

Naturally regrowing eucalypts is a challenge



Natural regeneration of a 40-hectare area of grassy woodland near Dookie in Victoria. Very light live-stocking rates during the last 15 years and resting from grazing, particularly during summers, has meant the site is now home to koalas, carpet pythons, echidnas and a variety of woodland birds. Kate Brunt/GBCMA

Large areas of Australia's grazing lands now need restocking with native vegetation in order to restore the integrity of the landscape and recharge ecosystems. But while 'natural regeneration' of eucalypts is typically relatively cheap for farmers compared with direct seeding or planting tubes, research shows that natural regeneration is fickle and can involve some risk in the allocation of resources to it.

The successful establishment of new woodland eucalypt saplings occurs infrequently and under limited circumstances. It requires a number of favourable conditions – high seedfall, gaps in pasture, good germination rains, low competition from pasture, a wet summer and freedom from grazing. The process can be, and often is, prevented by any of these conditions failing to occur. Success therefore may largely boil down to time,

patience, and resisting the urge to let heavy-grazing livestock back onto regenerating areas in harder times.

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University of Melbourne researcher Peter Vesk, co-author of a natural regeneration paper recently appearing in the *Australian Journal of Botany*, said research indicated eucalypt regeneration was likely to be episodic rather than annual, no matter what a manager did to prepare their land. Vagaries of weather, seed supply and seedling survival were a key part of the reason.

Along with Josh Dorrough, a researcher at Victoria's Arthur Rylah Institute for Environmental Research, Vesk has

shown that in any given year, natural regeneration may not be successful because the probability of having everything go right is low.

'Natural regeneration might work very well in time, but actually managing [land] for it to occur is going to be risky, given that we might do all we like and often not get the response we're after,' Vesk said.

Regional incentives schemes designed to foster natural regeneration therefore needed to accommodate this uncertainty, he said.

Such schemes typically invited landholders to enter into contracts to manage land parcels in a certain way for a number of years. Vesk said schemes based around longer periods were going to be more useful for exploiting the potential offered by natural regeneration.

The researchers presented a model that brings together three sorts of natural regeneration information available: relatively small-scale experiments 'that ecologists love to do'; broader-scale survey studies; and expert information held in

the minds of people who had worked on the land, in some cases for decades.

Vesk said the aim was to synthesise the varied knowledge on natural revegetation of temperate woodland eucalypts.

Model results about grazing regimes in particular suggested that instead of simply resting land from grazing it is in fact better in some cases to initially 'flog your land hard' before removing livestock.

Once stock is removed from an area, it's important to keep it away, even in harder times.

'You're just not going to get the results that you're after if you feel you can keep using [a regenerating] paddock as a reserve for your stock,' Vesk explained.

Another of Vesk's papers this year¹ cited a National Land and Water Resources Audit (NLWRA) estimate that 32 million hectares of eucalypt woodlands have been cleared during the 200 years of European-style practices.

It also cited a 2002 NLWRA analysis that 80 per cent of agricultural profit to the nation at full equity came from less than one per cent of the 454 million hectares in use at the time of the report.

In that paper, Vesk and co-author Ralph Mac Nally of Monash University said, 'In principle, one can rebuild landscapes without necessarily incurring great losses from foregone production by reorganising at very broad scales.'

Meanwhile, since their *Australian Journal of Botany* paper was published, Vesk and Dorrough have been looking at things from an economic perspective where the individual farm is concerned, and are currently trying to establish a risk-based decision-making framework that helps with the question: when would/should you choose natural regeneration versus planting tubestock or direct seeding?

Ultimately, the research points to more work being needed to understand how eucalypts expand their range.

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More information:

Vesk PA and Dorrough JW (2006). Getting trees on farms the easy way? Lessons from a model of eucalypt regeneration on pastures. *Australian Journal of Botany* 54, 509–519.

¹ Vesk PA and Mac Nally R (2006). The clock is ticking – revegetation and habitat for birds and arboreal mammals in rural landscapes of southern Australia. *Agriculture, Ecosystems & Environment* 112, 356–366.