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Nature strikes back or nature heals? Can perceptions of regrowth in a post-agricultural landscape in South-eastern Australia be used in management interventions for biodiversity outcomes?

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HIGHLIGHTS

- Stakeholder perceptions and management of spontaneous regrowth were identified.
- Regrowth is viewed through three frames: Accept, Ambivalent and Control.
- Each frame was expressed through associated positive and/or negative narratives.
- The frames and narratives could be used to promote biodiversity outcomes from the regrowth.

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ABSTRACT

Throughout the world spontaneous growth of vegetation (regrowth) often results from land use change such as reduced or ceased agricultural activity. Abundant and extensive regrowth typically has significant implications such as risks to human wellbeing (e.g. wildfire), and opportunities for low cost broad-scale land restoration and biodiversity conservation. Management of regrowth may be contentious due to differing views amongst stakeholders. Developing effective management strategies for biodiversity outcomes requires clear understanding of social perceptions of regrowth. This paper is based upon 53 semi-structured interviews exploring stakeholder perceptions, views and management of regrowth in a post-agricultural landscape in central Victoria, Australia. Aspects of discourse—in particular narratives (themes of discussion) and frames (philosophical perspectives) enabled interpretation of how different stakeholders perceived their changing landscape. Stakeholders typically viewed the shrubby regrowth through one of three frames expressed through a range of narratives that conveyed meaning: "Control"—a negative interpretation of the regrowth, "Accept"—a positive interpretation; and "Ambivalent"—a fusion of the Control and Accept frames. As frames profoundly influence behaviours, we suggest using the frames and narratives identified in the research to develop interventions that enable biodiversity outcomes from the regrowth. Social acceptability of regrowth will be fostered if the interventions acknowledge stakeholder concerns congruent with the three frames identified—in particular as expressed by the 'use', 'nature' and 'restoration' narratives which span the three frames.

1. Introduction

Reduction and cessation of agriculture on previously farmed land, sometimes called abandonment, is widespread globally (Cramer, Hobbs, & Standish, 2008). A frequent consequence of this land use change is spontaneous growth of vegetation through natural succession (Hobbs & Cramer, 2007), often on large areas (Cramer, Hobbs & Standish, 2008). For example, Fyhria, Steen Jacobsen & Tømmervik (2009, p. 202) described spontaneous post agricultural revegetation (regrowth) as "one of the most significant alterations" to European cultural landscapes in recent decades. The ecological impacts of this alteration appear to differ between regions of the world with long and short histories of agriculture. For example, in reviewing the consequences of farmland abandonment for biodiversity conservation, Queiroz et al. (2014) found mainly negative effects in Eurasia, and mainly positive effects in the New World. A similar dichotomy was noted by Beilin et al. (2014) who suggested that abandoning agriculture resulted in diminishing bio-

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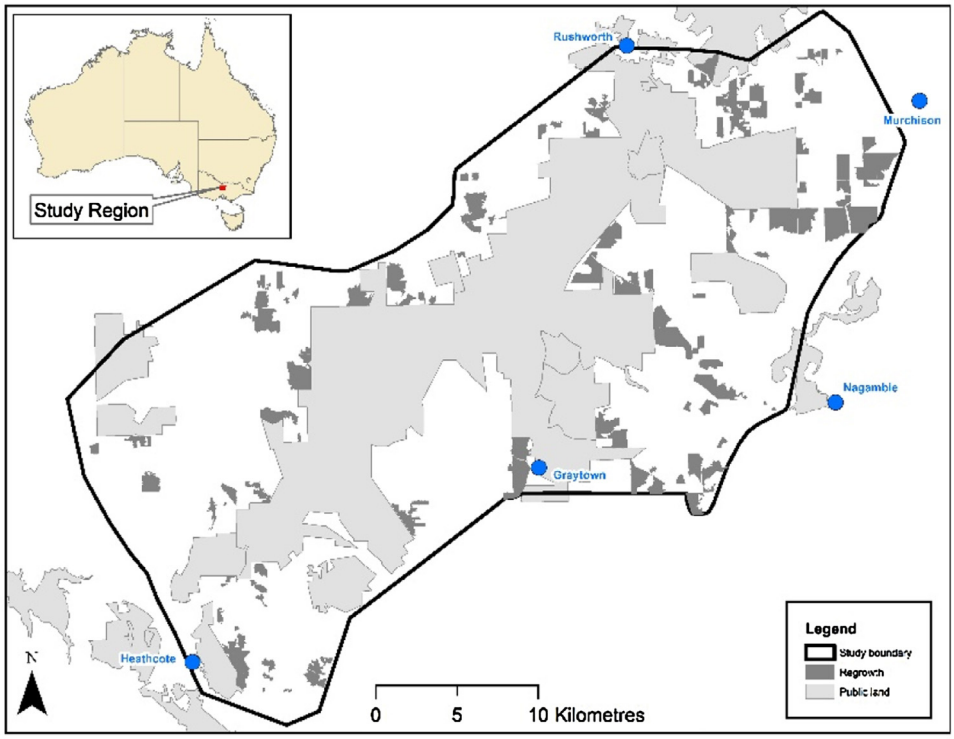

Fig. 1. Case study region showing extent of shrubby regrowth on private land in relation to the forested public land (adapted from Geddes et al., 2011).

diversity in Portugal and Sweden, while the same processes in their Australian case provided a move towards ecological restoration.

Notwithstanding the study from Beilin et al. (2014) cited above, there are few studies that focus on the biophysical aspects of regrowth in Australia. One of these few noted that regrowth is "becoming increasingly abundant in regions experiencing rapid changes in land use demographics, such as agricultural areas close to regional cities and towns" (Lunt et al., 2010; p. 5). Research by the same group of ecologists suggested this shrubby regrowth has the potential to reverse the steady decline in native vegetation cover in some landscapes, viewing it as an opportunity for broad-scale landscape restoration at small financial cost (Lunt et al., 2010 and Geddes et al., 2011). Further evidence to support this claim was presented by Smallbone, Mathews & Lunt (2014, p. 43), who found that "bird species diversity was increased by the presence of regrowth" and that "regrowth provided complementary habitat for threatened woodland birds".

Despite nascent interest in how regrowth can assist in restoring land, conservation efforts continue to focus on reserved land, or on the active revegetation of agricultural land (Smallbone, Mathews & Lunt, 2014). The potential for regrowth to benefit biodiversity is particularly important in Australia, which has experienced the greatest documented biodiversity decline of any continent (Australian State of the Environment Committee, 2006).

To understand how regrowth related ecological changes in post-agricultural landscapes are being interpreted and viewed socially, we can examine language used to describe spontaneous regrowth. This is because language plays a fundamental role in creating, articulating and reinforcing frames through which people view the world. Frames are interpretive lenses providing meaning and privileging some ideas over others (Goffman, 1977), and "perceptual lenses, worldviews, or underlying assumptions that guide communal interpretation and definition of particular issues" (Miller, 2000; p. 211). Frames profoundly influence thinking and behaviour (Corbett, 2006; Lakoff, 2004, 2010), providing not only insights into peoples' views but also offering scope to influence behaviours (Nisbet & Scheufele, 2009; Nisbet, 2009). Frames are expressed through narratives which concern specific cases. Narratives enable humans to construct experiences, convey meaning (Atkinson, 2010; Bruner, 1991) and represent reality (Czarniawska, 2004).

Examples of social research exploring responses to regrowth landscapes (spontaneous reforestation) originate mostly from Europe (see, for example, Antrop 2005; Bauer, Wallner, & Hunziker, 2009; Höchtl, Lehringer, & Konold, 2005; Soliva et al., 2008). Polarised framing of the regrowth by impacted stakeholders is noticeable in this body of research. Agricultural decline and associated reforestation is viewed either as negative because it increases fire hazard (Rey Benayas et al., 2007) and/or threatens valued agricultural ecosystems (Agnoletti, 2014), or as positive for its potential for restoring pre-agricultural ecosystems (Schnitzler, 2014). Benjamin, Bouchard, & Domon (2007) characterised the two responses in Europe as rejection, where the reforestation is viewed as non-productive, and acceptance where the return of nature is viewed romantically. In Australia Sharp et al. (2012) explored perceptions of regrowth on agricultural land, and Minato, Curtis & Allan (2010), and Race et al. (2010) considered regrowth within a broader native vegetation context, but little work has focussed specifically on social responses to shrubby regrowth occurring on private land in post-agricultural landscapes.

The questions this paper explores are: how do various stakeholders in a changing agricultural landscape perceive the rapid regrowth and wide distribution of shrubs; how do these perceptions influence landscape management behaviours and practices, and how can these perceptions inform interventions to enable biodiversity outcomes from the regrowth?

2. Methods

The case study was 109,223 ha of land in central Victoria, South Eastern Australia (Fig. 1). In 2009 Geddes et al. (2011, p. 34) mapped shrubby regrowth as occupying 12.3% of previously cleared private