goes ahead. Many government and national parks agencies are considering these new management activities in national parks in the future. Carbon credits from forest management open the door for potential new sources of funding for enhancing degraded landscapes such as in the mallee woodlands of north west Victoria. Similarly, such finance could help address the reduced carbon carrying capacity of forests that have been repeatedly burned.

It will be important to follow how the Australian Government defines direct human induced actions, and the rules it uses to determine how and when new forest lands enter the accounts.

A chance to do more with our national parks

Ultimately, the current definition highlights the tension between forest management ideologies across different forest agencies. Is there more to managing carbon than reducing the impacts of harvesting?

Managing for carbon as a forest value is an active process. It requires both management actions to promote carbon uptake, and actions that suppress the loss of that carbon. This is common in forests across all tenures.

Instead, conservation reserves are currently excluded based upon the concept of "additionality". The rationale is that forest carbon within reserves should already be managed optimally. Thus, it is considered carbon uptake in these forests is not additional and would occur regardless of carbon market finance.

There is an argument that degraded areas within conservation reserves should be restored as part of the responsibility of the managing agency. But the reality is that limited government funding often leads to benign neglect.

The implications of the current accounting framework have been recently demonstrated through the Tasmanian Forest Agreement process. Andrew Macintosh points out the Tasmanian government is likely to have unwittingly handed over the rights to a potential 6 billion dollars worth of carbon credits to the Federal Government.

In accepting Federal Government funding to move harvested forests into new conservation reserves, the Tasmanian government can no longer demonstrate additionality and generate carbon credits from these forests. The Federal Government however, can count the credits from the reduc-

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Which of our parks should be managed for carbon?

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tion of harvesting towards its national target.

The opportunities for new finance from forest management are large and would be a missed opportunity for conservation reserves if only some types of forest are eligible. It is thus critical that forest agencies and managers remain engaged in the policy debate around carbon accounting in Australia's forests to ensure opportunities are realised and prevent perverse outcomes.

Disclosure Statement: Rob Law does not work for, consult to, own shares in or receive funding from any company or organisation that would benefit from this article, and has no relevant affiliations.

http://theconversation.com/which-of-our-forests-should-be-managed-for-carbon-12443

Global warming awakens soil micro-organisms

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Robyn Williams: Interesting. Any results yet?

Janet Jansson: Yes, the preliminary results are that there seems to be a distinct prairie community of organisms, even though these states differ quite a bit and the soils are quite different.

Robyn Williams: So, in some respects your work is eventually going to disprove Leonardo, at least 500 years later we might know sufficient… well, can we ever have sufficient knowledge about some material which is so incredibly complex?

Janet Jansson: That is our hope with this type of huge project, looking for patterns to show what kind of micro-organisms you would expect in a certain kind of habitat.

Robyn Williams: Thank you.

abc.net.au/radionational/science-show/global-warming-to-awaken-soil-micro-organisms/3862170#transcript

Invention gets soil carbon measurement off the ground

By Caddie Brain

Researchers have invented an instrument to measure carbon levels in soil, making it more feasible to monitor large areas of land.

The instrument, called the 'carbon soil bench', is a furnace on wheels, that burns a soil sample and tests how much carbon dioxide is created.

Robert Pallasser, from the Soil Security Lab at the University of Sydney, says the instrument is proving to be cheaper, more accurate and less labour-intensive than the current measurement techniques that have proved a substantial barrier to soil carbon projects under the Carbon Farming Initiative.

"Currently, it's a very laborious process to measure soil carbon." he said. "The standard method of determining soil carbon relies on a very small amount of material.

You take a pinch from here and a pinch from there, and you've got this huge variation. This method, I believe, is a lot more reliable and a lot more robust on an agricultural scale.

You're taking large material, and you are integrating all the carbon that's in that material. Then you're getting one number that represents that whole core and it's just a few dollars to get that result. It takes ten minutes to process one core, or sample, that is generally about an inch in diameter and up to a metre in length."

The 'carbon soil bench' is not commercially available and is still lab-based. Mr Pallaser says farms or regional centres could have one to facilitate local soil carbon projects in the future.

abc.net.au/news/2013-06-07/soil-carbon-bench-instrument/4738212

New technology transforms pig poo to gas

ABC Rural: By Annabelle Homer

New technology has been developed by South Australian scientists in China to turn pig waste into biogas and biochar.

The Adelaide-based Co-operative Research Centre for Contamination Assessment and authorities in China have developed a biodigester at a Chinese piggery, transforming millions of tonnes of waste into natural gas.

China's pig industry generates 1.4 million tonnes of poo and seven million tonnes of urine per year. Only 10% of that is treated, causing major health and environmental risks. Professor Ravi Naidu, chief executive of CRC Care, says they have been working on it for over a year.

Currently there are biodigesters already being used by industry, the difference with this new technology is it can operate 12 months of the year because its stored underground and keeps a constant temperature.

Current models are above ground, exposed to changing temperatures, which affects the technology's efficiency. This technology is now ready to be implemented anywhere in the world with interest coming from India and Australia.

CRC Care is currently working with the Pork CRC at Roseworthy in SA to find a pig producer who would be interested in trialling this new technology.

CEO Roger Campbell says it's a novel idea that could potentially be taken up in Australia, but it has to be competitive with the current technology already used on farms to justify the cost.

abc.net.au/news/2013-05-21/gassy-pig-poo/4702538

Messina harvest reaps rewards

Relief for landowners hurt by saline and waterlogged soils could be on the horizon, thanks to research by scientists in South Australia and WA.

Messina (Melilotus siculus) has moved a step closer to commercial viability by passing recent seed harvesting trials with flying colours. The seed was straightforward to harvest and process, according to SARDI (South Australia Research and Development Institute) researcher Katrina Copping, so it looks like seed producers will be able to grow and harvest it relatively easily.

"For some pasture species, seed harvest can be a problem," Katrina said. "For example, the seed may be hard to collect if it shatters before harvest or the seed may be difficult to thresh from the pod. If it is hard to harvest the seed, it is difficult to make the species commercially available, so it can be a real problem.

Before this trial, we really did not know how difficult it would be to harvest messina seed. No-one had harvested it with a commercial grain harvesting machine before."

The researchers used a plot harvester on a field trial site at Keith, South Australia. The plot harvester works like a mini commercial harvester. Researchers harvested eight strips that were 8m long and 1.5m wide. Clean seed yield on the harvested area ranged from 1t/ha to 2.1t/ha, with an average clean seed yield of 1.6t/ha.

"The day we harvested was relatively cool – only around 19°C. We thought that may cause problems with the threshing but it didn't. The clean seed yield was 83.5% of the total harvest weight. On a warmer day, harvesting would probably be even easier and clean seed yield higher," Katrina said.

Messina is a Mediterranean annual pasture legume that promises to lift pasture and animal production on saline and waterlogged farmland. It was identified as a potential pasture plant in 2005 in research funded by Future Farm Industries CRC.

"The beauty of messina is that it grows on saline soils that are subject to waterlogging," Katrina said. "It is normally very difficult to grow any legume pasture in these areas and messina could really make a difference."

The messina research is on track to produce a commercial plant-rhizobia package for 2014.

Contact: Andrew Craig SARDI

futurefarmonline.com.au/Enews/2012-02/messina-harvest-fruitful

How much carbon can the world's forests absorb ?

Continued from Page 1

from Degradation (REDD) programme a meaningful contributor to offsetting emissions.

Our best estimates of global forest carbon sinks and sources demonstrate the ongoing importance of forests to the global carbon cycle. Unfortunately, however, they do not provide a road map to the future.

If forest "scrubbing of CO_2" declines while release of CO_2 remains stable or grows, the "braking" effect of the world's forests on the pace of climate change will grow weaker, perhaps disappearing entirely. That would be truly bad news for the global climate and those who depend on it.

Unfortunately, that is not just a lot of hot air.

Author: Peter Reich, Scientific advisor, Hawkesbury Institute of the Environment at University of Western Sydney

http://theconversation.com/explainer-how-much-carbon-can-the-worlds-forests-absorb-14816?

WILLUNGA Environment Centre INC

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, July 23rd, 10.30 am. Craig and Cathy will present a *"Living Smart, Living Simple"* workshop. We will be learning how to read labels on cleaning and other products.

Tuesday, 13th August, 7 pm: Chas Martin will present *"Rainwater & Greywater for your Garden."*

Free supper provided

Registration essential: Phone 8556 4188 or email info@willungaenviro.org.au to register

Editorial

Sometimes, it's hard to find really positive stories in relation to farming. I'm saddened to see what's happening in Victoria with the closure of fruit canning plants. However, I do try! For a start, right here in Willunga we've had really good rain for the start of winter, which is great.

It's also really pleasing to get the EnviroKids involved again with growing and planting trees which will take place on, or near, National Tree Day. July 26.

The group has engaged an Honours student to make a bird study on some of our revegetated sites. He's made some interesting discoveries which we will tell you about in our Spring newsletter as the details are not to hand at the moment.

On a recycling tour recently I was reminded that Mercury from fluorescent lamps in landfill risks leaching into the environment, harming plants and animals. Mitre 10 stores and the Willunga Environment Centre will accept these items where they will be correctly recycled.

BRIAN.

Willunga Hillsface Landcare Group

PO Box 215
WILLUNGA SA 5172

Meeting dates vary, but are usually held on Mondays monthly at 5.0 p.m. in the Willunga Hub, cnr. St. Peters Terrace, Willunga.

All members are welcome to attend these meetings.

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

Willunga Hillsface Landcare Group

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Our thanks to Leon Bignell, MP, local Member for Mawson for printing this newsletter.