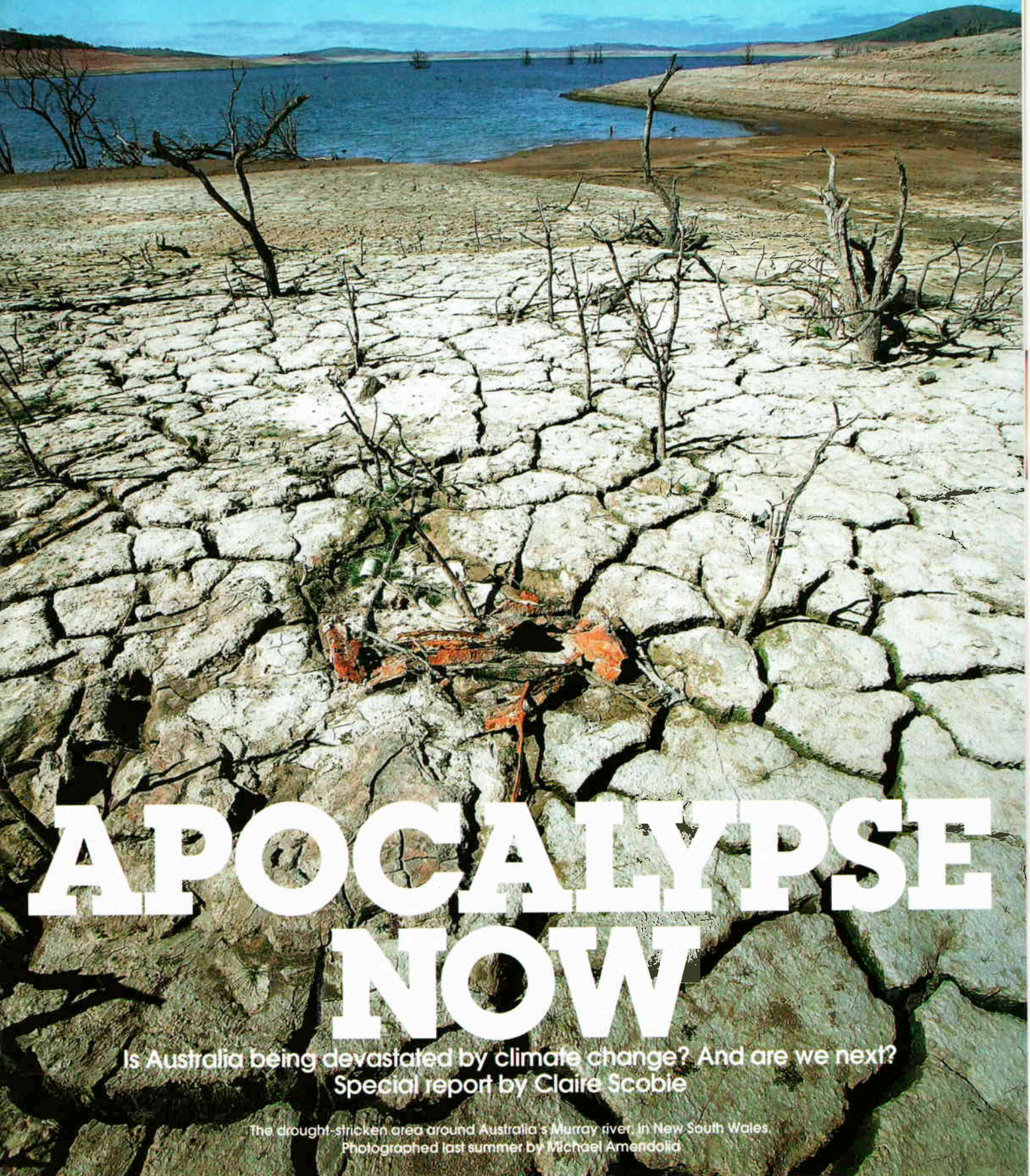


# The Observer Magazine

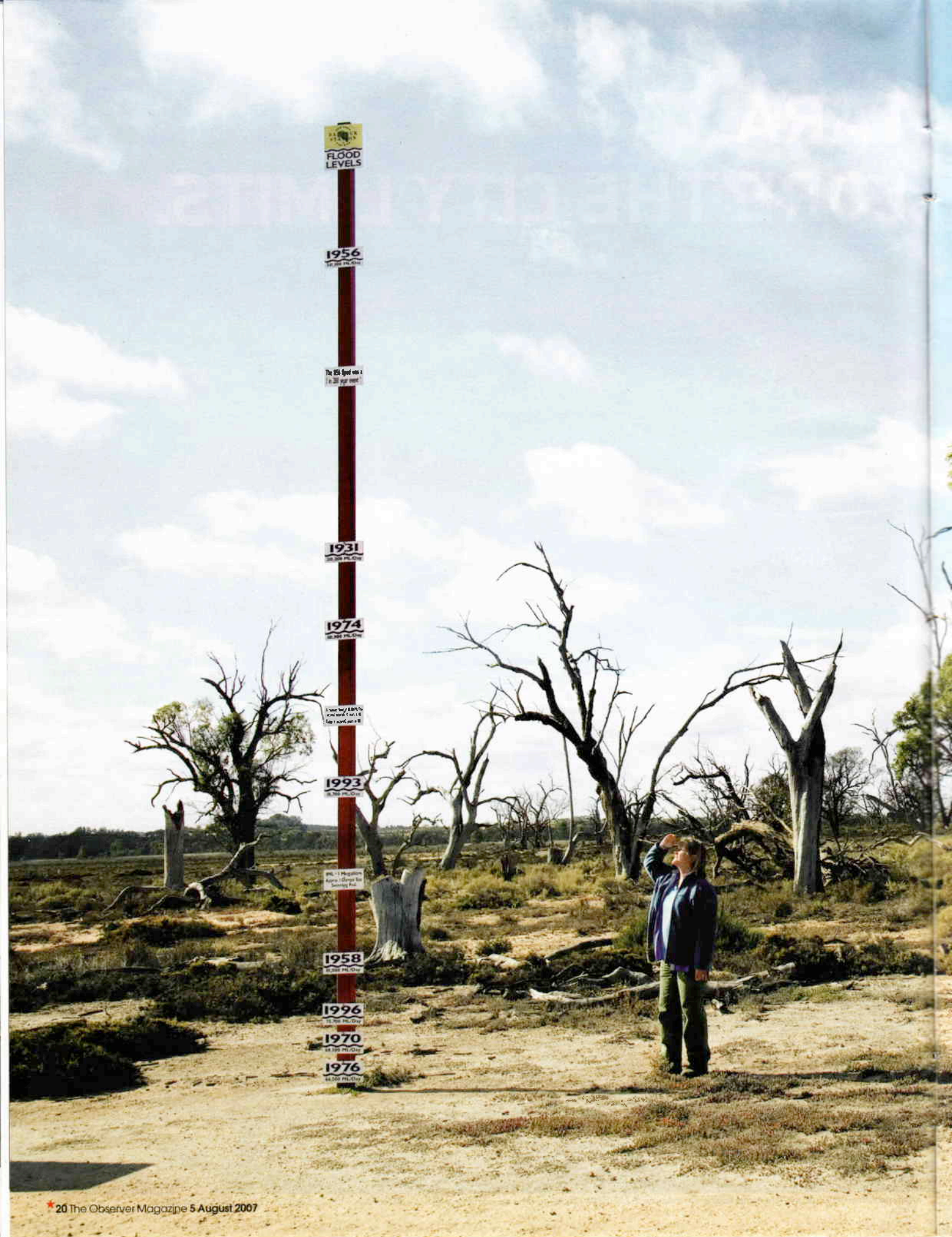
5 August 2007



# APOCALYPSE NOW

Is Australia being devastated by climate change? And are we next?  
Special report by Claire Scobie

The drought-stricken area around Australia's Murray river, in New South Wales.  
Photographed last summer by Michael Amendolia



FLOOD LEVELS

1956  
14.200 Ft. Ovr

The 1956 flood was a  
1 in 20 year event

1931  
14.200 Ft. Ovr

1974  
14.200 Ft. Ovr

1 year flood 8.800 Ft. Ovr  
10 year flood 10.000 Ft. Ovr  
100 year flood 14.200 Ft. Ovr

1993  
14.200 Ft. Ovr

MSL - 1 Mean  
Approx. 15 ft above sea  
level

1958  
14.200 Ft. Ovr

1996  
14.200 Ft. Ovr

1970  
14.200 Ft. Ovr

1976  
14.200 Ft. Ovr

# A river ran through it

The Murray is the lifeblood of Australia's farming country, a legendary river that thundered 1,500 miles from the Snowy Mountains to the Indian Ocean. Now, it's choking to death in the worst drought for a thousand years, sparking water rationing and suicides on devastated farms. But is the 'big dry' a national emergency, or a warning that the earth is running out of water? **Claire Scobie** reports. Photographs **Michael Amendolia**



High and dry: ecologist Anne Jensen below the flood marker at Barrock Station. The wellfands here depend on flooding two or three times a year - now they are dying as the Murray dries up

**A**ustralian farmers always know someone else who is doing it tougher. They pride themselves on their resilience. They take pleasure in living in 'a sunburnt country of droughts and flooding rains'. Conservative and deeply sceptical, many dismiss global warming as hogwash. But with unprecedented water scarcity and the Murray, the country's greatest river system, on the verge of collapse, warning bells are ringing around the globe.

Financially, the drought is pinching as far away as the UK, hiking up the cost of bread in British supermarkets as wheat prices reach a 10-year high. Symbolically, it cuts much deeper. Commentators are looking on, nervously, wondering if what is becoming the norm in Sydney could be the future for Sydenham.

Professor Tim Flannery, an Australian environmental scientist and an international leader on climate change, has no doubts. 'Australia is a harbinger of what is going to happen in other places in the world,' he says. 'This can happen anywhere. China may be next, or parts of western USA. There will be emerging water crises all over the world.' In Kenya, the herdsmen of the Mendera region have been dubbed the 'climate canaries' – the people most likely to be wiped out first by global warming. In Australia, the earth's driest inhabited continent, it is the farmers who are on the frontline.

This extended dry spell began in 1998. Four years later came the one-in-100-years drought. Last year was declared a once-in-a-millennium event. Every city, bar Darwin in the 'top end', is facing water restrictions. Rivers are reduced to a trickle a child can jump across. Old Adaminaby, a town drowned by a reservoir 50 years ago, has resurfaced from its watery grave. Distressed koalas have been drinking from swimming pools. The list goes on.

The extent of the crisis was illustrated in January, when the Prime Minister, John Howard, announced a A\$10bn (£4.3bn) package to seize control of the Murray-Darling basin, the nation's food bowl, accounting for 41 per cent of Australia's agriculture and A\$22bn worth of agricultural exports. The region covers an area the size of France and Spain combined and is home to almost 3m people; its famed waterway, the River Murray, no longer holds sufficient water to flow out into the sea. Despite Howard's massive rescue plan to overhaul the water system, six months later the irrigation taps to the region's farmers were turned off.

Malcolm Holm knows just how bad things can get. A dairy farmer with a bullish smile, Holm, 39, is a respected pillar in his local community of Finley, on the flat plains of southwest New South Wales (NSW). He depends, as do more than 50,000 other farmers, on the River Murray. I first meet Malcolm and his wife, Jenny Wheeler, 47, in Sydney in mid-July. As we sit down for coffee, it's hard not to notice his strapped left arm, with angry red weals seared along the forearm, resting inert on the table.

Last October, with no water flowing into the major dams, the NSW government faced an unparalleled situation. Following last year's lowest inflows into the Murray on record, they miscalculated how much water was available across the board. 'Carryover water' worth millions of dollars, which had been saved and paid for by farmers for irrigation, was slashed by 20 per cent without consultation. Three weeks later, farmers were hit with another 32 per cent cut. Today they are on zero allocation.

Aside from running his own 1,000 acres and 500 dairy cows, Holm works tirelessly on a raft of community committees. The day after the

**Lost and found:** (right) Malcolm Holm and family last month. Despite some recent rain, their farm's water ration has been cut by half. (Below) Old Adaminaby, a town drowned 50 years ago, is rising from the mud



second water cut, which had 'blown out' his drought strategy and would cost him A\$1.5m from the loss of water, fodder and milk production, he was back at work in the dairy. The grain auger – a cylindrical barrel that moves the grain from one massive silo to the other – was jammed. After fiddling with the machine he flicked a switch. 'I wasn't concentrating.' He pauses, frowning. 'I was thinking about water.' It was the wrong switch. In the blink of an eye, Malcolm Holm had sliced off his hand.

In March 2006, Professor Flannery's *The Weather Makers* was published in the UK, spelling out in incisive detail what awaits us unless we decarbonise our world by 2050. Described by Sir David Attenborough as 'in the league of the all-time great explorers', and the 2007 Australian of the Year, Flannery combines a Gaian



approach with hard science. The result: Australia's answer to *Silent Spring*. When I speak to Flannery, he's recovering from the flu after a particularly cold, damp July. Floods and violent storms have caused havoc along Australia's eastern seaboard, beaching one 40,000-tonne tanker like an aluminium dinghy. I put it to Flannery that the difficulty with global warming is that many areas are facing freak flooding. 'General modelling suggests that every degree Celsius of warming leads to a 1 per cent increase in rainfall globally,' he explains. 'But these downpours are not uniform, causing intense bursts and downpours of rain in some places and not in others. We are learning about this 1 per cent effect as we go.'

In his book, Flannery describes the dramatic decline in winter precipitation in southwestern Australia since the Sixties. The Commonwealth

Scientific and Industrial Research Organisation has forecast that on the east coast, rainfall could drop by 40 per cent by 2070, along with a seven-degree rise in temperature and an increased chance of bush fires. Last November, the UN Intergovernmental Panel on Climate Change report added to the predicted misery, stating that 'the annual flow in the Murray-



**Every city in the country - bar Darwin in the 'top end' - is facing water restrictions, while distressed koalas have been found drinking from swimming pools**



Darling basin is likely to fall by 10-25 per cent by 2050', resulting in a decline in production from agriculture and forestry.

Five years ago, during the last major drought, I travelled through western Queensland, across a fragile, red-baked landscape that was obviously not suited to the hooves of millions of cattle and sheep - there are no Australian native animals with cleft hooves - and met farmers whose dreams were crumbling to dust. Back then, there was virtually no mention of global warming. The problem was attributed to the dry, cyclical conditions caused by El Nino, a powerful climatic phenomenon linked to the Pacific Ocean, which drives rain-bearing clouds away from the continent.

Fast-forward to July 2007 and few scientists doubt the 'big dry' is caused, in part, by climate change. Some refer to it as a climate shift; ▶

◀ others, like Flannery, who matches Al Gore in his Armageddon-like predictions, are unequivocal that it is a foretaste of what's to come. As the first developed nation to experience such a prolonged dry spell, it's no wonder that the rest of the world is looking on to see how Australia copes – and what lessons can be learned.

**This time I chose not to trek to the burnished outback.** I wanted to see the effect of the drought a day's drive from Sydney or Melbourne. This wouldn't be a story of skeletal cows and cracked earth, rather the more complex tale of water mismanagement and a pounding assault by humans on a delicate ecosystem.

What is remarkable is the seismic swing among ordinary Australians over the past 12 months. The synergy of *An Inconvenient Truth* (although John Howard, until recently a climate sceptic, snubbed Gore on his Australian tour), the release of the Stern Report by British economist Sir Nicholas Stern and a rise in food prices have combined as a loud wake-up call. Now, as the stress of trying to squeeze every drop out of an over-stretched waterway threatens to tear communities apart, fierce public debate has forced the environment to the forefront of this year's general election. Two massive desalination plants will be built in Victoria and NSW, following the construction of Perth's successful 'de-sal plant'; the government also announced it would ban incandescent light bulbs, which contribute to greenhouse gases.

For Flannery, these are baby steps. 'We could be the Saudi Arabia of renewable energy. We've got solar potential; we've got a geo-thermal province in central Australia and the best potential for wind power off the east coast.' For Anne Jensen, an academic who's been studying the ecology of the lower Murray in South Australia for 25 years, it's a question of priority. 'Everyone is fighting to keep what they've got in a situation where people are going to need to give something up,' she says. 'While everyone is on rations, we have to make sure that the river is healthy enough to support us all.'

**It was Mark Twain who compared the River Murray to America's Mississippi.** During the 19th century, paddle steamers were a familiar sight along its lazy green-grey currents, ferrying goods from town to town. Covering an area of more than one million km<sup>2</sup>, the basin carries water from the tropical north in Queensland to the Darling River, and from the Murray's

**'In the past three years there have been eight suicide attempts here. A handful are on suicide watch – their spouses and children have taken control of the firearms'**



source in the Snowy Mountains to the outskirts of Adelaide, 1,500 miles downstream.

Nearly 60 years ago, the Snowy Hydro scheme was opened, harnessing the headwaters of three rivers to generate hydroelectricity and capture melting winter snows in two large lakes, Eucumbene and Jindabyne. With the creation of 16 dams and countless weirs, the scheme promised to 'drought proof' the nation by creating a reliable supply of water to the Murray. In the long term, the environment lost out, but the dry, fertile country, like Finley, to the west, was transformed into dairy pastures, orchards and lush rice fields.

When it comes to the River Murray, nothing is straightforward. Despite the commission in charge of the river being set up in 1917, it is only this year that the federal government is wresting control from the four states which, until now, have had their own rules and conflicting regulations. While Queensland, NSW and South Australia were quick to cede power to the central government, Victoria has raised the possibility of bringing a case to the High Court to protect its water rights.

The accumulation of years of over-allocation and drought has resulted in a pitifully low stream level. In June 2006, the catchment received an inflow of 700 gegalitres. A year later, it had plummeted to 300 gegalitres. (One gegalitre is 1,000m litres.) What is keeping the region functioning is the depleted water storage in dams like Hume, just outside Albury, a bustling centre on the border between NSW and Victoria. And it is from Albury that I set off, the day after meeting Malcolm Holm.

Ironically, it's raining. To an untrained eye, the green verges look promising. To Neville and Ruth Kydd, the grass in their paddocks is too sparse for their herd of dairy cows, which they have been hand-feeding since Christmas. This salt-of-the-earth couple, in grubby jeans and wellies, were particularly hard hit by last year's water cuts. They had bought A\$500,000 worth of water early in the season, but the government took back almost half, Neville

**Border wars: the Murray runs through New South Wales, Victoria and South Australia. Canberra has intervened in the three-way fight for its dwindling flow**

tells me, grim-faced. 'How could they get it so wrong? It's mind-boggling.'

Australia's water system is, indeed, mind-boggling. There are 24 different sorts of water licences in the Murray-Darling basin alone, which provide irrigators with varying degrees of security. Almonds and oranges are on the more costly high-security licences because without regular sprinkling the trees will die. As Neville Kydd says, 'If this season there is no water in the dam, virtually no dairy farmers will survive. It will return to sheep country. You can't sustain those sorts of losses year in year out.'

From their spartan bungalow it is 15 miles down the road to Prairie Home, the generous homestead of Louise and Andrew Burge. A log fire burns; tea and cake are laid out on a wooden kitchen table, alongside a wad of typed notes. Louise, 49, has written a summary of the state of their sheep and crop farm. She refutes evidence that the current drought is driven by climate change, providing a series of old photographs showing the Murray in drier conditions than it is in now.

'Global warming represents a herd mentality with a herd mentality for the solutions,' she begins. 'Australia has developed mass plantations in the upper catchments so in the next drought we will have less run-off because the trees are going to take water. This will exacerbate the drought,' she pauses for breath. 'My solution is to encourage new technologies and address emission reductions at the source.'

Even though Australia is one of only two western countries (the other is the US) not to ratify the Kyoto Treaty, it still adheres to international obligations to offset its emissions. According to a UN report, per capita, Australia's emissions of greenhouse gases are among the highest in the world. While planting vast forests attempts to fix one problem, it creates ▶

◀ another. As the drought bites, the conflict between farmers, traditionally portrayed as rampant land-clearers, and environmentalists is brought to the fore. In reality, while all the farmers I spoke to were global warming sceptics, they were passionate conservationists. And to be fair, as a huge island, Australia experiences such volatile swings in climate it can mask a perception of an irreversible shift. Farmers will argue that the current drought is very similar to that of the 1890s and 1940s.

Nonetheless, the effect on rural towns all along the Murray is acute. Figures from the Reserve Bank reveal that rural debt has almost doubled from A\$26.4bn in 1999 to A\$43.3bn in 2005. In Deniliquin, 20 minutes from the Burges' farm, the wide streets are eerily quiet. That evening, in the empty Federal Hotel, I meet Wayne Cockayne, an obliging 44-year-old whose glassy eyes stare into the mid-distance. 'This town's gone backward,' he says, taking a sip on a Diet Coke. 'In 1979, when I left school, the town was prospering. Farmers' children are leaving the land now.'

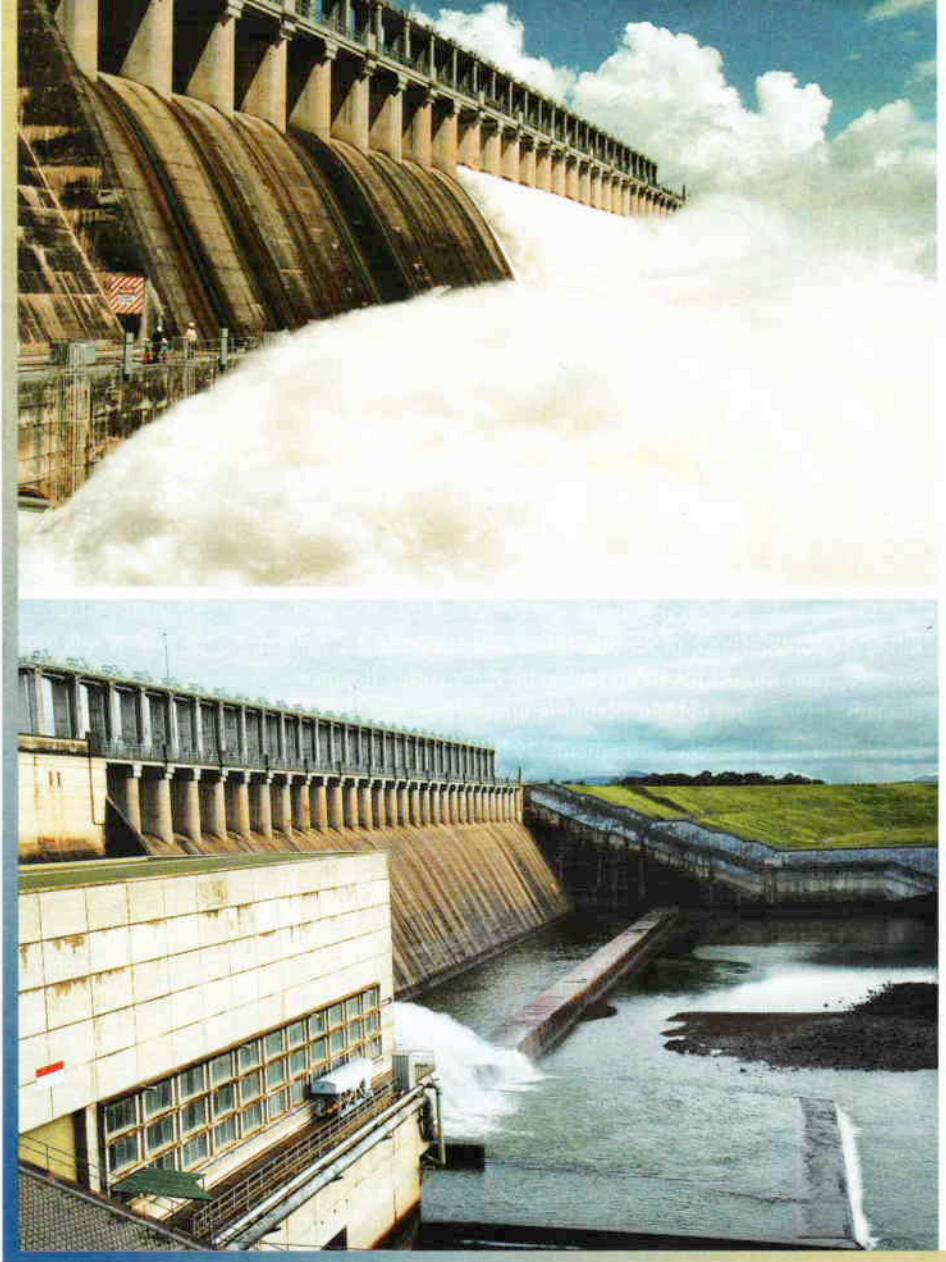
For the past four years, Cockayne hasn't made a cent from the cereals on his 3,000-acre property 20 miles south of Deniliquin. This year he had to pay for water to be trucked in to flush his toilet. He grits his teeth. 'I know about depression,' he goes on. 'I locked myself in at home for four days. Then I got in the family car and drove into town. A friend found me slumped over the steering wheel crying. I never thought I'd be a person who would suffer from it, but I've been better since I went to a grief and depression counsellor.'

'In the first seven years, I had, on average, two people a year from the farming community who presented with depression,' Dr Harry von Rensburg tells me in his surgery in Barham, 60 miles west of Deniliquin. An owlish, direct-talking South African GP, Von Rensburg has lived in Barham for the past decade. This year he is 'actively managing' more than 120 farmers, including some of the most high-profile landowners in the district. A psychologist comes once a week and has back-to-back appointments. 'If we could get her twice a week we would fill that.'

A year ago, Beyond Blue, the national mental health body, reported that one farmer commits suicide in Australia every four days. I ask Dr Von Rensburg whether this figure is accurate.

'Absolutely. In the past three years there have been eight suicide attempts here. A handful are

**The Murray river basin is Australia's bread basket, and covers an area the size of France and Spain. Now, its famed river no longer holds enough water to flow out to sea**



on suicide watch – their spouses or children have taken control of firearms.' He leans back in his big black chair. 'Shooting is the most favoured method; second is hanging.'

Von Rensburg puts this dramatic increase down to the drought's longevity and the uncertainty it brings. 'People are asking themselves, will this be ongoing? Are we going to see our landscape change? That is the greatest fear – what we can't control.'

Neil Eagle, the grand old man of orchard farming in the region, is a sprightly 73-year-old with large, dirt-encrusted hands and a deep, rumbling voice. He refuses to be beaten. Unlike his neighbour, who didn't purchase water this year, and whose orange trees are virtually bare, Eagle's citrus forest looks healthy. 'It could get to the stage where there's no water to buy,' he says, biting open a juicy orange. 'We could lose our trees. Then it would take seven to 10 years to get back into production. That would be very serious.'

Eagle's family have been living around Eagle Creek since 1870. 'As far as temperature

**Flowing, going, gone: (top) the Hume dam in full force in October 1996, and (above) last month – it now stands at 12 per cent capacity**

changes go, in the Forties and Fifties it was definitely hotter than it is now,' he says. 'I don't agree with the doom and gloom merchants that the sea is going to rise.' He gives a wry smile. 'It's become nearly a religion, this idea of global warming.' Still, he can't resist a swipe at those downstream in South Australia. 'The equivalent of two-and-a-quarter Dartmouth Dams go up in evaporation in the Lower Lakes. It's a squander of our resources.'

Some 300 miles west of Eagle Creek, in South Australia, Anne Jensen is witnessing a collapse of entire ecosystems on the floodplains. In the Nineties, one local from Kingston-on-Murray described this as a 'garden of Eden' for river red gums, some 400 years old. Today it resembles a graveyard. Jensen sees the 'hundreds of thousands of trees' dying in the Lower Murray as 'a combined effect of a man-made drought in the ▶

◀ river system, together with the severe natural drought which is proving to be the last straw'.

The twisted, ashen-grey branches of the black box eucalyptus and river gums are stark indicators of the region's deteriorating health. These hardy trees require natural flooding to survive. They have done without a decent drink for over a decade, but now there's 'an abrupt change', according to Jensen. 'If we got a flood in the next two to three years we could save the river, but only with enormous amounts of rain.'

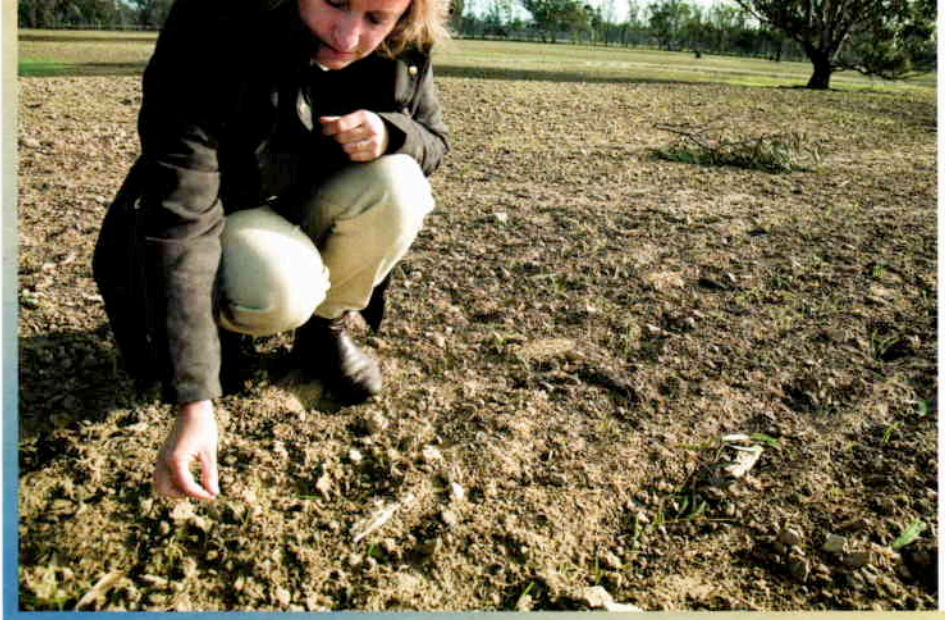
A mile from Kingston is Banrock Station. More famous in Britain for its crisp white wines than its pioneering conservation strategies, this vineyard pumps profits back into restoring the local wetlands. It has had considerable success in improving the Riverlands' biodiversity, but due to the minimal amount of water in the Murray allocated for the environment, and the rising salinity, they can only achieve so much.

Two years ago, the 'Living Murray' programme pledged to recover 500 gigalitres, the equivalent of Sydney Harbour, for the Murray for environmental purposes by 2009. At present they are likely to fall 80 per cent short of that target. For years, the country's most valued artery has been withering, some would say dying. 'In 2002 the river ran out of water,' says Adelaide-based Professor Mike Young, a water expert. 'There are three dredges in the mouth to keep it open and to keep water going into the Coorong wetlands.'

This 60-mile stretch of wetlands holds a particularly poignant place in Australian history, as the inspiration for the film *Storm Boy*, about a young lad who befriends a pelican called Mr Percival. The Coorong is an internationally recognised wetland sanctuary for migratory birds, but it sits on a part of the coast that is now gasping to stay alive as sand pours in. Over the years there has been a steady decline in its pelican population, due to a lack of fish and hyper-salinity. The water in the southern lagoon of the Coorong is four times saltier than the ocean.

As Anne Jensen explains, 'In South Australia there is water in the river and it looks all right, because of artificial pools held up by weirs. You can see plants and birds.' She pauses, sighing. 'It's the same problem with the drought. It's been raining, people's gardens are green. But it's a false image.' And many hundreds of kilometres away in Albury there is no water in the Hume dam.

**The World Bank estimates that by 2025, about 48 countries will experience water shortages, affecting 1.4bn people. Where rivers cross borders, it will be war**



**I catch up again with Malcolm Holm and his family at the Hume dam. Reduced to 12 per cent of its capacity, there is a yawning gap of cracked red earth at the end of the boat ramp where the water level should be, and the limbs of blackened trees reach skywards. Holm laughs when I tell him that after driving around the region, I'm drowning in arguments about water allocation. 'It is very political,' he says.**

What has struck me is that if temperatures continue to rise globally, as predicted, what is happening now in Australia is bound to occur in other regions, where many countries share one river system – the Euphrates in the Middle East, the Mekong in Asia. The World Bank estimates that by 2025, about 48 countries will experience water shortages, affecting more than 1.4bn people, the majority in under-developed regions. Here in Australia, at least the economy is robust and competing groups whose livelihoods depend on the dwindling flow of the Murray can sit down and talk. Where rivers cross borders, it won't be a case of negotiating and compromise – it will be war.

The future of many Australian farmers hangs in the balance. Notwithstanding show-ers in recent months, the pendulum from a La Nina wet-weather phase, which usually follows an El Nino drought, has not swung. 'And it is unlikely to do so for the rest of the year,' says Dr David Jones, head of climate analysis at Australia's Bureau of Meteorology. The drought, the bureau warns, is a long way from breaking. 'It will take years to refill the dams.'

Last year the drought whittled 1 per cent off the national economy, and this year reduced the available annual milk supply by more than a billion litres. As I write this in late July, during Australia's winter, the blistering summer is still several months away. But Professor Mike Young warns that already 'Adelaide is in a very frightening situation. If it doesn't rain and the dams don't fill, there isn't enough water in the system to supply the city.'

Living with such continued stress inevitably takes its toll, as it did on Holm, known by his

**Against the grain: Louise Burge inspects the wheat on her farm near Albury, in New South Wales. Her rain-starved crop is normally a foot tall by now**

friends as a particularly careful person. What's improbable is how rationally he dealt with the tragic mistake in his dairy. 'I called Jenny on the mobile and told her I'd cut off my hand,' he says. It had ended up on the ground after going through the whole machine and was taken and preserved by the paramedics. 'Luckily it wasn't mangled.' Holm was given a hefty dose of morphine and antibiotics and transferred by air to a Sydney hospital. His hand lay in ice in an 'esky', a cool box more commonly used in Australia for chilling beers.

'He amazed me,' says Jenny, who travelled with him. 'On the plane, he kept saying, "Have you got that esky?"' How did you cope? She shrugs and smiles, her face crumpled from the strain. 'He's still alive. I knew we'd be OK.'

Five weeks and 22 hours of anaesthetic later, Malcolm's hand was sewn back on. As he pulls off the protective glove, Ellena screws up her face and looks as queasy as I feel. 'The first skin grafts from my arm didn't take, so they took 12ml [of skin] from my back,' he points to the bulbous lump on the wrist. 'I've got another three operations ahead. There are two tendons to stitch up, pins to remove and a bit of liposuction on the arm to get rid of the flap.'

Movement is returning as the nerves grow back. 'It's a good outcome,' he says, cradling his arm. 'It's the little things... I can't do up a button, so we've put Velcro on my shirts.' At least it's your left hand, I say. 'I am left-handed.' He gives a dry smile. 'But I feel lucky. If I was wearing a jumper or a long-sleeved shirt I wouldn't have had an arm at all.'

Malcolm had to hire extra staff, and eight households are now dependent on his business. What if the drought doesn't break? 'We're in a lot of trouble.' His eyes narrow. 'We have very little fodder. After mid-August, there's no hay left.' He half-laughs. 'I'm a typical farmer. I just get on with it. Life's always a challenge.' ★