Taking over the reins: trends and impacts of changes in rural property ownership

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Abstract

There has been limited international research examining the recent trend to higher turnover in rural property ownership in developed nations. In this paper we discuss findings from innovative Australian research that analysed property sales records and spatially-referenced rural landholder survey data. Large scale and increasing rates of turnover were identified with 50% of properties in our case study predicted to change ownership in the next decade, double the previous rate. New property owners are significantly different from longer-term landholders in that they own smaller properties; are less likely to be farmers by occupation; self-report lower levels of knowledge of land management; are more likely to value conservation over agricultural production; and are less likely to adopt recommended sustainability practices. We explore the implications of these trends for natural resource management, including the difficulties of engaging an increasing number of non-farmer and absentee landholders.

Key Words

Rural Property Turnover; Ownership Change; Rural Rebound; Multi-functional Landscapes; Amenity Migration; Australia.

Introduction

In the 1970s a new trend in population growth was observed in western industrialised nations: non-metropolitan areas were growing at rates exceeding their metropolitan counterparts (Fuguitt 1985). It appeared the trend was short-lived as in the 1980s it reversed in America and slowed down in Australia. Rural population growth reappeared in the USA in the 1990s, the decade of the 'rural rebound' (Johnson and Beale 1994). The rural rebound has been linked to the search for amenity (Burnley and Murphy 2004; McGranahan 1999; Newton and Bell 1996; Rasker and Hansen 2000). In Australia, populations in much of the interior have continued to decline while towns and regional cities close to metropolitan areas, along the coast of eastern and south-western Australia and in irrigation districts or mining regions have experienced population growth (Haberkorn et al. 2004). The rural rebound in Australia has been spatially concentrated in attractive, well-watered areas and in commuting zones around the major cities (Hugo 1996).

There has been some important international research examining the emergence of multi-functional landscapes as part of amenity-driven growth (Argent 2002; Halfacree and Boyle 1998; Holmes 2006). These researchers suggest that rural areas, formerly dominated by production values, are changing into more heterogeneous (or multifunctional) landscapes with a mix of production, protection and consumption values (Argent 2002; Cocklin et al. 2006; Holmes 2006; Smailes 2002). To the extent that new residents are moving into rural areas we can anticipate higher levels of change in rural property ownership. However, this topic has received little attention in the international literature. This paper seeks to contribute to that literature by describing an innovative methodology for predicting future property turnover;

and describing the extent that new and longer-term owners are different and that these differences contribute to different land and water management behavior.

Using data collected through mail surveys across a number of Australian watersheds and Australian Government Life Expectancy Tables our previous research has predicted that 40% to 50% of rural properties will change ownership in the next 10 years (Curtis et al. 2000; Curtis and Byron 2002). Our methodology for predicting property ownership change is explained for the first time in this paper where we draw upon unpublished research for the Corangamite watershed of Victoria, Australia [Figure 1]. To provide a comparison between our predicted level of change in property ownership and previous trends we analysed the rural property sales data for 1995 to 2005 collected by the State Government of Victoria. Mail survey data from the Corangamite watershed were also analysed to explore the extent that new and longer-term owners were different and had adopted different natural resource management (NRM) practices.

In the following sections we provide a brief review of the literature on the rural population turnaround and property ownership turnover; introduce the Corangamite watershed; explain the methods used; and present our key findings. We conclude with a discussion of the implications of our findings for NRM.

Background

The Rural Rebound and Multi-functional Landscapes

The rural population turnaround has received substantial international attention since the trend was first identified by demographers in the 1970s who attributed the change to in-migration (Fuguitt and Beale 1978; Johnson and Beale 1994). As explained, the trend to rural rebound has been observed in the USA and Australia since the 1980s. More recent research suggests that the search for quality of life and environmental amenity are shaping population changes in rural areas (Burnley and Murphy 2004; McGranahan 1999; Rudzitis 1999). These

amenity values include ‘pull factors’ such as a pleasant climate, interesting topography, the presence of water bodies, wilderness areas and the appeal of living a ‘rural life’. There are also ‘push factors’ that influence decisions to leave urban areas, such as perceptions of crime rates and pollution. The increasing number of retirees and other footloose individuals with non-employment income; increased levels of entrepreneurial activity in rural areas; and improvements in telecommunications that enable people to live considerable distances from their place of business have also been identified as factors underpinning the rural rebound (Beyers and Nelson 2000).

In Australia, the emergence of new multi-functional landscapes has been studied by Barr et al. (2005) and Holmes (2006). These authors identified different ‘social landscapes’ (Barr 2003) and ‘occupance modes’ (Holmes 2006) depending on the values that prevail. Barr (2003) proposed a typology of landscapes based on the dominant values. For example, production landscapes are found in prime agricultural regions where the driving forces include maintaining competitiveness in global markets. Landholders in these landscapes are continually searching for efficiency gains, including those offered by increases in the scale of their business. Property amalgamations and increased mechanisation are expected to lead to the loss of population and property turnover, with most new owners likely to be existing residents or farmers from other districts. Barr (2003) also identified a large cohort of baby boomer farmers whom he predicted would cease farming between 2005 and 2015. On the other end of the spectrum, amenity landscapes are found in areas close to larger metropolitan centres and/or with high amenity values. These landscapes are dominated by consumption values and can be expected to experience population increases and substantial social change as new settlers with different values move in.

Property Turnover

In regions where there is a population turnaround and amenity driven migration we might expect higher levels of change in rural property ownership and that the new and longer-term owners will be different. In their study around the Greater Yellowstone National Park in the USA, Gosnell et al. (2006) showed that 23% of all land studied (>400 acres) had changed hands in the past decade and that some counties were experiencing property turnover of 50% in a decade (Gosnell et al. 2006). Amenity buyers dominated the land purchasers and, as a result, the landscape was being '…fragmented into the increasingly wide-ranging sets of values, beliefs, motivations, and economic circumstances of owners associated with amenity migration' (Gosnell et al. 2006 p. 744). In another US study, Huntsinger et al. (1997) reported high levels of property turnover and subdivision in Californian hardwood rangeland between 1985 and 1992. In this study, 35% of properties changed ownership over a seven year period: 24% had been sold, with about half sold to new owners (Huntsinger et al. 1997).

Existing literature suggests that new and longer-term owners are different. For example, Gosnell et al. (2006) concluded that new owners were more open to proposed changes to land management but there appeared to be a loss of local knowledge as longer-term owners moved away. In a survey of ranch owners in high amenity areas in south-western Montana, Gosnell et al. (2007) found that new owners were more likely to engage in practices related to recreation, aesthetics and conservation while longer-term owners were more likely to engage in activities related to production such as improving irrigation efficiency. Nelson (1997) found that new residents in the non-metropolitan Northwest in the US locate in different areas (they are less likely to locate in agricultural counties), work less and have greater levels of non-earnings income. Rudzitis (1999) found that rural areas in the United States were attracting environmentally-concerned young professionals. Jones et al. (2003) found that in southern Appalachia in the US, in-migrants rated slightly higher on several environmental attributes, with most differences being behavioural (such as recycling and

being actively engaged in promoting environmental activities). Salka (2003) suggested that amenity-led migration to rural areas is contributing to a breakdown in the differences in attitudes to environmental protection between rural and urban areas. In this case, newcomers placed higher priority on environmental values than longer-term residents and were more politically active (Salka 2003). However, the differences between new and longer-term residents on environmental issues were less than expected (Jones et al. 2003; Rudzitis 1999).

The Corangamite Watershed Case Study

The Corangamite watershed is one of 56 watersheds in Australia and is located to the west of the city of Melbourne in the state of Victoria, Australia [Figure 1]. The Corangamite watershed appealed as a useful case study because of its internal variation with high and low amenity areas (Barr et al. 2005). According to Barr's social landscape classification, the Corangamite watershed is classified as amenity in the east around metropolitan Melbourne and Geelong, transitional in its central areas and as a production landscape to the west (Barr et al. 2005). Amenity landscapes exhibit a diversified employment base, significant in-migration and population increases, smaller farms and prices for rural land and housing beyond the agricultural value of the land.

Close proximity to employment and cultural attractions in Melbourne and the nearby city of Geelong; to coastal areas accessed by the Great Ocean Road; and to the nearby forested areas of the Otways National Park make the watershed attractive to new residents. Indeed, the population of the watershed rose from 282,575 to 339,015, or 20%, between 1986 and 2006 (ABS 2007). Population density is highest along the coast, near towns and especially in the peri-urban region near Melbourne and Geelong. Population growth has been highest in the transport corridor between the regional cities of Geelong and Ballarat and along the coast while population declines have been experienced in northern part of the watershed, away from the major metropolitan centres.

The watershed of 13,340 sq km has a diverse economy with employment dominated by the manufacturing and services sectors. Although agriculture and forestry employs only 5% of the watershed's workforce, land use is dominated by agriculture and includes livestock grazing (beef and dairy) and cropping (CCMA 2003). The southern part of the watershed has higher average annual rainfall and dairy and cattle grazing are the dominant land uses, while the northern parts that receive lower rainfall totals are used primarily for dryland cropping, prime lamb and wool production. There are intensive livestock (pigs and poultry), horticultural enterprises and market gardens in peri-urban areas in the eastern part of the watershed (URS 2003). Forestry is expanding across the watershed and commercial fishing occurs at several ports. Rural land values are high, influenced by proximity to urban areas. For example, in the Ballarat to Geelong corridor land is $4,000/ha, almost twice the price of similar land in more remote locations (CCMA 2003).

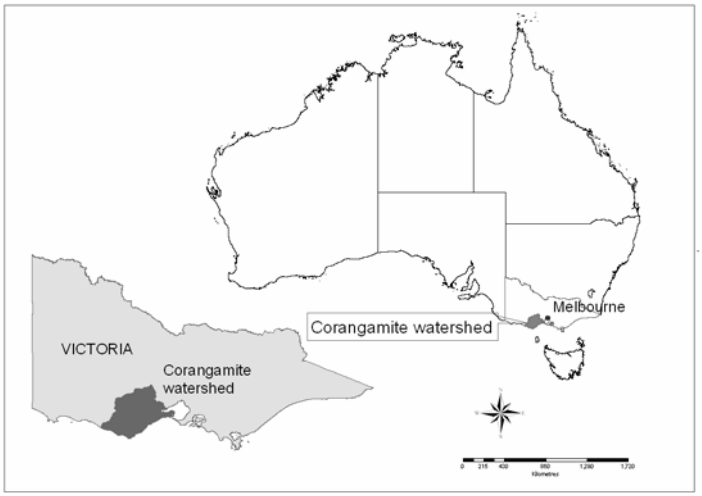

Figure 1 Location of Corangamite watershed.

Methods

Introduction

As Holmes highlighted, 'The complex dynamics of rural occupance…can only be understood by fine-grained research relating landscape dynamics to 'individual domestic

practices' on each landholding…. Here is a challenging research area, also of considerable theoretical and applied value, awaiting substantial research input' (Holmes 2006, p.156). We have responded to this challenge by collecting spatially-referenced data from rural landholders that enabled us to predict future property turnover; identify new and longer-term owners; and explore links between length of ownership and land management practices.

The Yellowstone research referred to above (Gosnell et al. 2006) stands out as a seminal study that attempted to link amenity migration with landholder behaviour. These authors gathered land owner data from local and state agencies, county tax assessors, private appraisers, realtors and others familiar with agricultural sales. The study focused on ranches greater than 400 acres in size that were designated agricultural for tax purposes and therefore excluded 'ranchettes'. By excluding ranchettes, this study deliberately excluded a potentially important set of amenity landowners. Australian research on amenity migration has focused on trends in coastal areas using data from population and household censuses (Buckley et al. 2006; Holmes 2006). Census data are readily available and are useful for identifying population trends, but these data offer little assistance to those wanting to explore differences between new and longer-term property owners, including differences in their priorities, values, knowledge and skills in land and water management and their adoption of practices expected to lead to better NRM outcomes.

In the next section we explain how we have responded to the challenge identified by Holmes (2006) using spatially-referenced data collected through watershed scale surveys of rural landholders and property sales data obtained from the State government. Analysis of these data allowed us to predict future levels of property turnover, compare future turnover with the past, and explore differences between new and longer-term property owners.

The Mail Survey Process

Local governments in the Corangamite watershed provided access to ratepayer lists and these were used to compile a list of the owners of all rural properties greater than 10 hectares. These lists included a property identification field that supported spatial referencing of the survey data. A random sample of 1,000 landholders was drawn from the list of 8,630 property owners in the watershed. After removing multiple listings of properties and deceased estates, a final mailing list of 972 people was obtained.

The survey design and mail out process employed a modified Dillman (1978) *Total Design Method* process that has been refined through the experience of successive catchment surveys. Curtis et al. (2005) provide a detailed explanation of the collaborative research process undertaken in these watershed scale projects. A 12-page survey booklet was developed in collaboration with watershed partners and extensively pre-tested through workshops with landholders. In the Corangamite study, a final survey response rate of 57% (N= 552) was achieved.

Questions included in the survey sought to gather information that would address watershed managers' needs for data to underpin effective landholder engagement and the evaluation of outcomes from investment in watershed management. The extensive literature on the adoption of sustainable agricultural practices (Cary et al. 2002; Rogers 2003) and biodiversity conservation practices (Dettmann et al. 2000; Wilson and Hart 2001) and the authors' previous work to address data needs of watershed managers underpinned the selection of survey topics. The principal survey topics were: level of awareness and concern about social, economic and environmental issues; values attached to their property; attitudes towards government and NRM; knowledge of land and water degradation and related management skills; level of confidence in recommended practices; property size; on and off-property income and debt level; involvement in short courses; age; involvement in succession planning; long-term plans for their property; current and future land use; adoption of

recommended practices (see explanation below); and acceptability of policy options to engage private landholders.

As indicated above, the survey asked respondents about their adoption of current recommended practices (CRP) for both sustainable agriculture and biodiversity conservation. The 11 CRP included in the Corangamite survey were identified by Corangamite watershed staff and survey pre-testing workshop participants as those practices expected to lead to improvements in watershed condition. CRP included in the survey can be classified into two groups: firstly, those principally related to biodiversity conservation (area of trees/shrubs planted, fencing to manage stock access to waterways and remnant vegetation, controlling pest weeds and animals); and secondly, those related to sustainable agriculture (soil tests, perennial pasture established, lime application, cropping in rotation with pasture, rotational or time controlled grazing, minimum tillage and water testing).

Determining the Extent of Previous Property Turnover

The Victorian Valuer General's office holds information on all property sales for that state. At our request, the Valuer General released sales information for the 10 year period 1995-2005 for all rural properties greater than 10 hectares that had been sold within that time for the seven local government areas (LGA) within the Corangamite watershed. The 10 hectare threshold is accepted in Australia as a way of separating rural and urban land use, particularly on the fringe of cities, and was also consistent with the property size threshold used for our watershed scale landholder surveys. The previous 10 years was the only period in which reliable data were available in Victoria. The property sales data provided were tagged to LGA area. To determine the past extent of rural property turnover, the number of sales in each LGA was divided into the number of private properties greater than 10 hectares for that LGA, obtained from the VicMap Property database (DSE 2002).

Predicting Trends in Property Ownership

Corangamite survey respondents were asked their age at the time of the survey, the number of years they had lived in their local district (length of residence) and the number of years they had owned their property. In a separate question, respondents were asked if their long-term plans involved a range of possible choices, including family succession; disposal of land through sale, leasing or share farming; and acquisition of more land through purchase, leasing or share farming; or staying on the property long-term. With these data and information from the Australian Bureau of Statistics (ABS) Life-Expectancy Tables (ABS 2004), we were then able to predict the extent and timing of future changes in property ownership. The strength of this approach is that all possible reasons for property transfer - sale, family succession, retirement and death; are considered. We employed the following steps in this order:

1. If the property was to be sold or subdivided and a large part sold (n=206)

Respondents selecting this option were also asked to indicate the year they thought the sale might occur. It was then assumed that this was when the property would be sold (n=148). If respondents said they were likely to sell but did not nominate a year for the sale (n=11), the median year of sale for people of the same age was allocated to them.

2. Ownership will stay in the family (n=96)

In Victoria, 13.9% of people employed in the industry of agriculture, fishing and forestry are over 65 years of age (ABS 2006). That is, most farmers had retired by age 65, but a small proportion continued farming beyond the age when Australian men can access the aged pension. When respondents indicated they had a family succession plan, property transfer was assumed to occur on retirement. For those under 65 years (n=19), retirement was assumed to be at 65 years of age. For those over 65 years (n=16), it was assumed that they had decided to ‘die with their boots on’ in that their property would be transferred at the time

of their death, which was then calculated using ABS Life-Expectancy Tables (ABS 2004). For those who indicated that they planned to pass the property on in the family but they said they did not have a succession plan (n=61), transfer was assumed to occur on death (age calculated using ABS Life-Expectancy Tables). One male respondent did not provide his age and was assigned the median age for males of 54 years.

3. For all others, including those who will continue on the property long-term

For respondents not planning to sell, it was assumed that property transfer would occur on retirement at age 65 years for those under 65 years (n=193) and at death for those over 65 years. For the latter set (n=40), ABS Life-Expectancy Tables (ABS 2004) were used to calculate the remaining life expectancy and provide the expected date of property transfer. The median age of 55 years was assigned to the 19 respondents who hadn't provided their age. It was assumed that these properties would be transferred on retirement at age 65 years.

Differences Between New and Longer-term Owners

Researchers have distinguished between new and long-term residents using different criteria, including the length of residence. Some authors have used five and seven-year periods of residency as thresholds between new and long-term residents (Ford 1999; Smith and Krannich 2000). However, most studies have adopted 10 years as the threshold (Burnley and Murphy 2004; Fortmann and Kusel 1990; Rudzitis 1999). Another approach has been to distinguish between those who lived in an area before and after a major migration wave (Hunter et al. 2005; Jones et al. 2003). This can be a sensible approach where there has been a major social upheaval, such as the post-Second World War migration from Europe to the New World. For the Corangamite study we adopted a 10 year residency period as the threshold because there was not an obvious migration wave; the 10 year threshold would enable comparison with most international studies; we already had property sales data for a 10 year period; and this division provided a larger sample of survey respondents.

Survey questions sought information about both the length of residence in the local district, the length of property ownership in the district and whether their rural property was the principal place of residence. It was therefore possible to explore differences between either new and longer-term residents or new and longer-term owners. We settled on length of property ownership, as this enabled distinctions between new and longer-term owners; and between new owners who had previously been residents of the region, those who had previously resided elsewhere, and those who continued to live outside the district (absentee owners).

Testing for normality revealed the data to be non-normal, therefore all statistical analysis included bivariate comparisons using nonparametric statistics including Pearson's Chi-Square Test for count data and Kruskal-Wallis Rank Sum Test for continuous data and Likert scale data (a Likert scale of 1-6 included options: NA, highly unlikely/ unimportant, unlikely/ unimportant, some, likely/ important, highly likely/ important). In all analyses the P statistic represents the significance level where a value below 0.05 is considered to be statistically significant. Although medians are usually presented when conducting non-parametric statistical analysis, owing to the nature of Likert scales, medians were often the same yet the test result was statistically different. Therefore, means are presented in the findings for ease of comparison (indeed, Kruskal Wallis tests use means of ranks). All statistical analyses used the SPLUS 7 software package and Microsoft Excel.

Findings

Past Property Turnover

Analysis of the Victorian Valuer General data revealed that 25% (n=3,894) of properties in the LGA within the Corangamite watershed had been sold at least once in the past 10 years. Only a very small proportion (2.46%) of these sales involved the same property being re-sold within the 10 year period. It is possible that some properties will change hands

within families without a sale and that this finding therefore under-represents the extent of past property turnover. Further analysis of the sales data revealed a strong trend of an increasing rate of property sales over the past 10 years, particularly since 2000. Indeed, since 2000, property sales have increased from a rate of 1.76% of all properties per year to a peak of 3.74% in 2004.

Predictions of future property turnover

Using mail survey data we predicted that half of all respondents' properties would change hands over the 10 years to 2016. The properties predicted to change hands by 2016 represented 52% of the land area in the watershed managed by the survey respondents.

Analysis of survey data predicted a significantly higher rate and overall level of change in property ownership between 2006 and 2016 (50%) compared to the historical data for property sales between 1995 and 2005 (25%). Our analysis of the property sales data had revealed a significant increase in the rate of property sales for 2001 to 2005 compared with 1995 to 2000 (median 1.52% for 1995-2000, and median 3.26 % for 2001-2005, p=0.006). Our predicted 10 year median for all property transfers appears to be affirmed by the trend to a significantly increased rate of sales over the previous 10 years.

Are new owners different from longer-term property owners?

Based on the analysis of mail survey data, most of the property turnover predicted for the Corangamite watershed will involve people from outside the local district taking over properties**.** Sixty-seven percent of those who have owned their property for 10 years or less had lived outside the district prior to purchasing their property.

Characteristics of new and longer-term property owners New and longer-term property owners were significantly different on a range of social and farming variables [Table 1]. It seems that many of these differences are related to differences in occupation. Longer-term owners held larger properties and were more likely to say they were farmers by

occupation. Longer-term owners were also likely to work more hours on-property and less off-property, were more likely to report an on-property profit, more likely to indicate that someone in their family is expected to take over the property and that their property is their principal place of residence. New owners were less likely to be volunteers or members of local sustainability organisations such as Landcare groups or commodity groups. These data suggest that new owners are less connected to their district and their land and less dependent on agricultural income.

Table 1 Key social and farming variables of new and longer-term owners (new, n=83-91; longer-term, n=345-365).

Topic	New property owners	Longer-term property owners	P
Median property profit range (new n=30, longer-term n=226)	Less than $10,000	$30,000 to $40,000	<0.001
Median years lived in district	7 years	42 years	<0.001
Property is the principal place of residence	61%	81%	<0.001
Median area land owned	41 hectares	140 hectares	<0.001
Family interested in taking on property	36%	53%	0.01
Property made a profit	35%	68%	<0.001
Member Landcare group	24%	37%	0.03
Farmer by occupation	23%	61%	<0.001
Received government funding for NRM on their property	22%	28%	0.33
Median days paid off-farm work/year	200 days/year	0 days/year	<0.001
Median hours week farm work	16 hr/week	40 hr/week	<0.001
Member commodity/ industry group	13%	20%	0.17
Part of property covenanted	11%	6%	0.12
Median hours week as a volunteer	0 hr/week	1 hr/week	0.03

New owners reported higher levels of concern about environmental issues such as the loss of habitat caused by the clearing of native vegetation (mean: new=4.11, longer-term=3.43, p=<0.001) and climate change (mean: new=4.06, longer-term=3.73, p=0.03). They were also more likely to value their property for providing habitat and as a place for recreation compared to longer-term owners [Table 2]. On the other hand, longer-term owners were more likely to value their property for the economic and social outcomes linked to farming such as providing most of the household income and providing a sense of

accomplishment from building/maintaining a viable business [Table 2]. At the same time, there are similarities between new and longer-term owners in the issues of concern, and the values attached to property [Table 2]. For example, almost all respondents were interested in learning, wanted to pass their property on in better condition, thought their property was an attractive place to live and that rural land was a sound investment. As will be explained later, these similarities provide some potentially useful pointers to more effective engagement of both new and longer-term property owners.

Table 2 Values attached to property for new and longer-term owners (new, n=89-90; longer-term, n=358-363)

Topic	New owners mean	Longer-term owners mean	P
Provides the lifestyle I want	5.27	5.13	0.18
Attractive place to live	5.14	5.15	0.67
Always learning new things	4.60	4.49	0.24
Rural land sound long-term investment	4.71	4.78	0.56
Being able to pass on in better condition	4.77	4.87	0.21
A place for recreation	4.65	4.13	<0.001
Being part of a rural community	4.48	4.70	0.06
Native vegetation providing habitat	4.46	4.09	0.02
Sense of accomplishment maintaining viable business	4.59	4.92	0.02
Asset to fund retirement	4.32	4.59	0.06
Great place to raise a family	4.98	5.05	0.63
Producing food and fibre	4.07	4.55	<0.001
Provides most of the household income	3.65	4.78	<0.001
Able to employ family members	3.42	4.14	<0.001

Consistent with their stronger environmental values and greater concern for environmental issues, new owners were significantly more likely to agree with two statements exploring attitudes toward landholder duty of care for the environment that were included in the survey [Table 3]. That is, new owners were more likely to agree that rural landholders have a responsibility to take reasonable steps to avoid foreseeable harm to biodiversity [Table 3]. New owners were also significantly more likely to agree with the statement ‘clearing native vegetation has substantially reduced biodiversity in the district’ [Table 3]. Additionally, there was a significant difference between the two groups on the statement

measuring commitment to a stewardship ethic based on the concept that reduced production in the short-term is justified where there are long-term benefits to the environment [Table 3].

Table 3 Attitudes of new and longer-term owners (new, n=90; longer-term, n=356-359)

Topic	New owners mean	Longer-term owners mean	P
Landholders should be paid for providing environmental services that benefit the wider community	5.15	4.93	0.07
Landholders have a moral responsibility to act in ways that minimise harm to native plants and animals	5.15	4.70	<0.001
Fencing to manage stock access is an essential part of the work required to revegetate waterways	5.06	4.95	0.22
It is reasonable that the wider community asks landholders to act in ways that will not harm native plants and animals	4.76	4.29	<0.001
Reduced production in the short term is justified where there are long-term benefits to the environment	4.64	4.32	<0.001
Clearing native vegetation has substantially reduced biodiversity	4.53	4.04	<0.001

Longer-term owners who were more likely to work longer hours on-property, to live on their property and to be farmers by occupation also reported higher levels of knowledge for almost all of the land and water management topics included in the survey [Table 4]. For example, they reported higher knowledge about how to interpret results from soil tests; how to recognise signs of salinity; how to identify acidic soils; the benefits of ground cover for soil health; and the ability of vegetation in waterways to improve water quality [Table 4].

Table 4 Self-reported knowledge of land and water management for new and longer-term owners (new, n=90; longer-term, n=358-362)

Topic	New owners mean	Longer-term owners mean	P
Benefits of retaining or improving native vegetation	4.18	4.18	0.72
Ability of vegetation in waterways to improve water quality	4.16	4.34	0.10
Benefits of pastures in crop rotation for soil health	4.14	4.44	<0.001
Benefits of ground cover on grazing or cropping paddocks to maintain soil health	4.00	4.32	0.01
Recognise signs of salinity	3.91	4.21	<0.001
How to identify new weed species	3.81	4.14	<0.001
How to access property management training/courses	3.76	3.99	0.07
Interpret results from soil testing	3.61	4.09	<0.001
Identify acidic soils	3.48	3.93	<0.001
Processes leading to soil acidification	3.06	3.51	<0.001
Major NRM strategies	2.83	3.29	<0.001

Length of property ownership and property management Analyses reported below compared new and longer-term owners who were involved in enterprises where specific current recommended practices (CRP) would be relevant. For example, only those respondents who reported they had livestock were included in comparisons for the uptake of fencing native bush/ grassland to manage stock access. Given the significant difference in the median size of properties owned by new and longer-term owners, comparisons were made on the basis of whether CRP was reported as being undertaken rather than the area or extent of activity undertaken. All statements seeking information about the implementation of CRP were time bound (mostly within the past five years) to reduce the effect of time on adoption. Nevertheless, it must be acknowledged that it may be time rather than the other characteristics of new property owners that is affecting their uptake of CRP.

There was a trend for longer-term property owners to undertake almost all CRP at higher levels than new owners, with the exception of native bush and grassland fenced to manage stock access to those habitats (32% of new owners had undertaken the practice compared to 30% of longer-term, $p=0.8$). These differences were significant for two CRP, including CRP for sustainable agriculture and biodiversity conservation (planting trees and shrubs: 59% new, 78% longer-term, $p<0.001$ and sown perennial pasture in the last five years: 33% new, 62% longer-term, $p<0.001$). New owners were more concerned about environmental issues, gave a higher rating to the conservation of biodiversity and were more prepared to acknowledge that landholders have a duty of care for biodiversity [Tables 2 & 3]. However, new owners were no more likely to adopt most conservation related CRP included in the survey. Logistic regression was used to further explore relationships between the length of ownership and adoption of CRP. Planting trees and shrubs and establishment of perennial pastures were the two CRP used as the dependent variables. The independent variables included length of ownership, farming as an occupation, area of land managed, hours of farm work per week, on-property profit, received government funding, membership of Landcare, a

knowledge index and an index of values. This analysis failed to identify a significant positive relationship between length of ownership and these CRP. At the same time, factors related to farming as an occupation, and indirectly to length of ownership (larger property size, longer hours worked on property, on-property profitability, greater knowledge of NRM) were significantly linked to higher adoption of these CRP using logistic regression.

Conclusions

In this paper we have described a relatively simple, effective and readily transferable methodology for predicting property turnover that is based on knowledge of each landholder's age, their future intentions and the use of life expectancy tables. Applying this approach we have predicted large scale property turnover that is consistent with Barr's (2003) prediction of farmer retirements in the period 2005 to 2015 based on census data. In the Corangamite watershed, our prediction is consistent with comparable research in the USA. In both instances, it seems that amenity-driven in-migration is a key factor in explaining the trend to much higher turnover in rural property ownership.

This Australian study also confirmed the findings of international research showing that new rural property owners are significantly different to longer-term owners and that they adopt different management practices. Amongst other things, new owners are less likely to be farmers by occupation, more likely to live off-property and their property ownership is motivated more by conservation than production values. In this Australian study there was a trend for longer-term property owners to undertake most CRP at higher levels than new owners. We now turn our attention to a brief discussion of the NRM implications of the trend to higher levels of property turnover and the differences between new and longer-term owners.

If half of the existing landholders move off their properties and are mostly replaced by owners new to the area then there is likely to be a huge loss of local knowledge about farming

and land management. Many parts of Australia have or continue to endure severe drought conditions. National policy assumes that drought is a part of climatic variability in Australia and landholders are expected to prepare for drought as part of their normal business planning. However, droughts occur infrequently and in south-eastern Australia the last major drought was in 1982/3. It is therefore unlikely that many of the landholders who have lived through the 2006/7 drought will be managing land if the next major drought occurs in 20 years time.

When new people take over a property there is the potential for considerable change in management. Consistent with findings from research in the USA, the new owners in the Corangamite watershed were very different from longer-term owners in that they were younger (although both are middle-aged), had stronger conservation attitudes and values; and with much higher off-property work, would seem to have substantial resources to invest on-property. Nevertheless, it was the longer-term owners who were undertaking most CRP at higher levels. The longer-term owners had higher levels of knowledge and skills of land management; stronger commitment to farming; and a higher dependence on income from agricultural production; and are more involved in local organisations and communication networks that are likely to establish social norms, enhance understanding and provide financial assistance that supports the adoption of CRP. It seems that these attributes are the more critical influences on adoption of CRP. A key implication of these findings is that NRM managers will have to work hard to engage new landholders, build their knowledge and skills and support them as they trial and assess CRP.

Compared to longer-term residents, a much higher proportion of new property owners in the Corangamite watershed were absentee owners. This trend to absentee ownership is also consistent with second home ownership in the USA which is an important characteristic of amenity landscapes there. NRM managers in the Corangamite watershed identified the task of engaging absentee owners as the most challenging issue they face. One approach would be for NRM managers to monitor property sales to identify new owners and then meet with the new

owners to explore their aspirations and needs and to identify opportunities for watershed managers to engage them. There is also the opportunity to engage this cohort through appeals to their pro-conservation attitudes and values. Given the high level of spatial variation across the watershed in the proportion of farmers and non-farmers and resident and absentee owners, it is also important that NRM managers consider adopting different approaches to communication and engagement in different areas. In areas where there is a high proportion of absentee owners meetings should be held on weekends and probably need to be at the scale of a few neighbouring properties. Another approach that is likely to be effective is for NRM managers to link new owners with a local farmer who has specific expertise or can supply labour or machinery to undertake critical farm or conservation work.

Although there are significant differences between new and longer-term owners, there are important similarities between these groups and these similarities provide insights into ways of successfully engaging landholders in NRM. In the Corangamite watershed both the longer-term and the new owners appear to have a strong expectation of making a capital gain through their investment in rural property. There was also universal concern for passing the property on in better condition and both groups scored highly on an item exploring aspects of a stewardship ethic. The meaning of ‘better condition’ needs to be unpacked in that it could just as easily refer to the property infrastructure, environmental condition or business viability. The important point is that the concept of ‘leaving the property in better condition’ has universal appeal and could underpin an effective landholder engagement strategy.

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