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**Clearing our climate hurdle - *Canberra Times***

It's the second verse of Dorothea Mackellar's poem *My Country* that's usually quoted with heart-stirring patriotic fervour as a paen to the beauties of the wide brown land". But the next verse puts those lofty colonial sentiments in perspective, with the 19 year-old poet moving on to hymn the praises of moonlight illuminating the stark white ringbarked forests".

Land clearing, by using teams of low-paid Chinese workers to ringbark eucalypts and other native trees, was a common practice among Australia's colonial settlers.

Mackellar's brothers probably dispatched teams to ringbark and clear bushland on their wheat farms at Gunnedah in north-west NSW. In fact, one of Mackellar's later poems, *Burning Off*, celebrates the bustling activity and spectacle of land clearing. There's not a twinge of regret for the wholesale destruction of native bushland as a great and old" tree becomes a red-hot column whence fly the sparks/One ceaseless shower of gold", crashing to become a pile of white fine ash", on cleared land where wheat shall bow to wind".

But not everyone thought clearing bushland was a mark of progress. Polish explorer and geologist Paul Strzelecki wrote in 1845 that he feared such large-scale destruction of bushland would make the climate both drier and hotter".

French geographer Edmund Mann la Meslee, after visiting farmland on the Murray River described immense tracts" of dead, ring-barked forests as suggesting a page torn from a portfolio of Gustav Dore, ' showing a part of Dante's *Inferno*". German botanist Ferdinand von Mueller thought land clearing a reckless practice" and in 1876 two NSW scientists published a paper claiming large-scale loss of trees would disrupt the water cycle and reduce rainfall.

These concerns were scornfully dismissed. NSW pastoralist and parliamentarian Leopold de Salis claimed land around Lake George, where ringbarking had been more thoroughly carried out" than elsewhere in NSW, offered proof that land clearing didn't affect rainfall or water supply.

But recent research shows Strzelecki and others who opposed clearing of native vegetation were well ahead of their time.

University of Queensland spatial ecologist Dr Chve McAlpine says his team's research shows land clearing is making droughts hotter across the Murray Darling Basin".

In a paper published by the American Geophysical Union a research team led by McAlpine and Joseph Syktus, from the Queensland Climate Change Centre of Excellence, argues there is a growing body of scientific evidence that land clearing is having a significant effect on global and regional climate".

Visiting Canberra this week to brief Federal Government policy staff on the implications of their research, they 're hoping to change the perception that climate change is solely due to greenhouse gases.

That 's too simplistic. Climate change is a multi-dimensional process, not a singular one," McAlpine says. Globally, the impact of land clearing is not as strong as greenhouses gases, but regionally, loss of native vegetation can be an important factor in driving significant changes.

What we 're seeing is that land clearing is making droughts worse, and protecting and restoring native vegetation needs to be considered in any plans to mitigate the impact of climate change." Using satellite mapping and CSIRO climate modelling, McAlpine and Syktus charted the impact of land clearing over the past 150 years on Australia 's regional climate. They found in extensively cleared regions, such as the Murray Darling Basin and Australia 's eastern coastline, mean summer rainfall had decreased by 4 to 12 per cent, and summer temperatures had warmed in some areas by up to 2 degrees.

Wind speeds had increased, particularly along eastern coastal areas, due to reduced surface roughness and loss of wind resistance offered by cleared areas. One of the most affected areas is an eastern seaboard strip, extending from Brisbane to Melbourne.

Most of these changes are consistent with places where vegetation has been modified. We 've done a lot of careful detective work with our data to see what contribution land clearing has made to local climate," Syktus says.

Those impacts include an increase in the strength of surface winds by reducing aerodynamic drag, loss of soil moisture, an increase in the average number of days without rain, reduced stream flows, declines in pasture growth and tree deaths across large areas.

McAlpine has dramatic photographs of large patches of mulga die-off across the Brigalow belt in eastern inland Queensland. If rain hadn 't provided some respite, we would have had catastrophic tree death across the region," he says.

There 's a real concern that as regions like the Murray-Darling Basin become hotter and drier, the remaining vegetation becomes more stressed and problems caused by climate change will accelerate. It 'll reach a point where ecosystems can 't function, and there will be a shift. Whole landscapes will be affected." Syktus says one of the biggest dangers facing Australia is a contraction of the regions that can support trees and agriculture.

We will have to re-define our climatic zones, and as semi-arid areas become more extensive, some ecosystems will no longer be able to function. Those changes will also affect farm productivity." In the Federal Government 's recent draft emissions trading paper, emissions from land clearing are excluded, despite accounting for 11 per cent of Australia 's greenhouse emissions.

Federal Climate Change Minister, Penny Wong has defended the decision, claiming land clearing is adequately controlled by state laws and conducted on a reasonably small" scale.

But a Queensland government report shows 351,000ha were cleared across the state in 2005 (the most recent figures issued), which is a 54 per cent reduction on peak clearing levels in 2000. The Brigalow belt where more than 160 regional ecosystems have been identified still has the state 's highest clearing rate, despite being habitat for at least nine nationally listed threatened species, including the bridle nail-tailed wallaby and northern hairy-nosed wombat. The statistics also show clearing across the Queensland regions of the Murray-Darling Basin has decreased by only 27 per cent.

The NSW auditor-general 's most recent report on land clearing in 2005 found illegal clearing was continuing, with about 30,000ha cleared illegally for farming, plantations and urban development In a federal election statement last year, Labor said it was opposed to broadscale and unregulated land clearing" and would introduce national standards to strictly regulate approvals" as well as making state, territory and local governments ' funding dependent on introducing appropriate clearing controls".

Earlier this week, Federal Environment Minister Peter Garrett rejected an application for a 40-lot residential development near Mission Beach in far north Queensland. Using his ministerial powers under the Environment Protection and Biodiversity Conservation Act, he claimed the project would destroy the habitat of the southern cassowary. But he declined to use these ministerial powers earlier this year to protect the habitat of three endangered species in Tasmania 's Wielangta forests from clearing for woodchips.

McAlpine says Australia 's governments must take action to mitigate climate impacts caused by land clearing before it gets too late and too dry to get vegetation back into the landscape".

We need to look at how protecting vegetation can help pull back the regional impacts of climate change. We need to see protecting native vegetation as an investment in our future, and anticipate some of the risks posed by land clearing when drafting national policies.

And, we need to do that before we make mistakes that we can 't reverse."