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Research article

Eliciting human values for conservation planning and decisions: A global issue

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1. Introduction

The MEA (2005) biodiversity synthesis emphasizes the important global contribution of natural biological elements to human well-being. In turn, wellbeing itself depends on satisfying some combined provision of human values, and it is these values that in principle drive decisions concerning the allocation of natural resources among competing demands (Gregory et al., 2012; Wallace, 2012). If we extrapolate current global pressures – ranging from climate change to accelerating resource use by an expanding human population – it is clear that competition for natural biological resources will continue to increase, leading to more intense conflicts and trade-offs amongst contending interests (McShane et al., 2011). In this environment, achieving conservation objectives requires a sound understanding of the attitudes and values of stakeholders and decision-makers (McShane et al., 2011; Madden and McQuinn, 2014; Redpath et al., 2013). That is, managing competing human values is central to decision-making concerning the conservation and use of natural resources. Thus, developing a classification of values consistent with identifying synergies and trade-offs in decisions, selecting key stakeholder representatives, and generating methods for eliciting and rating values are all vital considerations in biological conservation planning.

Planning processes have advanced considerably over the past two decades and basic components – including objective setting, risk management, dealing with uncertainty and selection of operational actions – are outlined in a range of publications (e.g., CMP, 2013; Gregory et al., 2012; Knight et al., 2006; Lockwood et al., 2006). While these authors and many others acknowledge the importance of human values, there is considerable scope for developing methods that more explicitly link human wellbeing and related values into conservation planning. This linkage is still in its infancy, as underlined by the Conservation Measures Partnership's comparatively recent recognition of human values as a component of planning in on-line documents (CMP, 2013). The point is further exemplified by Knight et al. (2010), experienced and well-credentialed workers in conservation planning, who recognized that the effectiveness of their strategy development was undermined by inadequate knowledge of some stakeholder values. We suspect this comment applies equally to all those (and certainly ourselves) who have engaged in operational planning, management, or policy development.

An important constraint in many decision processes is that outputs are required in short timeframes with limited resources – and this in an environment where the total global resources for conserving biodiversity already fall well short of what is required (Polasky, 2012). Consequently comprehensive stakeholder analyses, such as that by García-Llorente et al. (2011), where the actual survey work alone took eight months and involved 477 face-to-face interviews, are often not practicable. Also, to comprehensively rate many of the human values arising in biological conservation

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decisions requires non-market measures such as contingent valuation or deliberative money valuation. However, these and related techniques are costly to implement and require specialist expertise (Birol et al., 2006; Turner et al., 2010). Therefore, there is a global need for methods that effectively elicit and rate human values for decision-making with limited resources and within short timeframes (<6 months). Besides rating the importance of human values in a specified context, it is also desirable that elicitation methods assess uncertainty and the level of agreement within stakeholder groups.

We address the above issues by building an efficient methodology for values elicitation, based on the framework outlined by Wallace (2012), with a focus on three aspects:

1. Stakeholder selection and engagement, with a view to ensuring that socio-political aspects are transparent;
2. Classification and description of values so that they explicitly link to human wellbeing and are readily used to highlight synergies and trade-offs; and
3. Elicitation and analytical processes that efficiently rate the importance of values linked to biological elements and, at the same time, describe the level of certainty and agreement amongst stakeholders concerning their ratings.

We explore each of these aspects based on planning for the Lake Bryde catchment in south-west, Western Australia. We emphasize at the outset that outputs from the work described below may be used with a wide range of decision tools; that is, we aim to achieve better informed decision processes, not replace those that already exist. Finally, we focus on biological elements, the living elements of systems, but the approach may also be applied to abiotic elements, or a mixture of abiotic and biotic elements.

2. Methods

2.1. Study area

Lake Bryde catchment is one of six catchments selected to capture important, representative samples of biological elements threatened by hydrological changes, particularly salinisation, in the agricultural areas of south-west, Western Australia (Wallace et al., 2011). In these landscapes knowledge of the life histories and ecology of the biota is generally poor, there are limited resources for planning, and complex threatening processes operate over long timescales (George et al., 2008; Horwitz et al., 2008; Wallace et al., 2011). The Lake Bryde catchment is about 140,000 ha in area and lies some 300 km south-east of Perth. Most of the catchment consists of agricultural lands used for grain and sheep production, with some 25% remaining as natural vegetation that has mostly been set aside for a range of conservation purposes. Management of public conservation lands is undertaken by the Department of Parks and Wildlife (DPaW), a state agency.

2.2. Selecting the consultation approach and stakeholders

We adopted the broad definition of a stakeholder as those who can affect, or are affected by, a decision (Reed, 2008). Stakeholder engagement methods should address three important questions (adapted from Pellizoni, 2003): a) who should participate in the planning process? b) who will organize discussion and decide planning methods, including how stakeholders influence the setting of planning issues? and c) how is the stakeholder process connected with final decision-making? In addressing each of these questions below we have consciously aimed to describe the reasoning underlying our approach. Although such logic is not always explicit in planning documents or related research, it explains the aims and socio-political context of stakeholder engagement.

2.2.1. Who should participate in the planning process?

Because the biological elements under consideration are managed by a state government, a representative democracy, it is assumed that stakeholders should represent the state community. Taking the lead from Pellizoni (2003), two broad options for engagement are to involve the state public as a group of non-organized lay citizens, for example, via public surveys; or alternatively, to engage interest-group representatives. We chose to engage interest-group representatives because: we wanted to maximize the exchange of information and ideas with a group of stakeholders recognized as having knowledge pertinent to the planning situation; stakeholder engagement takes place over an extended period, and face-to-face interaction with a consistent group of people provides important opportunities for sharing knowledge and increasing mutual understanding; and it was important for stakeholders to have some direct interest and commitment to the planning outcomes to enhance their level of engagement and thus minimize hypothetical bias (Harrison, 2006). This approach is consistent with many features of best practice participation outlined by Reed (2008), particularly those related to building trust, mutual learning and knowledge sharing, and continuing involvement throughout the planning process. Furthermore, in line with the comments of Pellizoni (2003), stakeholders were expected to contribute to the planning process through their knowledge and other competencies – they were not merely representatives of narrow interest groups. None of these participation characteristics can practicably be achieved using the extensive surveys required to engage non-organized, lay citizens.

Having established that stakeholders should represent interest groups, the question becomes: which groups? The classification of Duane (1997) efficiently encompassed key stakeholder groups for our work while minimizing the complexity of categories. Duane's categories are (paraphrased):

a. Communities of place – individuals tied to a specific geographic space;
b. Communities of identity – individuals linked to each other through social characteristics, noting that these links may transcend place (e.g., religious or political groups); and
c. Communities of interest – those tied to a particular ecosystem or resource as beneficiaries of that resource or contributors to its condition.

Most stakeholders belonged to formal or semi-formal groups. This maximized the number of people represented in the elicitation process. The stakeholders selected spoke for communities of place and communities of interest, with one aim being to capture expert community knowledge concerning each of the values (Table 1). The list of stakeholders invited, and those who attended, are described with their community relationships in Supporting Information. Ten stakeholders ultimately provided ratings, 8 through the main workshop, and a further 2 through separate sessions. The same method was followed in all elicitation processes. Although a group of 10 may seem small, in our experience this is typical of many natural resource management committees, which, through their affiliations, may ultimately represent hundreds or many thousands of stakeholders. Also, based on experience with expert groups, Aspinall and Cooke (2013) suggest that 8–15 experts is a reasonable number for eliciting responses on a particular problem. They also note that there seems to be diminishing returns with group sizes over 20 people. This is broadly consistent with work using Delphi techniques and focus groups.