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Citizen science for policy development: The case of koala management in South Australia



Bianca Hollow^{a,b}, Philip E.J. Roetman^{a,*}, Michele Walter^c,
Christopher B. Daniels^a

^a Barbara Hardy Institute, University of South Australia, Australia

^b School of Natural and Built Environments, University of South Australia, Australia

^c Department of Environment, Water and Natural Resources, South Australia, Australia

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ABSTRACT

Citizen science involves the engagement of non-scientists in scientific research. Citizen science projects have been reported to be useful in policy development but there is little detail of how projects have contributed. The citizen science project, the Great Koala Count (GKC) collected ecological data about koalas and social data that have been used in the initial stages of the development of a South Australian Government koala management and conservation policy. After the GKC, we conducted an online survey of people who participated in the project and a control group. The survey focussed on opinions towards possible management options for koalas in South Australia. GKC participants were also asked about project-related changes in knowledge and opinions. We received 970 valid surveys and found some differences in opinions between GKC participants and the control group. Therefore, the GKC did not provide a representative sample of the entire South Australian population. However, we contend that the data from the citizen scientists are still valuable for policy development as it has been provided by people who are highly engaged in the topic (koala management in this case). It can be difficult to engage the public in the policy development process, and the citizen science project enabled the collection of a wide range of opinions, helping to discover and define relevant issues. Additionally, many people learnt about koalas and koala-related management issues, and some changed their opinions regarding koala management, also useful outcomes from the project in the policy development context. Our findings suggest that citizen science is useful for policy makers because projects provide the opportunity for dialogue with the people most interested in the topic of the project.

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1. Introduction

Citizen science involves the general community in scientific research, typically by engaging them to participate in data

collection and sometimes in data analysis. Over the last few decades citizen science projects have proliferated and methods have been studied, improved and formalised (Bonney, 2007; Dickinson and Bonney, 2012; Miller-Rushing et al., 2012). Over this period there has been a concomitant

* Corresponding author at: PO Box 2471, Adelaide, South Australia 5001, Australia. Tel.: +61 8 830 21081.

E-mail address: Philip.Roetman@unisa.edu.au (Philip E.J. Roetman).

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growth in the research outputs (e.g., scientific papers) from citizen science projects. There has also been an increasing interest and recognition of the outcomes of citizen science beyond the traditional research outputs, including the value of citizen science projects to policy development.

Citizen science projects have been classified by their style of engagement, with three emergent models: (1) contributory projects (designed by researchers with the public engaged to collect data), (2) collaborative projects (designed by researchers with the public engaged in data collection and in some aspects of project design), and (3) co-created projects (co-designed by members of the public and researchers, with participants directly involved in all aspects of the research) (Bonney et al., 2009; Shirk et al., 2012). It has been suggested that the level of engagement in citizen science projects is linked to their suitability in generating particular outcomes. For example, contributory projects were seen as more suitable for research and co-created projects more suitable for influencing policy and resource management (Wilderman and Shirk, 2010). However, this proposition has been displaced by the assertion that project design has more of an influence on the outcomes of a project. In particular, the objectives that are set during project design largely determine project outcomes (Shirk et al., 2012). While this assertion is based on research into learning outcomes (Fernandez-Gimenez et al., 2008), Shirk et al. (2012) believe it will hold for other outcomes of citizen science projects (e.g., policy development).

Citizen science projects have been reported to be useful in policy development (Couvett et al., 2008; Greenwood, 2012; Roy et al., 2012; Simpson et al., 2009; Tudor and Dvornich, 2001; Tulloch et al., 2013), but there is little detail of how projects have contributed (SCU, 2013). For example, it has been reported that projects run by the British Trust of Ornithology (BTO) have informed major national government policies on bird conservation (Greenwood, 2012) and, in particular, the UK Biodiversity Action Plan (Lawrence, 2006). Other examples include projects focussed on the monitoring of waterways (Bonney et al., 2009), mammals (Battersby and Greenwood, 2004), insects (Davey et al., 2010; Fox et al., 2011a,b; Gregory et al., 2004), birds (Brereton et al., 2011), and noise pollution (Maisonneuve et al., 2010).

Are citizen science projects useful in the policy arena? And, if so, in what ways? We had previously conducted a citizen science project in South Australia (SA), the Great Koala Count (GKC), and social data from that project (participants' views of koala management) have been used to inform the initial stages of the development of a State Government koala management and conservation policy. We have used the GKC as a case study to examine two potential areas of benefit of citizen science in the policy arena, namely social data collection and community involvement.

Regarding the benefit of data collection, we wanted to know how useful the social data collected would be for policy development. It is understood that the public's "capacity and interest in interaction and engagement will vary widely" in the policy development process (Head, 2007, p. 444), and that wider public involvement in policy development is often limited and overshadowed by the more profuse participation of business and interest groups (Yackee and Yackee, 2006). We

were therefore interested in how the views of people who were involved in the GKC compared to the views of the wider community. Thus, we compared people who participated in the GKC to those who did not participate, with two groups of non-participants – those who did not hear about the project and those who heard about the project but did not actively participate (hereafter called the "onlooker" group). We tested the hypothesis that the opinions of participants and onlookers in a citizen science project represent those of the wider community. We conceived that an understanding of how the views of people involved in a citizen science project (both participants and onlookers) represent views held by the public will be useful in determining how a project like the GKC is best utilised in a policy development process.

Regarding the benefit of engagement, we investigated what GKC citizen scientists and onlookers learnt, and if the project led to any changes of opinions towards koala management. Such changes in participants could also be useful as part of policy development. We discuss the implications of the present research in terms of Walters et al. (2000) policy development framework and current understandings of the impacts of citizen science.

1.1. Background

1.1.1. Koala management in South Australia

Koala management has been a contentious issue in SA for many years. At the time of European settlement, in the 1830s, koala populations were present in the south-east of the State, but they were considered locally-extinct by the 1930s (Robinson, 1978). Koala populations were thought to be declining elsewhere, too, with extensive hunting of koalas for their pelts, land clearance, wildfire and disease leading to concerns over the viability of the national koala population (Duka and Masters, 2005). In an effort to ensure the persistence of the species, koalas were introduced to a number of locations around SA. This introduction programme began in the 1920s, with 18 koalas released on Kangaroo Island (Robinson, 1978). From Kangaroo Island, koalas were subsequently introduced to other parts of the State (Eyre Peninsula, Riverland and the South East) where the populations have remained small (Robinson et al., 1989), and into the Adelaide Hills, where the status of the koala population has been largely unknown (Natural Resource Management Ministerial Council, 2009). The population on Kangaroo Island grew and the marsupials were considered overabundant with an estimated 27,000 koalas in 2001 (Duka and Masters, 2005). Initially, a culling programme was suggested by some ecologists to control the population but this proposal was met with fierce opposition from the community of the SA mainland, where koalas are favourably viewed by the public, and gained much media attention (Duka and Masters, 2005; Stratford et al., 2000). The public outcry prompted the implementation of less controversial management options, such as sterilisation and translocation, which have since reduced the koala population on the Island (Duka and Masters, 2005).

1.1.2. Great Koala Count

The GKC citizen science project was run in 2012 to assess the koala population in SA, particularly focussed on the Adelaide

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