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Unforeseen consequences of extractivism: The influence of employment modes and place setting on environmental preferences and values in coastal Australia

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ABSTRACT

Many localities in regional Australia have experienced a rapid move from a rural based economy to an extractive one, due to a 'resources boom'. The central aim of this research was to begin to investigate how such rapid industrialisation might influence the relationship between local residents and their environment. A social survey was conducted to investigate if and how environmental values and perceptions are shaped by: a) employment mode (permanent resident or mobile workforce); and b) place setting (urban, rural, or industrial). Surveys occurred in urban, rural and industrial towns in coastal Queensland and South Australia, and tested for landscape preferences and environmental values. Respondents showed a preference for 'naturalistic' coastal landscapes, however respondents that live or work in industrial settings have a greater tolerance for industrial intrusion into the landscape. Industrial workers and residents were less likely to endorse the values of the New Ecological Paradigm. Contrary to public perception, Fly-In Fly-Out workers were more likely than other workers to value the marine environment for its intrinsic worth. Our findings illustrate the complexity of the relationship between industrialisation, employment, and environmental values, and suggest that an industrial place setting, or mode of employment, can erode one's sense of connection to the natural environment.

1. Introduction

Understanding the influence of 'place setting' (i.e., a person's home environment) on environmental values and perceptions is vital to how conservation groups advocate for conservation and facilitate the effective delivery of environmental education. A place setting is a socially, culturally, and economically distinct space, and is frequently given as being either rural or urban. Moving away from the rural-urban dichotomy allows for the addition of industrial spaces (highly urbanised) as an emerging place setting descriptor.

Alternate living/working arrangements, such as Fly-In Fly-Out (FIFO) work rosters (also referred to as long-distance commuters and offshore workers), are increasingly common in Australia (Storey, 2010; Joyce et al., 2013), as is moving significant distances away from home for employment opportunities (Petrova and Marinova, 2013). Often this movement is within the context of obtaining work in the resource extractive industries (Storey, 2010; Carrington et al., 2012) and is subsequently linked to poor wellbeing and anti-social behaviours in the new locations (Torkington et al., 2011; Ennis and Finlayson, 2015). These behavioural issues expand to concepts such as littering (Duffy, 2012) and lack of buy-in and awareness of environmental guardianship activities (Campbell et al., 2014). Thus, from conservation and environmental management contexts it is important to gain an understanding of how one's employment mode in a town might influence environmental attitudes and perceptions.

People often have a spatial bias when considering their environment and surroundings: we tend to view proximal conditions more favourably than distal ones (Gifford et al., 2008). This could imply that we strive for a positive place-based identity, and hence we may avoid perceiving negative characteristics of our local environment. If this is the case, then we should see differences in peoples values and perception about their immediate environment based on the period of time a person has resided in an area (which we term 'employment mode').

Within this spatial bias context, it is worth considering how people that have moved to a new location, for work, interact with, or consider the environment. It is important to acknowledge that these individuals

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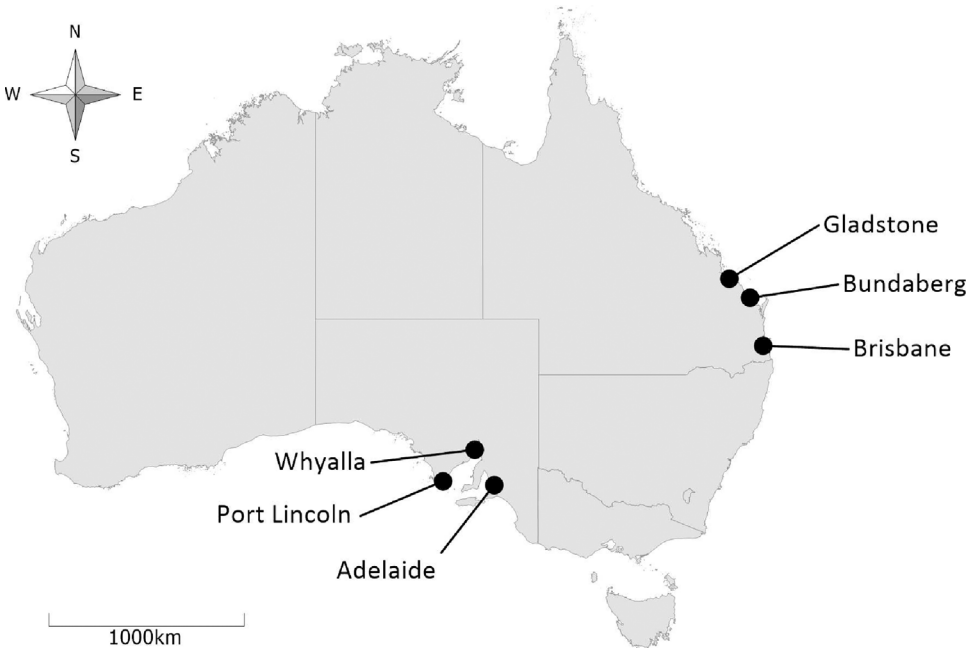

Fig. 1. Location of rural, industrial and urban sites sampled in Queensland and South Australia.

may not choose to live in their 'new' locations but have relocated to secure an income for themselves and their family. As such, these individuals may have no affinity for, or particular desire to be at the new location. Therefore, based on the research of Budruk et al. (2011) there is an anticipation that there are differences in the depth of emotional place attachment held by mobile workforces for their temporary location, compared to long term residents. We investigate and discuss whether in such circumstances these individuals interact positively or negatively with the environment; what would drive environmental interactions, and what implications these have for coastal conservation and environmental management.

In an Australian context, the environmental attachment of FIFO and Drive-In Drive-Out (DIDO) workers is of particular interest due to societal concerns (e.g., Torkington et al., 2011; Joyce et al., 2013) and perceived behaviours surrounding this practice. In certain regions of Queensland, a large proportion of the workforce is thought to be comprised of FIFO and DIDO workers. We note however that the Australian census data does not record this type of work status (McKenzie, 2010). An Australian Government inquiry into FIFO workers demonstrated that long-term residents of resource boom communities believe that the presence of FIFO workers results in markedly increased amounts of litter present in an area (Duffy, 2012). Hence, a negative perception exists around the interactions these individuals have with their environment. Yet, this dynamic may be more complex, and perhaps overstated. For example, research by Campbell et al. (2014) contradicts this perception in the Central Queensland region, where there is no statistically significant difference in littering behaviours between local and mobile workforce (including FIFO and DIDO) populations.

The urban/rural divide in terms of environmental experience, knowledge, attitudes and affective connection is well documented (Berenguer et al., 2005; Swanwick, 2009). Hinds and Sparks (2008) assessed numerous elements of environmental affiliation, including affective connection, behavioural intentions, and positive attitudes, and found that rural participants gave significantly higher ratings across these variables than did urban participants. The urban/rural dichotomy is a common topic in the published literature (e.g., Arcury and Christianson, 1993; Berenguer et al., 2005), and the inclusion of industrial place settings in such comparisons is increasingly relevant. Evidence is starting to indicate that industrial settings can negatively influence public perceptions of environmental quality. For example, close proximity to industry can influence people's perception of air-quality (Howel et al., 2002). Similarly, individuals living within view of an open cut mine experience higher levels of 'environmental distress' compared to farmers who lived nearby but had more bucolic views (Higginbotham et al., 2006). Findings such as these highlight the potential social impacts of industrialisation.

Exploring potential differences between industrialised and non-industrialised locations creates opportunities to improve understanding and thus manage environmental conservation targets against the public's expectations and perceptions. As such, the dynamic and complicated relationship that people have with the environment may be better understood within a context that extricates the influence of various demographic and geographical factors (Paterson de Heer, 2015). With this in mind, this research explores how place setting and mode of employment influences marine and coastal environmental values and preferences. This examination occurs in an Australian coastal setting and the findings have the potential to be extrapolated to other industrialised countries.

We hypothesise that affiliation with heavy industry, whether by place setting or mode of employment, will be associated with a reduced:

1. Affiliation with the New Ecological Paradigm; and/or
2. Preference for 'naturalistic' coastal landscapes.

2. Methods

2.1. Study sites

Data was collected through a single, multi-faceted, social survey questionnaire that targeted sites in two states of Australia: Queensland (QLD) and South Australia (SA). The geographical focal point for the research was coastal Queensland, a region where massive industrialisation and resource exploitation are occurring with the concomitant move from a rural based economy to a mining economy (e.g., Cheshire et al., 2014 Windle and Rolfe, 2014). The keystone of the Queensland marine estate is the Great Barrier Reef, which is recognised internationally as a World Heritage Area (Johnston and Smith, 2014). Replicate sites (determined by place setting) were located in South Australia, due to this states historical industrial presence along with its increasing rate of coastal development (Government of South Australia, 2003). There were three study sites in Queensland (Gladstone,

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