



Generating narratives on bushfire risk and biodiversity values to inform environmental policy

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ABSTRACT

Communities living on the periphery of Australian urban areas face major issues relating to increasing bushfire risk. At the same time and in the same areas, declining biodiversity levels are undermining sustainable development goals. Mitigating bushfire risk while simultaneously improving conservation outcomes in peri-urban areas under development pressures poses a significant governance challenge. Opportunities for narratives from experts and practitioners to inform reflexive policy responses to that challenge are explored in two Mediterranean-climatic regions in South Australia. Workshops and interviews were undertaken with vegetation specialists and bushfire managers to facilitate deliberation on planning opportunities for the peri-urban areas around Adelaide and Port Lincoln. The stories of local bushfires and biodiversity from people with a diverse range of expertise in bushfire, land and vegetation management inform narratives on risk and value, which in turn enable deep and contextual understanding of the complex management challenges. Important mutual learning was developed by applying social learning techniques that associated expert experiences with scientific information to generate comprehensive, contemporary perspectives on risk and value to guide environmental policy.

1. Introduction

Narratives are stories of human groups that coalesce into dominant themes for informing ways of thinking and acting. Narratives have always been used by people to inform understandings of living with and managing environmental risk and value. However, they are often neglected within contemporary environmental policy discussions, as reductionist and modelled sciences dominate approaches to knowledge generation to inform environmental policy (Bardsley et al., 2016). Science provides high quality and specific information, but it is rarely holistic nor does it usually represent all viewpoints on important issues. Knowledge generation to inform policy is a complex process carrying responsibilities for stakeholders to consider different perspectives and experiences. Our aim was to examine the opportunity for the generation of narratives to complement scientific knowledge to inform the development of contentious environmental policy through comprehensive approaches to engagement with key stakeholders.

The context for the research is the conflicting demands associated with responses to both the bushfire hazard and biodiversity loss within

peri-urban spaces. While generating a hazard to people living in close proximity to forests, bushfire is also a crucial element of Mediterranean fire-adapted ecosystems. The opportunities and risks generated by fire need to be understood together as a socio-ecological process that is normal in peri-urban areas of South Australia (SA) (Moritz et al., 2014). The difficulty is that risk mitigation goals often conflict with biodiversity management. Exacerbating this difficulty, biodiversity and bushfire management are governed by different arms of State Governments across Australia, including emergency services, environmental agencies, and planning and development authorities, as well as local government, communities and individuals to deliver effective multi-functional landscape planning. As such we also aimed to provide insight into what needs to be addressed in expert debate about how we might address the tension of asset protection and biodiversity conservation. So, narratives in this paper refer to the shared stories and experiences that offer representations of risk and value in the words of diverse practitioners and decision-makers, which can be used to generate targeted responses that incorporate the systemic complexity into plans for future management. This allows for the benefits of polyvocality, that is

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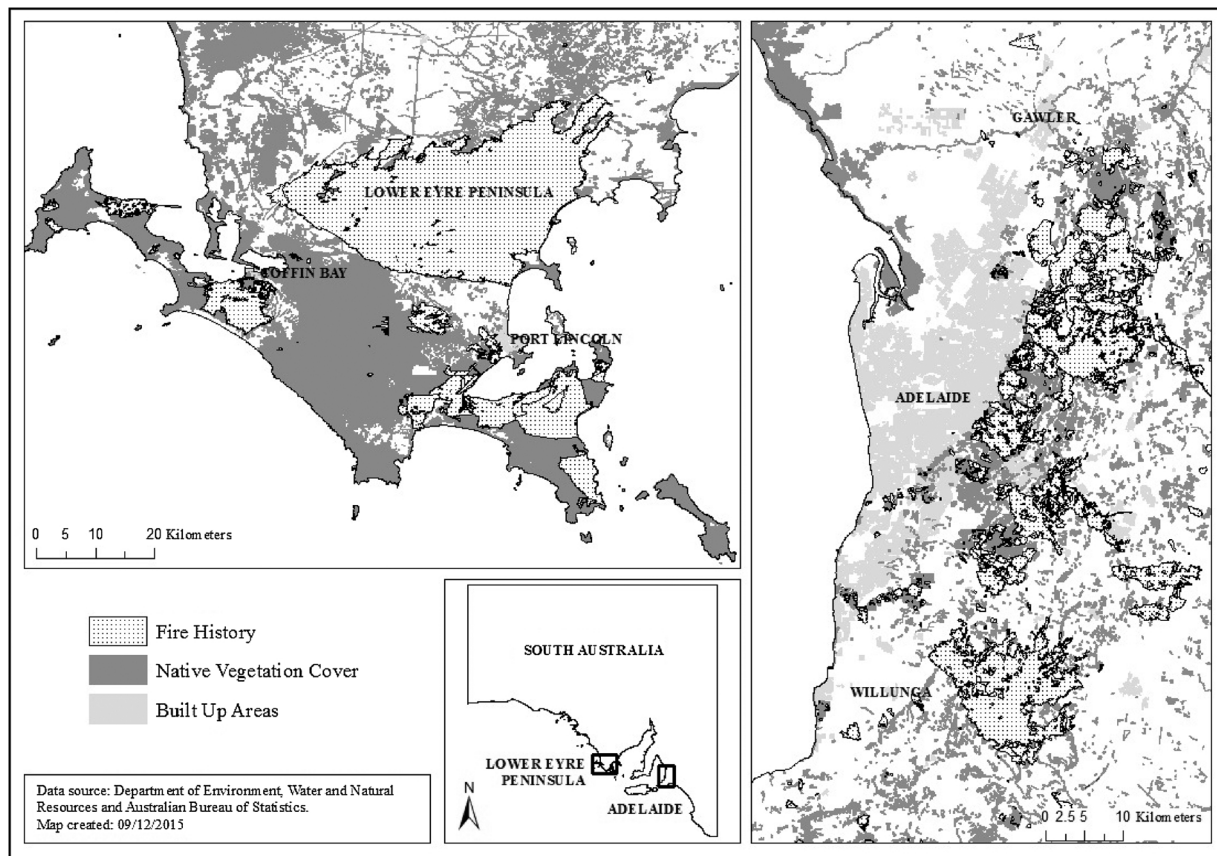


Fig. 1. Lower Eyre Peninsula (left map) and Adelaide and Mount Lofty Ranges (right map) revealing extent of urban development, conservation spaces, and recent fire history for each location.

the ability for stakeholders to tell their story in different ways, thereby creating the opportunity for diverse sources of knowledge to inform policy development (and provide a collective practice that spans bureaucratic division of policy responses), as well as describing the material engagements people have with each other and the environment (Boholm et al., 2012; Ingram et al., 2015). We outline an approach for facilitating and framing expert narratives through reflexive processes of engagement, discussion and critiques of decision-making to inform policy that aims to respond to environmental risk while enhancing local values (Beck, 1992; Wacquant, 1992).

Eight workshops and 17 interviews were undertaken in two peri-urban areas that experience high bushfire risk: Mount Lofty Ranges (MLR) and Lower Eyre Peninsula (LEP) (Fig. 1). Stakeholders comprising 105 state and local government employees, working across specialties including ecology, conservation, natural resource management and bushfire management, were asked to discuss their experiences with bushfire risk and vegetation management. We focussed on two key concerns: (1) the threat of bushfires occurring close to residential areas; and (2) the need for effective conservation measures to maintain important and unique biodiversity in these same locations. These twinned environmental management concerns pose a challenging scenario for formulating mutually-positive policy outcomes (Sherrah, 2009; Willson and Bignall, 2009). For this reason, participants were asked to highlight agreements and discrepancies regarding the most pressing issues and future management options for sustainable management of the peri-urban fringe.

2. Bushfire risk in South Australia

An important element of the complexity in managing for bushfire risk is that it comprises various complex subsystems, social and

ecological, which work together, or not, in sophisticated ways (Bertalanffy, 1950). Urban expansion in Australia has broadened the peri-urban range within which large areas of native vegetation and urban neighbourhoods intersect. Despite attempts to constrain urban growth around the city of Adelaide (Government of South Australia, 2010), urbanisation has continued in areas of the MLR that are both highly vulnerable to fire and of great importance for biodiversity conservation (Robinson and Liu, 2015; Willson and Bignall, 2009). A similar situation is seen on the LEP, with several developments being constructed in areas of high fire risk adjacent to native vegetation on the outskirts of Port Lincoln and Coffin Bay (see Fig. 1). Recent fires in areas such as the MLR and LEP, with Mediterranean climates of hot dry summers and cool wet winters, are reframing perceptions of what constitutes effective multifunctional landscape planning (Bardsley et al., 2015), and a governance challenge has emerged to both mitigate bushfire risk and conserve biodiversity.

Adelaide has about 1.3 million people and extends almost 100 km north to south between the coast of St. Vincent's Gulf and the MLR. Here the peri-urban space provides mixed land-use opportunities, including rural and suburban residential living, viticulture, horticulture, dairy farming, grain production, hobby farming and biodiversity conservation. The landscape has been dramatically altered since European settlement, with native vegetation, including important eucalypt forest, woodlands, shrublands (scrub) and heaths that are fundamental for the state's conservation goals, now covering less than 14% of the MLR (Natural Resources Adelaide and Mount Lofty Ranges [NRAMLRL], 2014). In 2013–14, for example, recovery work was undertaken on 106 threatened plants, 39 threatened animals, and 4 threatened ecosystems, with 1474 ha of remnant bushland designated for protection (Natural Resources Adelaide and Mount Lofty Ranges [NRAMLRL], 2014).

With a population of more than 15,000, greater Port Lincoln is the

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