

# Newsletter

No. 182

May 2014

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South Gippsland  
**CONSERVATION SOCIETY Inc.**



## Warming Effects Near the Poles

At our recent AGM Aileen Vening expanded on the mechanisms of the changing weather patterns which the globe is experiencing, especially in the Northern Hemisphere, and how these factors will continue to effect the future of our planet.

In the last issue we introduced the concept and importance of jet streams in the Northern Hemisphere. Aileen expanded on this, explaining that as conditions warm the system is less stable and cold air can meander further south, sometimes with catastrophic effects such as Cyclone Sandy in October 2012.

I won't try to give a full summary of Aileen's talk but a couple of the concepts she introduced are worth exploring.

### Albedo

Albedo is the fraction of incident electro-magnetic radiation which is reflected from a surface. It's a vital element of global warming because water

and ice exhibit vastly different values, with water (dark) reflecting only 7%, while ice and snow (white) reflect 85% of incoming light. Light which isn't reflected has a heating effect so, as the arctic ice-sheet retreats and the sea expands, more heat is taken up by the earth.

Warming of the atmosphere and the Arctic Ocean have led to a halving of the extent of sea ice from 1984 to 2012, so there is now much more sea to warm up and continue the damaging cycle.

As Greenland warms, dark-coloured rocks - also with low albedo - are also being exposed.

### Permafrost

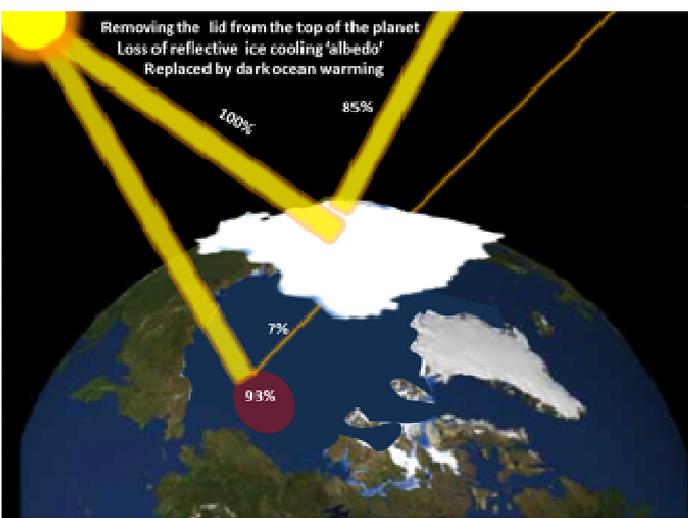
Permafrost is permanently and intermittently frozen ground and it covers huge areas in the Northern Hemisphere largely in Russia and Canada.

In these cold regions plants that die don't break down and become part of the soil because it is too cold for bugs to break them down, so dead organic matter is preserved and added to each season.

In some places there are massive beds of frozen organic matter: 1,500 metres thick in northern Siberia, 740m thick in northern Alaska. 62% of Russia is underlain by permafrost.

From a climate change perspective as long as they remain frozen they are locked away, but if warmed and melted, CO<sub>2</sub> and methane are released.

As we know, methane is 25 times more potent as a greenhouse gas than carbon dioxide, so the effects of any thawing of the permafrost will have a powerful accelerating effect on climate change.



### Newsletter

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*If the melting of permafrost continues to accelerate, infrastructure problems like these ones in Alaska could be dwarfed by the effects of massive CO<sub>2</sub> and methane emissions.*



## Meanwhile in Antarctica.....

Climate change is happening there too but for several reasons, including the fact that Antarctica is a large land mass while the Arctic is all water and ice, the impacts are not as significant as those in the Northern Hemisphere.

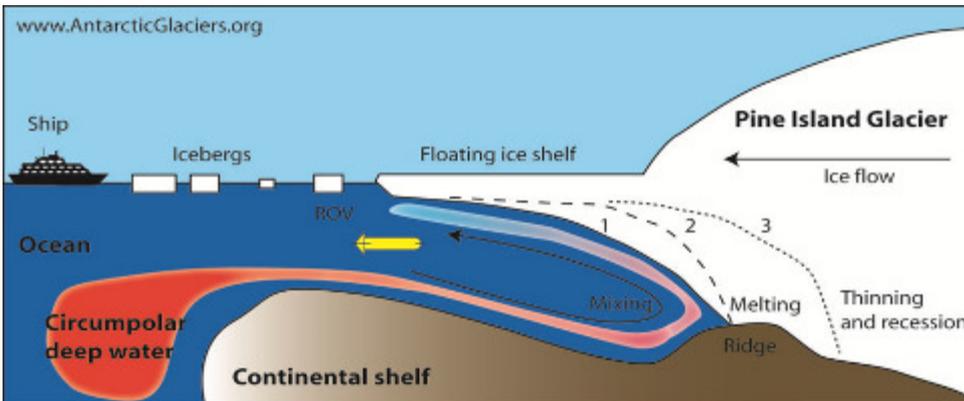
Unlike glaciers in Greenland and much of East Antarctica, the ice sheet in West Antarctic rests on bedrock that is below sea-level, leaving it exposed to melting as waters warm.

The thinning ice is largely caused by warming offshore waters reaching under the ice floating at the continental margins. The band of westerly winds known as the Roaring Forties have quickened and moved closer to Antarctica, drawing up relatively warm waters from below the surface. Even normally cold waters around

-1.5°C are warm enough to melt ice under pressure, but the water now entering the continental shelf is over 2<sup>0</sup> warmer and accelerating ice loss.

**Frank Hirst**

using notes from **Aileen Vening**



1. Early 1970s. Pine Island Glacier is grounded at a bedrock ridge.
2. Warm, inflowing Circumpolar Deep Water melts the base of the glacier. The glacier steepens and accelerates.
3. Present day, observed by a remotely operated vehicle (ROV). Glacier is thinning and receding.

*Pine Island Glacier (shown left in diagrammatic form) is one of a number of glaciers which empty into the Amundsen Sea, east of where the great Norwegian explorer set off to "conquer" the Pole early last century.*

## Roadworks

*I was driving through the country  
on an autumn afternoon  
when I passed two roadside workers  
and I wondered what they do'n*

*Cos it looked as though the first one  
would dig a hole beside the road  
which the other chap filled in and then  
towards the next they strode*

*So I stopped and did a u turn  
and drove back towards the pair  
and I hollered to the fellas  
"Whaddaya think you're doin' there?"*

*"Why go wasting time and money  
digging all these useless holes  
Can't you fix some corrugations  
or perform some useful roles?"*

*Then the digger gave the answer  
"Well we usually work in threes  
but today there's one bloke missing  
and it's him what plants the trees!"*

**Mike Cleeland**

## Leatherback at Waratah

A remarkable ocean wanderer unfortunately washed up at Waratah Bay in South Gippsland in February this year.

Leatherbacks are the largest turtles in the world and a true oceanic species. They breed in tropical areas but then spend many years at sea drifting across oceans seeking out their favourite prey, jellyfish, before returning many years later to their breeding sites.



Leatherbacks are encountered every so often in Bass Strait, unfortunately often after being entangled in fishing gear or craylines and drowning.

Some more information on this fascinating species including video and images is at [http://en.wikipedia.org/wiki/Leatherback\\_turtle](http://en.wikipedia.org/wiki/Leatherback_turtle)

**Mark Rodrigue, Parks Victoria**

## Wetlands

Shimmering water under an azure sky, a patchwork of colours threading through greenery, birdsong, frog calls, butterflies flitting, insect hum - a tropical paradise? No, a wetland on Wonthaggi's outskirts.

Mindful of water, mosquitoes and the odd snake, we went well-prepared: gumboots, long sleeves, hat. We did alarm a great egret and a white-faced heron, but the serenade of wren, fantail and shrike-thrush continued. Nearby a reed warbler sang, the strident call of a masked lapwing rang out and welcome swallows dipped and skimmed.

Like a rich oriental carpet, the ephemeral wetland glowed with colour, embroidered with the yellows of buttercups and goodenia, the pinks of plantain, knotweed and loosestrife and stars of white purslane. Cushions of green yielded cryptic flowers through which slim, sapphire damsel flies stitched a trail. A pure white moth clung to a stem, while hoverflies hung suspended above the blooms. Festoons of seed beaded the water ribbons and arrowgrass.

The list of plants rolled richly off the tongue as we identified them: waterribbons, pithy sword-sedge, swamp goodenia, streaked arrowgrass, long-fruit watermat, floating pondweed, toad rush, pale rush, grassy club-rush, common spike-rush, swamp club-rush, narrow-leaf cumbungi, white purslane, common rush, pennywort, duckweed, small river buttercup, slender knotweed, centella, broad-leaf rush, lesser loosestrife, aus-

tral brooklime, shiny swampmat, yellow water-buttons, upright watermilfoil and a new plant for our wetlands, water plantain. In one patch was the fetchingly named fungus: slime mould.

As we waded the margins, the swamp merged with a thicket of swamp paperbark, the water black and mysterious in the dense shade, surely a fit home for Hobyahs?

A twenty-minute walk from home, two minutes off the roadside and all these specialised wondrous plants. How lucky we are to live in such a richly diverse area! Get out and enjoy it.

**Terri Allen**



*Yellow water buttons make a bright show in the Wonthaggi wetlands*

## Sustainable Architecture

The Adult Education program in May featured leading Melbourne architect Terry Nott with his presentation on Sustainable Architecture.

About a dozen members and visitors enjoyed Terry's stimulating and informative presentation. Some of the interesting points he made included:-

- Passive solar design involves orienting the long axis of a house east/west, so that maximum sunlight can enter from the north for natural heating. Unfortunately many recent subdivisions have been developed with blocks oriented north/south, making it difficult to align the house correctly.
- Big south-facing windows with standard glass lose a lot of heat.
- Narrow or absent eaves on modern houses make it difficult and expensive to cool a house in summer.
- Cross ventilation is important for summer cooling.
- Large areas of hard surfaces such as concrete drives and service roads create drainage and runoff problems.
- Solar installations on family homes should be at least 3kw capacity, and the house should be designed with sufficient north-facing roof area for mounting.

- Population growth is best managed by high density development rather than urban sprawl.
- High grade marine quality colorbond should be used for roofing in coastal areas.
- Timber is probably the best choice of material for windows, as it has less embodied energy than either zincalume or moulded plastic.
- Merbau and Meranti are both Indonesian rainforest timbers, are not being harvested sustainably, and should not be used.
- Insulation is vital, as is it's correct installation.
- Building materials with high thermal mass reduce energy costs for heating and cooling. These include rammed earth, stone and concrete.
- Care should be taken to design a house around selected items of furniture or other internal features, to reduce wasted space.

More information about Terry's award-winning projects on his website at <http://www.nottarchitecture.com.au/>

**Mike Cleeland**

## Humans Mucking with Nature - What's New?

Several years ago in an article I wrote for the Newsletter about 'What is Conservation?' I remarked that many of us were conservationists because we have a deep love for nature. Many of us love and are fascinated by our native flora and fauna or marine life, or all of these. And of course it is this passion that drives the conservation movement.

I went on, however, to insist that for our cause to be valid, and to be taken seriously, what we advocate for and fight for, and what we do, must be based not on sentiment but on the best science and the best research that is available.

But here's the rub! Scientific knowledge isn't static. New science is being done all the time. Of course, that science needs to be verified by ongoing research and testing. An interesting test for us then is when some new science/research seems to challenge a strongly held position we have long advocated as central to our cause.

In this article I want to introduce you to two recent books which are pointing to new ways of looking at old problems. They are new to me; perhaps not to you.

They are not yet orthodoxy, but they are troubling many previous "experts" in these fields.

The first book is called "The Biggest Estate on Earth", by Bill Gammage.

It is causing great controversy and defensiveness in the relevant academic communities. It challenges a long cherished view that Australia's aboriginal inhabitants largely adapted themselves to their natural environment, and lived in harmony with the land as they found it.

Gammage's evidence suggests the reverse, that the aborigines actually 'farmed' (or managed) the whole of Australia, radically altering the natural environment. It



*The massive Diprotodon was widespread across Australia when the first indigenous people arrived, but evidence suggests they eventually caused its demise.*

Picture:- Australian Museum. website

assembles convincing evidence that extensive (not occasional) use of fire was made to turn vast forested areas into grasslands and open forests, entirely for the purpose of making hunting of wild animals easier and more accessible. This practice - the repeated burning of some forest areas to destruction, then regularly burning the ensuing grasslands and the understory of open woodlands - is responsible for large areas of native grasslands interspersed widely among Australia's forested areas long before European settlement extended these areas.

Open grasslands meant that kangaroos and other game could be surrounded and hunted, close to impossible in thickly forested areas.

On arrival in Australia the aborigines found a land almost entirely covered in dense forest. The first European settlers however found a land that reminded them of the large park-like estates of the wealthy English landowners. The first settlers had little or no need to clear land for pasturing their sheep and cattle. It had already been done. When the grasslands were all taken up, then of course later settlers began to clear more of the remnant forest.

Gammage also argues convincingly that once European settlers decimated aboriginal communities and took over their grazing lands, their exclusion and our lack of knowledge of their land management practices meant that the grasslands were not maintained, returning to scrub and forest and becoming vulnerable to the hugely damaging bushfires much more characteristic since white settlement than before.

The second book, "Feral" by George Monbiot, also refers to Australia, as well as many other places, by way of illustration of its major theme, which he calls "rewilding" of the environment. He assembles significant evidence that early man as "hunter", rather than later man as "farmer", caused much the greater change to the natural environment.

When early indigenous tribes 'peopled' Australia for the first time 40,000 to 50,000 years ago, this country was largely covered in dense rainforests, with a range of very large "mammoth" at the head of the food chain. Most of these animals became extinct through hunting within a period of about 10,000 years.

At roughly the same time the dense rainforests began to be replaced with the grass and scrubby trees which populate much of Australia today. Why?

Well, the climate changed, so we are told! However, evidence from pollen and charcoal analysis from drill cores show that the shift from rain forest to dry forest took place some 10,000 years *before* the climate dried out. It seems that humans, and their destruction of the

giant herbivores, were to blame. This disturbance of the balance of nature, a balance wrought through evolutionary processes over millennia, allowed large fuel loads to build up in the forests, with wildfire taking hold and slowly converting rainforest to grass, scrub and dry forest.

The author's major thesis is that if we are to 'restore' nature we will have to reintroduce top predators and top-of-the-food-chain animals, and exclude hard-hooved animals like sheep and cattle from areas which are fundamentally unsuited to their presence. Among many other examples of the intricacies and ecological interdependencies of nature he quotes the example of the re-introduction of wolves into Yellowstone National Park in the USA.

When human intervention eliminated wolves from the national park an unforeseen consequence was the explosion of the elk population (also known as wapiti), and a train of environmental damage which followed. With the deliberate re-introduction of wolves in 1995 (70 years after their extermination) the whole ecology began to revert to its former richness and diversity, at the same time naturally overcoming severe environmental damage caused by the deer.

The deer population was drastically reduced by the wolves. The remaining deer avoided the exposed areas such as river banks. With the cessation of excessive browsing the riverside vegetation quintupled in height in 6 years. The trees shaded and cooled the water, providing cover for fish, etc. The grazed valleys reverted to natural forests of aspen, willow and cottonwood. The number of songbirds increased. The populations of beavers and bison expanded. The greater presence of beavers created niches for otters, muskrats, fish, frogs and reptiles. River banks became stabilized reducing the rate of erosion and increasing fish numbers three-fold.

By hunting coyotes the wolves also allowed the population of smaller mammals to rise, providing increasing prey for hawks, weasels, foxes, badgers, bald eagles and ravens. The number of bears has also increased – they feed on the carrion abandoned by wolves, and the berries on the new vegetation no longer grazed or destroyed by excessive deer numbers.

The author reports on both the massive destruction of nature and the "rewilding" projects happening across Europe. For example, in describing the Welsh countryside he argues that most of the so-called beautiful "scenic" and much visited rural landscapes of Great Britain, especially the hilly and mountainous regions, are mostly barren of vegetation other than heather and gorse. They have been similarly denuded of their forested cover many thousands of years before farming and grazing, when top predators and other animals were hunted to extinction. What is more is that these denuded landscapes are kept that way by the power of wealthy landholders for modern recreational hunting of



*The re-introduction of wolves into Yellowstone National Park is redressing the population explosion of elk (above) which caused massive habitat destruction in their absence.*  
Photo:- Wikipedia

grouse, pheasant, deer and foxes; or alternatively for the farming of sheep.

He tells us what may be surprising to many, that around 50,000 years ago, rhinoceros, hippopotamus, elephants and lions roamed Britain and much of Europe. Lions survived in Britain until 11,000 years ago.

He describes many projects in Europe and Russia where unique experiments in "rewilding" are taking place. He also describes the deliberate destruction of remnant natural vegetation on farmland by the European Union's subsidising of farmers at a significant financial cost with no benefit to the economy.

His criticism of this mindless activity and of some British so-called government-directed 'conservation' groups seems justified enough. The government's interest is in historical preservation rather than nature conservation.

It is clear that if we want not only a natural environment but a healthy and diverse ecosystem we need to vastly reduce human interference in it, and ultimately that means a vastly reduced human population (an issue that the author does not directly engage with). We also need to see that many of our human interventions to restore nature are fraught with lack of knowledge, and hence shortcomings, if not failure, until we have the full picture that science and sound research can give us.

All of this raises the questions of what is the natural environment we are aiming to restore, and what are the indigenous plants of our area? Perhaps the ones we know and love are in fact deeply modified over centuries and indeed millennia by human intervention, and climate change of one sort or another.

The two books I refer to belong among many other emerging or new understandings of our world. They are worth reading and pondering. They raise important questions yet to be resolved. For too long humans have seen the world only from our perspective, what

seems to suit us in the short term, and that by destroying so many animal and plant species around us has become a major destruction of nature's long-crafted ecosystems which in the end are our life-support systems too.

To be a successful conservationist today means we must come to grips with ecology, and with very, very ancient history. These books are not just about research and theories, but about actual projects which are exciting, and indeed grounds for hope, provided of course that we act urgently on human-induced climate change before it is too late.

Books referred to:

"The Biggest Estate on Earth - How Aborigines made Australia."

By Bill Gammage. 2012. Allen & Unwin.

"Feral" - Searching for Enchantment on the Frontiers of Rewilding".

By George Monbiot. 2013. Allen Lane

Check your local library, or encourage them to procure them. Perhaps the BEC Shop could get some copies if a few of us ordered them.

P.S. I wrote this article to help the editor as much as anything else. He is doing a great job for which we should all be grateful, and I hold him in the highest regard for his many contributions to the Society over many years. I told him that he could only publish the article on condition that he also published this PS.

**John Gunson**

*What could I possibly say to that John, except thanks for the kind words and the articles? - Ed.*

## Bunurong Coast Education July School Holiday Program

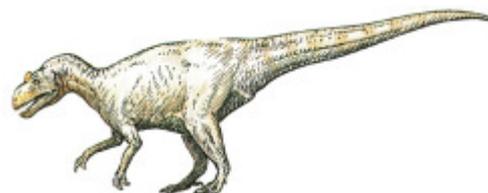


### Rock Pool Rambles with Rod Webster

**Saturday 5<sup>th</sup> July 10.00am    Monday 7<sup>th</sup> July 11.00am**  
**Thursday 10<sup>th</sup> July 2.00pm    Saturday 12<sup>th</sup> July 4.00pm**

### Walking in the Steps of the Dinosaurs with Mike Cleeland

**Friday 4<sup>th</sup> July 10.00am**  
**Sunday 6<sup>th</sup> July 10.00am**  
**Wed 9<sup>th</sup> July 1.00pm**  
**Friday 11<sup>th</sup> July 3.00pm**



**What you need:** Sturdy shoes for walking on the rocks, appropriate clothing for the weather, and transport from the Centre to rock platform (0.5 km) or dinosaur site (5 km)

### Whale Watching!

**Introduction to local whales from our resident expert, then a whale-watch drive around the Bunurong coast.**

**Sunday June 29<sup>th</sup> 2pm                      Sunday July 6<sup>th</sup> 2pm**



### BOOKINGS FOR ALL SESSIONS

Go to SGCS website:- [www.sgcs.org.au](http://www.sgcs.org.au) follow links to "Holiday On-Line Bookings".

*If you prefer to book by phone or need any further information about the activities, then please call Mike on 0447 352 619*

**Cost: \$10 per adult, \$5 per school age child or \$25 per family**

**Where:** Meet and pay at the **Bunurong Environment Centre, Inverloch** just prior to the advertised time.

## Some Updates on Nuclear Power

Nuclear reactors have to be near a water supply for cooling purposes. However, it has become clear now that water can represent a major threat to them and they to water.

The Australian uranium mine at Kakadu has frequently spilled radioactive waste into the waters of the surrounding Kakadu National Park.

The Fukushima Daiichi nuclear plant in Japan had to be shut down in 2011 after a meltdown caused by the invasion of seawater. Reactors on or near the coast are vulnerable to extreme tides and of course tsunamis.

Not only has Fukushima contaminated a large area around the plant making it uninhabitable for people, animals and crops, but it has now been revealed that tons of groundwater flood into the stricken plant each day. This water becomes so radioactive that it also needs to be pumped out and safely stored.

Following the Fukushima accident Japan is shutting down all its nuclear power plants, but had to restart one recently to cope with a spike in power demands.

Nonetheless Fukushima has put the frighteners on other nuclear countries.

A highly industrialized country like Germany has 17 nuclear reactors in its power supply mix. Following Fukushima in 2011 Germany shut down 8 of them. The

remainder will be shut down by 2022.

In spite of 2013 being a 60-year low in sunshine for Germany and much of Europe, Germany has a world-leading input from solar panels. It is also ahead of its Kyoto target, with emissions down in 2012 by 25.5 %. Germany imports and exports power with neighbouring countries according to need, but overall it exports more than it imports, despite the reduction in nuclear.

Germany is also using and developing a range of other renewables in its energy mix, and innovating ways of storing and 're-using' energy from non-continuous sources such as solar and wind. They predict also that renewables, rather than being dearer than coal and gas will be cheaper, with the expectation that by 2030 renewables will cost 7.6c per kw/hour and gas and coal-fired power 9c per kw/ hour.

In Australia, our conservative Federal government is determined to make sure that we go to the bottom of the class, with discredited plans to aim at a mere 5% reduction.

Source: New Scientist magazine. 18<sup>th</sup> May 2013 edition.

Article on German power by the President of Germany's Federal Environment Agency.

**John Gunson**

## Favourite Foods Affected by Climate Change

We've all heard how climate change is going to devastate island nations and polar ice-caps, but the effects will be felt closer to home too. In fact, climate change could be about to limit supply of some of your favourite foods. It's enough to turn a person to drink but your favourite tipples don't escape unscathed either!

### Chocolate

Currently, more than half of the world's chocolate is sourced from African countries such as Ghana and the neighbouring Ivory Coast. But according to a [report](#) funded by the Bill & Melinda Gates Foundation and produced by the Colombian-based International Centre for Tropical Agriculture (CIAT), temperature rises of 2.3 degrees Celsius by 2050 will leave parts of this chocolate hotspot too hot for the job. Such temperature rises are predicted if the world carries on with business-as-usual greenhouse gas emissions.

### Meat

We know that [70 per cent](#) of agriculture's direct emissions come from livestock - largely cattle and sheep - but what many don't realise is that the changing climate may ultimately make meat more of a luxury item than the staple it is in many western households.

According to [Meat and Livestock Australia](#), a number of threats would impact our livestock production. These include productivity decline due to an increase in extreme weather events, poor quality pastures, reduced availability of water across southern Australia, and greater exposure of stock and crops to heat-related stress and disease.

### Wine

Warmer conditions and drier soils will be just some of the problems expected to impact wine growers, and according to Dr Leanne Webb from CSIRO Marine and Atmospheric Research; we're already seeing changes.

"Predicted average temperature increases affect the annual cycle of events like harvesting. We're already seeing some evidence of harvest coming earlier in the season," she says.

*Excerpts of article by **Sue White, ABC Environment***

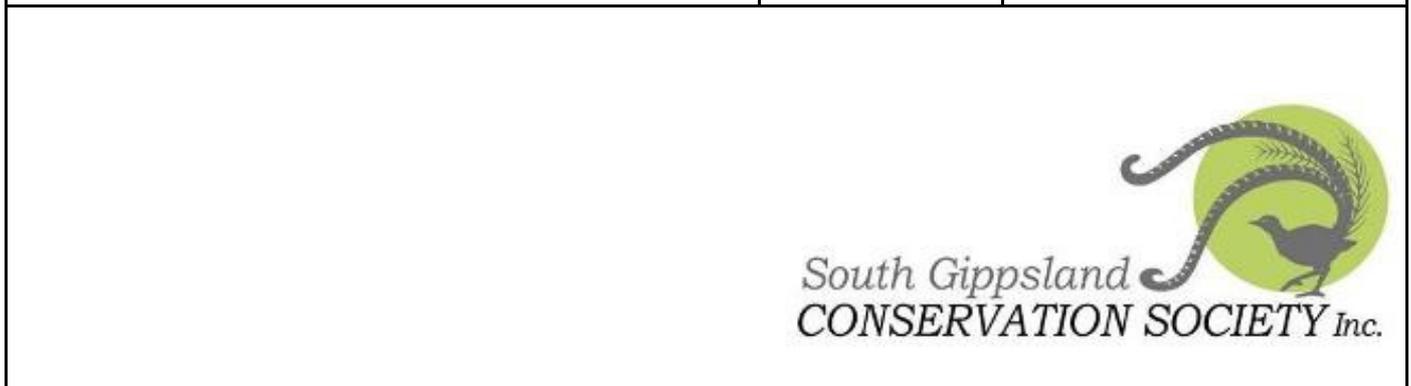
**Oysters, coffee, mangos and beer** also feature in this article as having climate-change problems.

<http://www.abc.net.au/environment/articles/2014/05/19/4007400.htm>

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