

Social Research looking at NRM investment and Demographic Change

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Abstract:

In some parts of Australia rural areas are increasingly a mix of farming and lifestyle properties. Newer property owners in these areas are more likely to be motivated by consumption or protection values; in other words the land is seen as 'a nice place to live' and there may be a desire to plant trees and protect native flora and fauna. These trends are being driven by a mix of factors, including the retirement of a large cohort of older farmers, strong demand for lifestyle properties from baby boomers retiring from cities and greater mobility facilitated by freeways and the internet. Increasing rates of property turnover and the move away from farming are leading to changes in land management that are likely to alter the appearance and function of existing landscapes. The implications of these trends for future investment in natural resource management have received little attention in Australia and there appear to have been no attempts to link past investments with changes in resource condition in areas undergoing demographic change.

This research aims to explore the relative influence of demographic change and government investment in NRM on the extent of native vegetation on private land in North-eastern Victoria. A case study approach combining field visits and in-depth interviews with land managers in a small catchment was used to explore this topic. Field investigations established that there has been an overall net gain in the amount of native vegetation within the catchment and that this increase is mostly associated with lifestyle properties where owners are actively planting or encouraging regeneration. However there is also evidence of change on farming properties where vegetation has been strategically planted over the years to address salinity and erosion problems, and clearing of regrowth is less likely to occur. Interviews with landholders revealed that government funding often goes to landowners who admitted they would probably have done at least some of the work without financial assistance. This raises some interesting questions about future government investment in similar high amenity rural areas, which may be addressed at a later stage in this research.

Interview data suggest that the effects of drought and a downturn in the agricultural sector in recent decades have undermined efforts to increase the extent of native vegetation on private land. However there are indications that there is the potential for an exponential increase in the extent of native vegetation in future years if the drought breaks and some of the farming properties change hands. Given that much of the current investment in natural resource management is now focused on conservation and re-establishment of native vegetation it is noteworthy that only a small proportion of landholders (particularly those with bush blocks) showed any real interest conservation as a land management objective.

Preliminary findings from this study suggest that government investment in areas undergoing demographic change has greater potential to lead to improvements in native vegetation extent than in areas not undergoing population turnaround. Traditional farmers are often reluctant to undo what generations of their forbears have done in terms of clearing the land and maximising production, whereas newer non-farmer property owners are not operating within the same financial constraints and long established traditions. The challenge will be to capitalise on these changes with incentive programs that are flexible enough to take advantage of significant rainfall events, perhaps by paying farmers to allow natural regeneration to occur. Future NRM programs may need to refocus on the needs of the next generation of non-farmer property owners who are not so constrained financially and are perhaps more willing to give up some of their land 'for trees'.

Keywords: *Natural resource management, native vegetation, demographic change, social research*

1. INTRODUCTION

In recent decades there has been substantial investment by governments to raise awareness and understanding of land management issues amongst private landholders (Curtis et al., 2001). A range of policy options including education, economic incentives and regulation have been applied. Initiatives specifically designed to fund biodiversity conservation and sustainable agriculture include the 1983 National Soil Conservation Program; the Save the Bush, One Billion Trees and National Landcare Programs from 1989; and in 1997 the Natural Heritage Trust (NHT), Australia's largest ever environmental spending program (Crowley, 2001).

Unfortunately, the outcomes of past investment through various policy instruments are unclear, especially where more than one intervention has been applied (Mitchell et al. 2007; Lefroy, 2008). According to Lefroy (2008) four audits of public environmental programs over the last decade have concluded that there is no way to gauge the effectiveness of billions of dollars spent because there has been no provision for adequate monitoring of changes on the ground. Although there is evidence that investment in engaging communities and building human and social capital has been effective (Curtis et al., 2008) there is a noticeable lack of research demonstrating that net positive change in native vegetation extent and condition has occurred and natural resource management agencies continue to report that resource targets are not being met (GBCMA, 2007/08; NECMA, 2007/08).

Substantial demographic change is occurring throughout rural Australia. Population is declining in many inland dry-farming areas due to changes in agriculture and the out-migration of the young (Argent & Walmsley, 2008). Other areas are experiencing population growth, with landscape amenity consistently found to be the best predictor of rural area population change, especially in those areas within commuting zones around major capital and regional cities (Argent et al., 2007). Various authors (Argent, 2002; Barr, 2003; Holmes, 2006) have explored aspects of the trend to multifunctional landscapes and the associated in-migration of a new type of property owner. Traditional farmers and a rural population directly dependent on the land are being 'diluted' (Smailes, 2002) by new settlers with different values, attitudes and socio-economic circumstances. This trend is likely to continue; Mendham & Curtis (2009) predict that up to 50% of rural properties will change ownership across south-eastern Australia in the next decade.

This paper describes preliminary findings from a research project focusing on changes in native vegetation on private land in a high amenity area of north-eastern Victoria. This research is seeking to understand the relative influences of government NRM investment and changes in land management associated with demographic change, on the extent of native vegetation. Whilst the condition of native vegetation is important and involves more than just changes in extent, extent change is easier to document and discuss with landholders than the more abstract concept of condition (Keith & Gorrod, 2006).

2. THE RESEARCH SETTING – INDIGO VALLEY CASE STUDY

To assess the relative importance of both demographic change and government investment on the extent of native vegetation the research needed to focus on an area undergoing socio-demographic change and one where significant government investment in natural resource management had been made. Indigo Valley in north-eastern Victoria fitted this profile (Figure 1). The valley is a rural landscape close to Albury / Wodonga with high amenity value. It has a mix of small farms (<400ha) and lifestyle blocks of around 40 hectares in size. Due to the hilly topography of the area the valley was originally a tightly knit farming community with strong social and family networks. This is slowly changing as the older farmers leave the land and their properties are passed on or subdivided and sold to a socially diverse cohort of new owners, often from urban backgrounds.

The Indigo Valley sub-catchment covers an estimated 35,500 hectares within the Indigo Shire local government area. Geographically the sub-catchment can be divided into three zones; Upper Indigo is characterised by steep hills which form well defined boundaries to the west and east; Middle Indigo is flatter with gentle slopes and a greater proportion of cleared land; Lower Indigo extends from the town of Barnawartha to the Murray River and consists of flats and river plains. Although the catchment includes the plains area to the north, local residents do not consider Lower Indigo to be a part of the valley and it is clearly physically and socially quite separate from the Middle and Upper Indigo case study area which together constitute 'Indigo Valley' proper (Figure 1).

Indigo Valley is located within a region which was once covered by Box-Ironbark forest, a generic term referring to dry sclerophyll eucalypt ecosystems made up of broader ecological vegetation classes and numerous floristic communities (Muir et al., 1995). Most of the Box-Ironbark remnants are on public land, most notably Chiltern Mt Pilot National Park, 'the Jewel in the Crown' of the shire. The southern section of

the National Park abuts the western edge of Indigo Valley and some of the properties within the study area share boundaries with the park. Apart from some narrow strips of crown land, the land in the valley is privately owned. Although the amount of remnant Box-Ironbark vegetation on private land is small its conservation value is high, both for habitat and for increasing connectivity between isolated remnants and the larger public reserves (Muir et al., 1995; Hamilton et al., 2000).

North-eastern Victoria has been the focus of many government programs aimed at improving the quality and extent of native vegetation including the North-East Salinity Strategy Implementation, the North-East Firewood Plantation Project, the Land Protection Incentive Scheme, Care of Remnants Incentive Scheme (CORIS) and the Chiltern-Mt Pilot Biolink Project. A part of the North-East NRM region that included Indigo Valley was one of two trial areas for BushTender (a new market-based instrument) in 2001. The Department of Primary Industries (DPI), the Department of Sustainability and Environment (DSE), the North-east Catchment Management Authority (NECMA) and Trust for Nature (TFN) have excellent partnerships within the area and with other local government and community organisations. There is strong support for Local Landcare as evidenced by the North East Landcare Support Strategy (NECMA, 2004) and the highest rate of Landcare membership among farmers in the state (Curtis & Van Nouhuys, 1999). The region also has a uniquely integrated strategy for maintaining links and networking among agency staff involved in environmental restoration, locally known as ‘The Green Team’, which is made up of representatives from DPI, NECMA, TFN, Landcare, local government and Greening Australia.

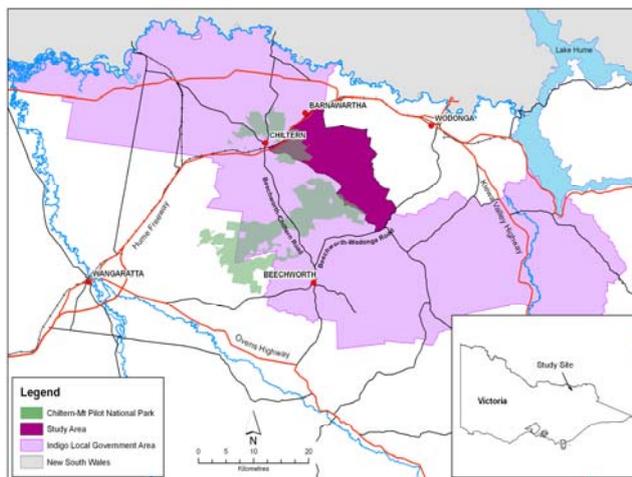


Figure 1. Indigo Valley Case Study Area, NE Victoria

Indigo Valley in particular has been targeted for various land, water and vegetation initiatives. From the late 1980s the valley was a high priority area for dryland salinity management with a focus on reducing groundwater discharge through an increase in perennial vegetation in the landscape, particularly on hill tops and break of slope. DPI ran an ‘Indigo Valley Incentive Project’, which aimed to establish more native vegetation, firewood plantations and perennial pastures in the valley. The Indigo Valley Landcare group has been operating continuously since 1988 and has been a very active and successful group; the majority of landowners in the valley, old and new, have had some involvement in Landcare. Native vegetation protection is currently the major focus for funding of on-ground works in the valley and there are management payments available for the conservation of native pastures or remnant patches within the Biolink area. However the need to protect recognised assets (agricultural land, soil structure and water quality) threatened by salinity is ongoing and funding is also available for fencing and revegetation projects.

3. METHODOLOGY

A mixed method approach (Tashakkori & Teddlie, 2003) that draws on a variety of data sources is being employed to address the key research questions for this project:

- 1./ Is native vegetation increasing in extent within the case study area and if so; where is it occurring and is it due to replanting and / or regeneration?
- 2/ What is the relative importance of government investment in NRM and demographic change on changes in the extent of native vegetation within the case study area?
- 3/ What is the interaction between these factors and what are the implications for future NRM policy and investment?

Maps, aerial and satellite photography, census data and demographic information from interviewees will be used to contextualise the research. Existing documentation such as NRM agency annual reports and Catchment Authority Management System (CAMS) data will supply information about the type and extent of NRM investment in the case study area.

In-depth semi-structured interviews are being used to obtain a detailed understanding of the motivations for past and present land use and land management in the valley (Fontana & Frey, 2008). Purposeful snowball sampling (Atkinson & Flint, 2001) was used to identify a mix of farming and life-style property owners. Interviews were conducted in person, on-property, recorded and transcribed. Data analysis began with the transformation of audio to text which is being analysed with the aid of NVivo software. Interview data is entered and coded (into themes) and the relationship between coded categories can then be explored. This is quite a lengthy process; the findings in this paper are preliminary because the analysis is at an early stage. To date, 37 Indigo Valley landholders have been interviewed on topics such as involvement in government investment programs, regard for native vegetation, future plans for the land, past and present land use and the nature of the local community.

This research is ongoing and will later be supplemented with data from interviews with key informants who can be critical to the success of a case study (Yin, 1994). Key informants for this research will be agency personnel known to have years of experience in NRM and familiarity with the North-east region and Indigo Valley. They will be able to provide a different perspective on investment and change in the area and will represent organisations such as Trust for Nature, DSE, DPI and NECMA.

4. PRELIMINARY FINDINGS

Newer (<15 years residence) land owners in the Indigo Valley area are predominantly professional people, presumably because the minimum subdivision size of 40 ha and high land prices in the area make it difficult for less well-resourced purchasers to buy in. Although it is acknowledged that many lifestyle owners lack the land management skills that go with being a professional farmer (Mendham & Curtis, 2009) the majority of newer property owners interviewed showed a willingness to learn, have a strong sense of obligation to look after the land and the financial capacity to do so. These owners often keep a few cattle or sheep but there is no imperative to overstock and an effort is made to keep weeds and pests under control. A number of property owners, especially in the top end of the valley were born into farming families and have inherited their land but are not farmers themselves. They typically run cattle, grow feed and lease land to other landholders in the valley.

The longer term (>40 years) landowners in the valley are mostly older farmers nearing the end of their working careers. Only half a dozen farm full-time and most have off-property income to make ends meet. For most this means contract work such as hay baling or a partner working in town. Just one older male interviewed will see his land farmed by the next generation and this particular family owns large tracts of land in the valley and farther afield ensuring the viability of their farm business. Many farming properties will be split up amongst offspring or be subdivided and sold once the current owners retire or pass away.

Although non-farming landholders can pose land management issues in farming areas many of the farmers have positive attitudes towards newer owners of land in the valley as illustrated by the following quotes:

I don't hold a grudge against that at all. I think that they've got more money to spend on the land than what I have and I'd say that everybody, that's moved into this area here – like they've improved their farm, or the land that they own, heaps – compared to what I can do. (LH1)

Some of the smaller farmers are more productive than the large farmers because they subsidise what they're doing more heavily out of their own wage, so they're putting more into their little block and they're making it work harder. It's not financially viable, but it's viable for their lifestyle and viable for what they're doing. (LH21)

These farmers recognise that newer owners may have more money to invest in the land to protect and improve it whereas many farmers are barely viable and so have less capacity to make improvements or change their land management practices:

In my parents' time you had big families and there were often a lot of uncles and aunties around who lived on the land with the family...there was that labour available - whereas it's not now. You have people struggling on, on their own, trying to make a living and do everything that was once done by half a dozen people...you have technology to help you, but it's pretty tough. (LH16)

The willingness and capacity to spend time improving the land is an important aspect of land management, already well researched in relation to the adoption of best management conservation practices (Pannell et al., 2006). A good understanding of the complexities of this issue within the case study area is emerging as an important aspect of this study. Preliminary findings indicate that the type of people moving into the area have greater willingness and capacity (in the form of off-property income) to invest for environmental and aesthetic outcomes; engaging with these people should provide new opportunities for government programs that promote and support land management practices aiming to protect and improve native vegetation on private land.

Landcare has been influential in this valley with respect to raising awareness of land degradation and land management issues. The Indigo Valley Landcare group has been running continuously for over 20 years and is unusual in that it charges a very small, one off fee which confers lifetime membership. A newsletter goes out to the majority of residents in the valley irrespective of whether they are active members or not. Most landholders in the valley have been involved with the group's activities at some stage, especially in relation to weed and pest control; ripping of rabbit burrows, blackberry eradication and creek restoration have been a major focus over the years.

The group has always subsidised the purchase of native trees and many landholders take advantage of this service; much of the replanting on farming properties has been done through Landcare because of the availability of cheap trees. DPI and NECMA funding is channeled through the group and the newsletter acts as a one-stop-shop for information about available incentives. At present the group is not as active as it was for a number of reasons; older members have passed away or left the area, some key people are no longer on the committee and there is new leadership with a greater environmental focus, causing conflict within the group and alienating some of the longer term members.

Community social networks and local organisations are immensely important for community cohesion and knowledge transfer and both individuals and groups can 'act as surrogate extension officers, send significant signals to others and act as models for better conservation practices' (Harrington et al., 2006:190). Indigo Valley has had some key individuals supporting Landcare and welcoming newcomers into the valley which has had positive outcomes for the community and for natural resource management. Even though the valley lacks a township, the local school and Country Fire Association (CFA) are well supported and act as 'social glue', binding people together. Many family networks still exist, a small community church runs a weekend service in the lower valley and weekend newspaper delivery is carried out by local residents on a roster basis. Although there is some evidence of value-based conflict over resource management issues in the valley, in general newer residents seem to have integrated well. On the other hand many older longer term residents have dropped out of Landcare and the CFA ('too many new faces' and 'too many regulations'). The extent to which changing community structure has influenced and will influence natural resource management in the valley will be an important finding from this research.

There is empirical evidence to support anecdotal reports of an increase in vegetation extent in Indigo Valley although a quantitative evaluation of change over time using air photo interpretation is incomplete. The majority of properties studied (67%) were found to have improved vegetation extent whilst other properties showed less evidence of improvement but certainly no decrease in extent. There is noticeable recruitment of woody vegetation in some areas, particularly in the steeper country where the land is difficult to access and returns from grazing no longer justify the work involved in spraying or clearing regrowth. Older farmers who might be inclined to spray or clear do not have the physical capacity to do the work or the financial capacity to pay someone else to do it. Lifestyle owners are inadvertently promoting regeneration with low to zero stocking rates and are less aware of their entitlements to clear regrowth when it does occur. At present the drought is a limiting factor but there is huge potential for regeneration following rain, given the changed disturbance regimes on lifestyle properties. When native vegetation regeneration does occur on a farming property a financially viable farmer will remove new growth whereas an older less viable farmer might be inclined to let it go. Properties in the valley which have already increased the extent of native vegetation have the potential for germination of native species following rain; fencing and weed control will be all that is needed to promote significant regrowth of native vegetation.

Other improvements in native vegetation extent in the valley are the result of active planting for firewood, windbreaks, salinity and erosion control, and creek restoration. Some of the work has been voluntary but in most cases revegetation has been government funded or subsidised. Some gains have been offset by losses due to drought, fire and (anecdotally) illegal clearing. There is evidence from interviews of money misspent on poor or incomplete fencing and some adverse outcomes of investment. Some of those farmers who

supported Landcare are now cynical about government investment to increase native vegetation, citing lack of follow-up, management problems associated with weeds and rabbits, increased maintenance of fence lines due to falling trees and native vegetation as a fire hazard. Others are simply exasperated by some of the investment objectives:

Three generations of us have grubbed out wattles and these geese want to plant 'em
To see this top quality land go into trees gives me the shits (LH25)

One of the most important outcomes of investment in NRM is changing attitudes towards managing the land. Whilst there are still some farmers in the valley who think trees are 'a bloody nuisance', the majority can see that there are benefits in planting native trees and grasses, and they have done so, although the objective is usually to improve production rather than to create habitat for native species of plants and animals. Evidence of changing social norms is a general awareness that large scale clearing of native vegetation is no longer an acceptable practice and that there is now financial support available to help put trees in rather than take them away. However it is well known that values are hard to change in adults (Gardner & Stern, 2002) so those property owners who have resisted efforts to increase the amount of native vegetation on their land may be a key element of change in the valley particularly where farm succession is uncertain or unlikely.

They've got a lot of that country that lends itself to reveg because they go right up close to the border of the forest. His brother's got some of those really bare hills; haven't had a tree on them for a hundred years, and quite a bit of land, so if that's ever sold off that's when you'll start, you know, really noticing a difference (LH2)

It is difficult to compare the outcomes of past investment with more recent interventions because landholder recollections of what has been done in the past are sometimes vague and the work has not been documented. More evident are the outcomes of NRM investment with newer property owners in the valley. Large numbers of trees have been planted, a number of properties have covenants and remnant vegetation condition has improved as a result of diligent weed and pest control. Financial assistance has given some owners the chance to plant more quickly and on a larger scale than they might otherwise have done, and although some landholders admitted they'd have done at least some of the work without any assistance, they appreciate the help and advice that comes with it.

5. CONCLUSION

The analysis of interview data and quantitative assessment of vegetation change over time, although incomplete, is supporting the assumption that there has been a net gain in vegetation extent in Indigo Valley due to both regeneration and replanting. A large proportion of this change can be attributed to direct investment and active management. Regeneration is occurring as a result of economic and demographic change and is likely to continue if encouraged and correctly managed.

Some of the money invested over the years has been offset by the effects of drought and a downturn in the agricultural sector making it difficult for farmers to implement practices to improve native vegetation. Indications are that there is the potential for an exponential increase in the extent of native vegetation in future years in the event of rain and with more farming properties changing hands. Given that much of the current investment in NRM is now focused on conservation and re-establishment of native vegetation it is noteworthy that only a small proportion of landholders (particularly those with bush blocks) showed any real interest in conservation as a land management objective.

The influence of demographic change on the extent of native vegetation seems to have increased over the years with recent improvements in extent mostly associated with lifestyle properties. Owners of more production oriented properties are often reluctant to undo previous generations' years of hard work clearing to maximise production. Newer owners are not constrained by historical land management practices. The challenge will be to capitalise on these changes. Interview data suggests that there is a clear need for ongoing extension, and future incentive programs may need to be flexible enough to take advantage of significant rainfall events, perhaps by paying farmers to allow revegetation to occur.

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