

The Australian

John Schubert: Don't let our corals lose their colour

- *Climate change will critically affect the life of the Great Barrier Reef*
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ALL Australians should be hoping that the reality of climate change is not brought home to us this summer by severe damage to the Great Barrier Reef.

Last summer the southern reef around the Keppel Islands gave us a preview of what may happen over larger parts of the reef in the future. The Keppel Island reefs experienced warmer than normal water temperatures, which caused as much as 98 per cent of the corals to bleach. Fortunately, more than half of these corals survived when the weather cooled in time to allow them to recover.

This is an example of why coral reefs are described as a canary in the mine in the context of climate change. Small increases in water temperature can, and will, prove catastrophic, especially if the settings are not in place to avert rolling effects from other factors.

On November 4, heavy rainfall combined with an extremely low tide to kill large areas of shallow coral reefs. This meant that, added to the loss of corals from the bleaching event earlier in the year, the Keppel reefs have now been the victim of two serious events in less than 12 months. It is true that previous damage to the corals in this area was caused by floods from the Fitzroy River. However, these events were separated by decades, allowing the corals time to recover. Scientists observing the corals this year are now predicting that the return of the Keppel reefs to their former state would require at least 15 years of good conditions: an unlikely prospect considering the region's recent volatility and the likelihood of increasingly frequent bleaching events.

Coral bleaching was unknown in the Great Barrier Reef region before 1979. It occurs when zooxanthellae, the microscopic plants that nourish the corals and give them their colour, are expelled by higher than normal water temperatures, leaving the corals white, as if they had been bleached. If these high temperatures are prolonged, the zooxanthellae

do not return to recolonise the corals and the corals die, as do fish and other dependent organisms. Eventually, ecosystems and industries such as tourism, that depend on them, will be severely damaged as the dead corals are covered by unattractive seaweed.

The Great Barrier Reef is now experiencing coral bleaching events more frequently. Apart from this year's blow to the Keppel Island reefs, the most recent serious bleaching event was in 2002 when the Great Barrier Reef Marine Park Authority estimated that 60 to 95 per cent of reefs were affected to some extent. Climatologists are predicting weather conditions this summer that are conducive to another significant bleaching event.

Corals can recover from bleaching events, but it takes time and, as we are discovering, we are all up against the clock on climate change. The danger the Great Barrier Reef faces each summer reflects the rapid effects of climate change on our planet. With global temperature rises likely to be 2C to 6C by 2100, we have to ask how corals will have time to adapt.

We have largely ignored the warnings of our top scientists across many disciplines. It is only now, when the consequences are tangible, immediate and irrefutable, that we have started to pay attention.

Until my appointment as chairman of the Great Barrier Reef Foundation two years ago, I was something of a sceptic. However, the marine scientists who advise the foundation convinced me that climate change is the most pressing threat to our Great Barrier Reef. The evidence presented by these scientists, the literature they have shared with me and my visits to the reef have proved to be so compelling as to prompt something of an epiphany.

I am not alone: 2006 has, on any measure, proved to be a turning point in Australia's realisation that climate change poses a risk to our way of life. I sensed a palpable shift in mood among business leaders at the Australian Leadership Forum last August, when the foundation presented a session on climate change and the Great Barrier Reef, and previewed Al Gore's climate-change documentary, *An Inconvenient Truth*. Many Australians have since seen the film and the mass media now cover climate change issues on a daily basis. The tide is turning. The good news is that it's not too late.

In Madagascar, scientists reporting recent widespread coral damage have also discovered several small reefs with corals that appear to be remarkably resilient to higher sea temperatures. These corals may be able to provide us with information and strategies for protecting coral from future damage; in a worst-case scenario, such studies may enable scientists to re-seed damaged reefs. This concept was unthinkable a decade ago. It is now at least a possibility.

As a nation, we may need to prepare ourselves for the previously unthinkable in order to address climate change. We need to review our habits and behaviours, our technology and our industries. Nuclear energy, carbon taxes, geo-sequestration, heavy investment in renewable energy sources and reducing our reliance on coal and oil may seem

unpalatable - and may be expensive - in the short term, but a combination of at least some of these measures will provide the solutions we need. We now must take the opportunity to harness the broad momentum that is building and direct our energies into developing technological, social and policy innovations to address the issues. We need to start listening to our scientists and build an economy that is clean, fair, safe and prosperous.

We should undertake a study, as Britain has, to determine the economic effects of the range of climate change outcomes on the Australian economy. The results would allow us to better understand and justify the actions that clearly must be taken. We should also use our influence, especially with the US, to hasten a worldwide response to this global problem.

I am hopeful that the Great Barrier Reef, as a result of good management practices, will prove to be far more resilient than reefs elsewhere. By funding scientific research to better understand the reef and ensuring that other pressures are controlled, we can buttress its ability to withstand the threats of climate change.

However, it is not just the future of the Great Barrier Reef that is at stake.

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