The Green Challenger

Official Newsletter of the Willunga Hillsface Landcare Group

Willunga Hillsface Landcare Group

Working towards a healthy, vibrant and sustainable Willunga Basin

Spring 2015

Despite decades of deforestation, the Earth is getting greener

While the news coming out of forests is often dominated by deforestation and habitat loss, research published today in Nature Climate Change shows that the world has actually got greener over the past decade.

Despite ongoing deforestation in South America and Southeast Asia, we found that the decline in these regions has been offset by recovering forests outside the tropics, and new growth in the drier savannas and shrublands of Africa and Australia.

Plants absorb around a quarter of the carbon dioxide that people release into the atmosphere by burning fossil fuels. With a greening globe, more plants may mean more absorption of carbon dioxide. If so, this will slow but not stop climate change.

However, questions remain over how long plants can keep pace with our increasing emissions in a warmer climate.

Measuring carbon in plants

We studied how plants and vegetation are faring by determining the amount of carbon stored in living plant mass (or "biomass") above the ground.

We developed a new technique to map changes in vegetation biomass using satellite measurements of changes in the radio-frequency radiation emitted from the Earth's surface, a technique called passive microwave remote sensing. The radiation varies with temperature, soil moisture and the shielding of water in vegetation biomass above the ground.

We extracted this vegetation information from several satellites and merged them into one time series covering the last two decades. This allowed us to track global changes in biomass from month to month, something that was not possible before.

For the period 2003-12, we found that the total amount of vegetation above the ground has increased by about 4 billion tonnes of carbon.

Still losing rainforests, but gaining forests elsewhere

Our global analysis shows losses of vegetation in many regions, particularly at the frontiers of deforestation in the tropics of South America and Southeast Asia.

As expected, the greatest declines have been in the so-called "Arc of Deforestation" on the south-eastern edge of the vast Amazon forests. In Southeast Asia we found the most widespread declines in the Indonesian provinces of Sumatra and Kalimantan - the Indonesian part of Borneo.

However, we found that these

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You are invited to come along to hear Dave Bell, International award-winning author, award-winning garden designer and nature lover, who will give a fascinating talk entitled:

"Looking after things that matter... plants, wildlife and the environment"

On Thursday, 12th November, 2015

At The Willunga Environment Centre
18 High Street, Willunga from 7.30pm

A light supper will be provided after the talk

A GOLD COIN DONATION IS REQUESTED TO DEFRAY EXPENSES

A short Willunga Hillsface Landcare Group A.G.M. will be held prior to the talk

Editorial

Sometimes I struggle to find positive news to fill this newsletter, but I have been really pleased to be able to include the information about Saskia Gerhardy winning awards whilst working for the environment. I find that really encouraging.

Saskia's mother, Karen really started the ball rolling with her involvement at Willunga Primary School and the Envirokids so she had a good teacher.

The following is a snippet from a rather sad article I read recently:

Trees die – that's a fact of life. But is the death of an entire iconic landscape of Eucalyptus in the Cooma-Monaro region of New South Wales natural? For over a decade, large stands of Eucalyptus viminalis, commonly known as Ribbon Gum or Manna Gum, have been gradually declining in health, and now stand like skeletons in huge tree graveyards… the affected area covers almost 2,000 square km!

The full article is available from: theconversation.com/death-of-a-landscape

The article on Page 7: *New water conservation method trialled,* raises questions for me regarding the ultimate break-down and disposal of these plastic balls. Plastic is one of the World's biggest pollution problems. However, reducing evaporation is a worthy goal to aim for.

I heard about another method that's been put in place in Jamestown whilst listening to the Science Show on Radio National recently… it's their "open-air water effluent system that they've put a floating solar system over the whole top of it which will stop evaporation and create electricity that can power part of the town…" transcript available: http://www.abc.net.au/radionational/programs/scienceshow/can-climate-change-have-a-silver-lining3f/6744380#transcript

For me, that's a much better idea, despite being more expensive. Solar panel prices continue to fall and efficiency is increasing.

Brian

Saskia Gerhardy receiving her Manpower Young Landcare Leader Award at the Landcare Conference held in Waikerie. Presented by Brendon Fenner

I was very honoured to receive the Manpower Young Landcare Leader Award for my work with the YACCA group, setting up the group, coordinating their activities and teaching them about environmental awareness. Earlier this year I was also awarded with the Channel Nine Young Achiever Award for the Environment category.

This was for doing similar work with the children but also for my volunteer work (working with fauna rescue, giving presentations to community groups, numerous fauna and flora surveys with various organisations), also my work as the coordinator of Envirokids at Willunga Primary School and my university work (I'm currently undertaking a bachelor of science in Biodiversity and Conservation).

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.

I'm very lucky to work with so many different organisations and people who are doing such great work in the environmental field. It is both inspiring and heart warming to realise how many people care.

YACCA news

YACCA (Youth And Community in Conservation Action) is an environmental youth group set up to educate high school aged students about their local environment.

The group was set up as there was a need for environmental opportunities for children aged between 11-16. After some investigation it was found that there were many opportunities for primary school students to participate in environmental action, but older students were either not presented with these opportunities or had to sacrifice school time to participate in them.

With this in mind, YACCA was set up in the late stages of 2013.

YACCA has now been running successfully for almost two years, with the number of members skyrocketing from 8 when the project first begun, to 20 currently. These members all attend different schools and come from different environmental backgrounds. This is a feature that adds to the dynamics of the group, often allowing advanced members to teach other members, creating ownership of the knowledge that they hold.

This has been one of the reasons that the group has been so successful, as there is a philosophy of young people teaching young people, making the general atmosphere of YACCA unlike school and more like an environmental action group,

which only further encourages ownership.

It is due to the talented work of the group that YACCA has been able to participate in so many environmental activities including planting days with Trees for Life and the NRM, surveys along the Aldinga reef with Reef Watch, water and macro-invertebrate testing along the perennial creeks in Willunga, a camp at Arid Recovery in Roxby Downs, trapping nights at Tatachilla Lutheran Collage and much more. Additionally this year YACCA was trusted by council to become the care takers of a local creek line at Bassett St., Willunga.

Already YACCA has conducted many fauna, flora and water surveys on the area and started revegetating the first 100m this winter. Not only do the members of YACCA get to participate in exciting activities, experienced scientists, leading experts and local community groups, also give them lessons on environmentally significant issues. By coupling the lessons with activities, gives the members hands on experience as well as knowledge, solidifying their understanding of the issue.

The activities that YACCA partake in give the young members enthusiasm about the work that they are doing and create a passion for environmental work. YACCA hopes to key into this passion for environmental work.

If the members are passionate about what they do, then they will feel a sense of ownership towards it. If they feel ownership, then they are more likely to try to protect the work that they have done, whether that be revegetation, helping a native species or cleaning up an area of environmental significance. With this YACCA hope that we have created a group of environmentally minded students who will invest and protect our local environment well into the future.

Saskia Gerhardy

Regreen the Range Report

The Landcare group have completed another successful year of revegetation across a number of properties on the hillsface. Another 25ha was revegetated across three properties along with the ongoing programme of increasing the biodiversity of plantings that were conducted over fifteen years ago. A revegetated property at Mt. Terrible will assist in linking previous plantings the Landcare group have undertaken and will add another 10ha to the considerable amount of revegetation already located between Mt. Terrible and Sellicks Hill.

Another property revegetated, located just north of Willunga on top of the escarpment, will assist in buffering good quality remnant Stringy Bark woodland. The revegetated property at McLaren Flat will assist in linking and buffering a nationally listed threatened vegetation association, Eucalyptus microcarpa (Grey Box), which the Landcare group re-established last year. The rains have been reasonable this year, apart from a very dry June. So hopefully if we get some good spring rains the revegetation should have a good chance of being successful.

Another project the Landcare group have just begun is the removal of Willows and Arum Lilies from two properties which the Wirra Creek flows through. Sections of the Wirra Creek are heavily infested with Arum Lily, which is now a declared plant, resulting in properties being affected when significant rainfall events occur. The Arum Lilies, and the Willows, clog the creek, restricting the ability of the water to flow freely down the creek system and causing issues for properties upstream. The programme to remove the Lilies and the Willows will take a number of years to complete and will require repeated removal of the plants as any small part of the rhizome which is left behind has the ability to re-shoot and become a new plant.

We think this is an important project to be undertaking as the Wirra Creek is the main creek system that passes through the township, it is spring fed and flows all year round and many other community groups have contributed to re-habilitate this creek system.

The Landcare Group would like to acknowledge the Adelaide and Mount Lofty Ranges NRM Board for the financial assistance in undertaking these important projects. Without this assistance these projects would not be able to proceed.

Wayne Lawrence

From Farm to Fork

Supporting our farmers and kids

"From Farm to Fork", an initiative of Landcare Australia, is a fundraising campaign to encourage us all to get together and enjoy Australian food, while supporting the farmers that make it possible. If we want to be able to enjoy the same supply of fresh food that we have, farmers need our support.

Your involvement will help raise awareness about where our food comes from through Junior Landcare programmes. The funds will enable us to develop resources for the Australian school curriculum to educate kids about our food. We will also provide grants for disadvantaged schools to start their own vegetable garden or have access to a special programme called *"From Paddock to Plate"* developed by Louise Fitzroy (one of our ambassadors) through Junior Landcare.

Imagine, your impact will teach both adults and kids understand more about where our food comes from and learn about the importance of a healthy environment in a hands-on way!

Find out more by visiting: www.fromfarmtofork.org.au

The tropical steam-engine: how does El Niño warm the entire globe?

We regularly hear about how El Niño events raise the temperature across much of the planet, contributing to spikes in global average temperature such as the one witnessed in 1998, with severe bush fires, droughts and floods.

Indeed, the extra warmth is typically much more apparent over land than in the oceans, despite El Niño being chiefly thought of as an ocean temperature phenomenon.

How is it that an event predominantly characterised by a warm blob of water in the tropical eastern Pacific can have such a pervasive effect on global land temperatures?

Consider the following: in your home you have a heater that warms all of the rooms. If you increase the heater's temperature by one degree you would expect that the rest of your home also warms a bit, but probably less than one degree, and that the most remote rooms would warm least of all. Surprisingly, this is not what happens when you warm the tropical oceans in our climate system. This heater heats up all the "rooms" by more than itself.

It turns out that if we were to warm all of the oceans on Earth by 1°C, the land would, as a direct result, warm by 1.5°C. On average, the land always warms more than the ocean. The key difference here is that when you warm the tropical oceans you also release additional water vapour into the atmosphere by evaporation from the oceans' surface.

When the warm air over the oceans rises to higher levels in the atmosphere, the moisture in the air rains out, releasing extra heat – called "latent heating of condensation". This leads to extra warming of the air.

The temperature above the land comes into balance with the warmer higher-level temperatures above it and, because the land surface is much drier it warms right away without surface evaporation cooling it.

Where El Niño comes in

In a study we published last year, we used climate models to perform simulations in which we raised and lowered the temperature of the oceans to see how the land would respond. As expected, we found that land temperatures varied more than ocean temperatures, and changes in ocean temperature were amplified over the land.

To explore how an El Niño or La Niña event would affect this land/ocean contrast, we then introduced the El Niño Southern Oscillation (ENSO) into our model as the main source of temperature variability in the oceans.

This time, instead of assigning the whole ocean a uniform temperature, we simulated El Niño/La-Niña conditions. We made the tropical Pacific Ocean warm and then cool over a period of four years (in the real world, ENSO is much less regular than this but the oscillation typically lasts about that long). We then watched to see how the rest of the ocean and land would respond.

Remarkably, the global land surface temperature still responded with increased variability, relative to the ocean. If the ocean surface temperature increased or decreased by 1°C, the land temperature increased or decreased by almost 1.5°C. Essentially, we found that the global land temperature can be altered simply by changing the temperature of the tropical Pacific Ocean.

You might ask: what if you changed the temperature of the Southern Ocean, or the North Atlantic, or some other bit of ocean instead? Would you get the same result? The answer is no.

Why is the tropical Pacific so influential?

Atmospheric convection in the tropics reaches up to about 5-10km above the ocean, taking the warmth into the mid-to-upper troposphere. This is fuelled by the heat release from the condensing moisture in the tropical air. The colder oceans do not have the capacity to evaporate that much water vapour and therefore to generate the kind of convection that reaches this high.

Warm air penetrates the troposphere's upper levels (as opposed to the lower troposphere immediately above the surface) and in the tropical upper atmosphere air can flow freely and easily distribute heat, so regional differences in temperature are evened out. The warm temperatures above the Pacific Ocean spread out and encircle the tropics. The warmth from tropical ocean convection can also spread out of the tropics and influence atmospheric temperatures in the mid-latitudes.

What does this mean for the years ahead?

We know that land and ocean temperatures fluctuate around an average value. However, that average value is increasing as a result of global warming resulting from human carbon dioxide emissions.

At the same time, we currently have a large, potentially record-breakingly hot El Niño brewing in the Pacific Ocean, which is expected to keep growing at least through to January.

As the current El Niño combines with the background warming of climate change, we can expect land temperatures to continue to spike, potentially surpassing last year's global record average. This warmth is likely to persist through and slightly beyond the period of the El Niño, increasing the likelihood that 2015 and 2016 will be very warm years indeed for the planet.

http://theconversation.com/the-tropical-steam-engine-how-does-el-nino-warm-the-entire-globe

Authors: Nicholas Tyrrell, PhD candidate, Monash Weather and Climate, Monash University; Dietmar Dommenget, Senior Lecturer, Climate Dynamics, Monash University

Enhancing agrobiodiversity to reduce vulnerability

For decades, agro-ecologists have contended that a key strategy in designing a sustainable agriculture is to re-incorporate diversity into the agricultural fields and surrounding landscapes and manage it more effectively (Altieri and Nicholls 2004).

Diversification occurs in many forms: genetic variety and species diversity such as in variety mixtures and polycultures, and over different scales within field and landscape level as in the case of agroforestry, crop-livestock integration, hedgerows, corridors, etc., giving farmers a wide variety of options and combinations for the implementation of this strategy. Emergent ecological properties develop in diversified agro-ecosystems that allow the system to function in ways that maintain soil fertility, crop production, and pest regulation.

There are many agro-ecological management practices that increase agro-ecosystem diversity and complexity as Agro-ecology and the design of climate change-resilient farms the foundation for soil quality, plant health, and crop productivity. It is generally believed by many entomologists and plant pathologists that inter-specific (species) and intraspecific (genetic) diversity reduces crop vulnerability to specific diseases and insect pests.

There is a vast body of literature documenting that in diverse cropping systems (variety mixtures, polycultures, agroforestry systems, etc.), there is less insect pest incidence and the slowing down of the rate of disease development, leading to less crop damage and higher yields in mixed crops as compared to the corresponding monocultures (Francis 1986; Altieri 2002). Swiderska (2011) found that maintenance of diverse traditional crop varieties (maize, potatoes, rice) and access to seeds was essential for adaptation and survival by poor farmers in China, Bolivia, and Kenya. Even when planted alongside modern crops, traditional crop varieties are still conserved, providing a contingency when conditions are not favourable.

For example in China, when farmers from 15 different townships grew four different mixtures of rice varieties over 3000ha, suffered 44% less blast incidence, and exhibited 89% greater yield than homogeneous fields without the need to use fungicides (Zhu et al. 2000). Maintaining species diversity in fields acts as a buffer against insect pests and also against uncertain weather.

In Kenya, scientists at the International Centre of Insect Physiology and Ecology (ICIPE) developed a push-pull system which uses two kinds of crops that are planted together with maize: a plant that repels these borers (the push) and another that attracts (the pull) them (Kahn et al. 1998). Two of the most useful trap crops that pull in the borers' natural enemies such as the parasitic wasp (Cotesia sesamiae) are Napier grass and Sudan grass, both important fodder plants; these are planted in a border around the maize.

Two excellent borer-repelling crops, which are planted between the rows of maize, are molasses grass, which also repels ticks, and the leguminous silverleaf (Desmodium), which in addition can suppress the parasitic weed Striga by a factor of 40 compared to maize monocrop. Desmodium's N-fixing ability increases soil fertility leading to a 15–20% increase in maize yield. It is also an excellent forage (Kahn et al. 1998).

Given the positive role of biodiversity in providing stability to agro-ecosystems, many researchers have argued that enhancing crop diversity will be even more important in a future exhibiting dramatic climatic swings. Greater agro-ecosystem diversity may buffer against shifting rainfall and temperature patterns and possibly reverse downward trends in yields over the long term as a variety of crops and varieties respond differently to such shocks (Altieri and Koohafkan 2013).

Plant diversity and resiliency

Diversified farming systems such as agroforestry, silvopastoral, and polycultural systems provide a variety of examples on how complex agro-ecosystems are able to adapt and resist the effects of climate change. Agroforestry systems are examples of agricultural systems with high structural complexity that have been shown to buffer crops from large fluctuations in temperature (Lin 2011), thereby keeping the crop closer to its optimum conditions.

More shaded coffee systems have shown to protect crops from decreasing precipitation and reduced soil water availability because the over story tree cover is able to reduce soil evaporation and increase soil water infiltration (Lin 2007). Intercropping enables farmers to produce various crops simultaneously and minimize risk (Vandermeer 1989). Polycultures exhibit greater yield stability and less productivity declines during a drought than in the case of monocultures. Natarajan and Willey (1996) examined the effect of drought on enhanced yields with polycultures by manipulating water stress on intercrops of sorghum and peanut, millet and peanut, and sorghum and millet.

All the intercrops over yielded consistently at five levels of moisture availability, ranging from 297 to 584 mm of water applied over the cropping season. Quite interestingly, the rate of over yielding actually increased with water stress, such that the relative differences in productivity between monocultures and polycultures became more accentuated as stress increased (Natarajan and Willey 1996).

Intensive silvopastoral systems (ISS) are a sustainable form of agroforestry for livestock production that combines fodder shrubs planted

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Despite decades of deforestation, the Earth is getting greener

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rainforest losses have been offset by increases in biomass in other parts of the world.

For example, forests have spontaneously regrown on farmland abandoned after the fall of communism in Russia and neighbouring countries, while large-scale tree planting projects in China have measurably added to the global biomass. This roughly offset half of the carbon loss by tropical deforestation.

We also found unexpectedly large vegetation increases in savannas and shrublands of Australia, Africa, and South America. Previous analyses have focused on closed forests and did not measure this increase.

Is Australia getting greener?

On average, Australia is "greener" today than it was two decades ago. This is despite ongoing land clearing, urbanisation and the recent droughts in some parts of the country.

However, the increase in vegetation has not been uniform. The largest increases are in northern Australia, with lesser increases in southern Australia and a small decrease in south eastern Australia.

These vegetation trends seem to be mainly explained by rainfall patterns: northern Australia has been getting wetter and southeast Australia dryer. This pattern is predicted to continue according to the most recent climate change projections from the CSIRO and the Bureau of Meteorology.

Australian vegetation growth generally responds strongly to rainfall variations. More variability and an apparently increasing frequency of extreme El Niño and La Niña events due to climate change would create stronger boom-bust cycles in Australia's vegetation.

Apart from the effect of rainfall patterns, our study also agreed with other studies observing a gradual greening trend for the past two decades, even where there was no change or even a small decrease in rainfall.

This has been ascribed mainly to the increasing number of trees and shrubs growing on semi-arid grasslands. These plants are more efficient water users than other plants such as grasses. With the increased atmospheric concentration of carbon dioxide from fossil fuel emissions, they are able to absorb more carbon from the atmosphere without using more water.

More vegetation will slow but not prevent climate change

The world's vegetation plays an important role in slowing down climate change. About a quarter of all carbon emissions from human activities are removed by terrestrial vegetation, with the size of the carbon land sink increasing over time.

However, it remains to be seen how the increased climate variability that accompanies climate change will affect this terrestrial "carbon sink" in future. This is particularly true for seasonally dry ecosystems that experience fires, such as Australia's savannas, where a single fire event can easily remove the carbon stored in plant biomass over many previous years. The future interaction between climate variability, vegetation and fire is difficult to predict and remains the focus of intense research.

Overall, our study provides more direct evidence of the global increase of vegetation growth and the terrestrial carbon sink than previous studies, with unprecedented geographical attribution and year-to-year changes.

With terrestrial vegetation removing about a quarter of the carbon emissions from human activities and the global oceans removing another quarter, this means that half of our CO_2 emissions remains in the atmosphere. Therefore, stabilising concentration of CO_2 in the atmosphere and the consequent impact on the climate system will still require large reductions of global fossil fuel emissions

A new investigation of satellite records reveals that the Earth is getting greener, despite ongoing deforestation in Indonesia and South America.

Authors: Yi Liu, ARC DECRA Fellow in Earth Observation at UNSW Australia

Albert Van Dijk, Professor of Water Science and Management, Fenner School of Environment & Society at Australian National University

Pep Canadell, Executive director, Global Carbon Project at CSIRO

http://theconversation.com/despite-decades-of-deforestation-the-earth-is-getting-greener

Enhancing Agrobiodiversity

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at high-densities trees and palms and improves pastures. High stocking and the natural production of milk and meat in these systems are achieved through rotational grazing with electric fencing and a permanent supply of water for the cattle. At the El Hatico farm in the Valle del Cauca, Colombia, a five-story Intensive silvopastoral system (ISS) composed of a layer of grasses, Leucaena shrubs, medium-sized trees, and a canopy of large trees have over the last 18 years allowed to increase stocking rates to 4.3 dairy cows ha and milk production by 130%, and to completely eliminate the use of chemical fertilizers.

2009 was the driest year in El Hatico's 40-year record, with precipitation having dropped by 44% compared to the historical average. Despite a reduction of 25% in pasture biomass, the fodder production of trees and shrubs remained constant throughout the year, neutralizing the negative effects of drought on the whole system. In response to the extreme weather, the farm

had to adjust its stocking rates and increase energy supplementation. In spite of this, the farm's milk production for 2009 was the highest on record with a surprising 10% increase compared to the previous 4 years.

Meanwhile, farmers in other parts of the country reported severe animal weight loss and high mortality rates due to starvation and thirst. Productive performance of El Hatico during the exceptionally hot and dry period of El Nino Southern Oscillation illustrates the huge potential of SPS as a sustainable intensification strategy for climate change adaptation and mitigation (Murgueitio et al. 2011). The combined benefits of water regulation, favourable microclimate, biodiversity, and carbon stocks in the above-described diversified farming systems not only provide environmental goods and services for producers but also a greater resilience to climate change.

Soil management and resiliency

Many traditional and organic farmers add large quantities of organic materials on a regular basis via animal manures, composts, tree leaves, cover crops, and rotation crops that leave large amounts of residue, etc., as a key strategy used to enhance soil quality. Soil organic matter (SOM) and its management are at the heart of creating healthy soils with an active biological activity and good physical and chemical characteristics.

Of utmost importance for resiliency is that SOM improves the soil's water retention capacity enhancing the drought tolerance by crops and improves infiltration diminishing runoff avoiding that soil particles will be transported with water under intense rains. SOM also improves surface soil aggregation holding tightly the soil particles during rain or windstorms. Stable soil aggregates resist movement by wind or water (Magdoff and Weil 2004).

The article above is just a small section that I've used from a pdf: ***Agroecology and the design of climate change-resilient farming systems.*** *It can be found by that title.*

Authors: Miguel A. Altieri, Clara I. Nicholls, Alejandro Henao & Marcos A. Lana

New water conservation method trialled

Australian authorities are constantly looking for ways to combat the impact of drought, particularly the shortage of potable water.

Now it seems a viable solution might be on show in the United States, in drought-affected California.

After four years of record low water inflows, and limited snow melts off the Sierra Nevada, the city of Los Angeles is having to become creative about water storage and conservation.

Water managers in Los Angeles are now managing drought pressure on city water supplies by covering their major reservoir with 96 million little plastic balls.

The balls are made of food grade plastic, and are coloured with carbon black to ensure maximum shade for the water supply, reducing evaporation and algal bloom.

Director of Water Operations with Los Angeles Department of Water and Power, Richard Harasick, said the concept had been developed from bird defence systems at commercial airports.

The balls have been used at airports to fill depressions surrounding runways and to discourage water birds from gathering there.

Mr Harasick said the balls are mesmerising to watch as they roll around the surface of massive city water supply storage.

This is a huge reservoir, a conventional roof or cover would have cost $300 million or $400 million.

Director of Water Operations with Los Angeles Department of Water and Power, Richard Harasick

"It's 126 acres and to put any kind of cover or roof on it would have made it the largest covered reservoir, at least in the United States, to the tune of $300 million or $400 million.

"So by putting the shade balls on, we solved all of our water quality problems and saved $250 million."

A very speculative estimate has been given of the possibility of installing a similar system on the controversial Menindee Lakes water storage which supplies Broken Hill in NSW.

Evaporation from the lakes system, which has a surface area of 47,500 hectares, regularly puts pressure on Broken Hill water supplies and creates an imperative to limit irrigation extraction upstream.

Unofficial estimates of the cost of installing a similar system on the lakes is in excess of $50 billion.

In Australia, research has been looking at various coverings on dams to reduce evaporation for the past several years.

A recent engineering Honours graduate has experimented with the idea of using plastic recycled bottles as a barrier.

Eliza Mooring studied at the University of NSW; she says her research has found that installing bottles can cut water evaporation by up to 70 per cent on farm dams.

Ms Mooring undertook the research on farms in the Western Division of New South Wales.

She said using recycled plastic bottles is one way of making it cheaper and easier for cash strapped farmers to cover farm dams.

"The main thing farmers are concerned about is the cost, how much it will cost to freight all the bottles out to the farm, and how much ongoing maintenance the plastic bottles will require," she said.

"But many farmers are keen to reduce evaporation.

"I would like to able to set a up a large field trial to try and ascertain the most efficient and cost effective means of reducing evaporation."

http://www.abc.net.au/news/2015-08-14/los-angeles-water-supply-shade-balls/6697272

Willunga Hillsface 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 like to receive your copy in PDF format (via email) please let me know as this saves the group postage. This is my 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.