

Farmers and scientists in rescue of endangered woodlands

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Australian farmers and scientists working together have developed a world-first approach to restoring native landscapes on a large scale and measuring their recovery.

In one of the largest [conservation projects](#) of its type in the world, environmental researchers have developed a new, low-cost, system for monitoring the recovery of wildlife and native trees and grasses on 153 farms spread over 172,000 square kilometres of the critically endangered grassy woodlands of NSW and Queensland.

Restoration of native woodlands is taking place in farming landscapes all around the world – but until now there has been no easy or cost-effective way to monitor progress, says Professor David Lindenmayer from the [Environmental Decisions](#) Hub (EDH) and The Australian National University.

"The world's biodiversity is in a dire state, and the loss of native [plants and animals](#) is especially prominent in [agricultural areas](#)," he says. "This is mainly due to the clearance of native vegetation for farming, over-grazing by livestock and weed invasions."

While farmers are generally keen to conserve biodiversity on their lands, they often lack the information to tell them which approaches work best and which don't, Prof. Lindenmayer explains.

In Australia, Europe, the US and elsewhere, it is increasingly common to

use public funds to pay farmers to restore native landscapes on their farms. However, these restoration schemes are expensive and have been criticised for inadequate monitoring of their results. "A lot of these programs are quite well-funded - but nobody really knows whether they are working or not," Prof. Lindenmayer comments.

"If we're using public money to fund conservation, it's vital to show that we are achieving the desired results. So it is good news that Australia's project to save our grassy woodlands is meeting with measurable success."

Under the Environmental Stewardship Program, the project involves contracting landowners to restore grassy woodlands on NSW and Queensland farms over a period of 15 years. These woodlands are rated as critically endangered, and have been reduced to three per cent of their original area. Today the remnants are mainly small patches of trees on private farmland.

Working with the farmers over a decade, the researchers established 268 monitoring sites on farms over a 1500-km stretch of country from southern NSW to southern Queensland. Their survey of plants, birds and reptiles on the sites reveals that straightforward conservation methods, including reducing grazing pressure, weed control, fencing and re-planting of native vegetation are proving successful in restoring [native vegetation](#) and wildlife.

"Over the last four years, we compared restored sites with sites where no conservation work was done," says Prof. Lindenmayer. "We found that there were significantly more [native plants](#) and birds in the restoration sites, and fewer invasive species.

"We now have good, sound science to say that making straightforward changes in how we manage our land – if done properly – can make a

huge difference in its biodiversity. This also means we can promise a measurable return on public investment in conservation."

To keep monitoring costs down, especially in large scale projects, the scientists have proposed a new way to observe the environmental outcomes of conservation programs.

"We propose a full survey at the start, followed by sampling different farms for the next four years, and doing a full census again in the fifth year," Prof. Lindenmayer says. "For instance, if we have 250 sites to monitor, we'll observe 150 sites this year, and use advanced statistical modelling to pick 150 sites the next.

"We might choose two thirds of what we sampled from the previous year, and make up the remaining one third from unsurveyed sites. This way, over a number of years, we'll be able to track the changes in the entire population."

If applied to the Environmental Stewardship Program, this new way of sampling can save a hundreds of thousands of dollars each year, compared to the traditional method of monitoring a fixed set of sites annually.

"This new approach has been shown to work in possum conservation programs in Victoria, and lends itself beautifully to a large-scale study like this," Prof. Lindenmayer says.

"Landscape restoration policies are usually well planned, and now we have good science to support them. This project has involved many different groups working together, including environmental managers, farmers, policymakers and scientists. Everyone is happy with the results.

"Australia's Environmental Stewardship Program has been a success -

and it's vital that we keep going with it."

The study "A novel and cost-effective monitoring approach for outcomes in an Australian biodiversity conservation incentive program" by David B. Lindenmayer, Charles Zammit, Simon J. Attwood, Emma Burns, Claire L. Shepherd, Geoff Kay and Jeff Wood is published in the latest issue of *PloS One*. See: bit.ly/122HeYK .

Provided by Environmental Decisions Hub

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