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An interview methodology for exploring the values that community leaders assign to multiple-use landscapes.

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ABSTRACT. We report on a grounded theory research methodology to elicit the values that underpin community leaders' advice on regional natural resource management. In-depth, semi-structured in-person interviews of 56 community leaders permitted respondents to explore their values and to elucidate some trade-offs. Furthermore, analysis of the coded transcripts provides evidence of the anthropocentric nature of values, and the importance of people, communities, and physical infrastructure. As well, the relative silence by community NRM leaders on supporting and regulating ecosystem services may reveal a lack of understanding of these functions rather than a discord in values. The tested methodology provides one approach to understanding the values of important advisory groups that are increasingly being required to guide regional agencies that implement natural resource management policy. Results indicate that, in practice, the values expressed may at times be confrontingly anthropocentric, although those interviewed also expressed existence values. Greater understanding of values is a prerequisite to the design of improved natural resource management.

Key Words: *Australia; community leaders; ecosystem services; grounded theory; natural resource management; values*

INTRODUCTION

Managing natural resources requires public policy makers, scientific advisors, and community stakeholder groups to reach agreement on the activities necessary to achieve effective landscape-scale environmental outcomes (Grimble and Wellard 1997, Lockwood 2005, Bryan et al. 2011). Successful policy implementation is predicated on the willingness of the various actors to support environmental management programs. Public support for policy decisions is a pressing concern for policy advisors and implementation staff in the area of natural resource management (NRM). In the Australian context, the success of NRM programs often requires linking state support, community initiative, and in-kind support from private landowners (Curtis and Lockwood 2000, Lee and Wood 2004). Efforts can be seriously hampered by community-led protest or simple inertia. Information about the values and motivations of different groups involved in NRM could aid in moving all three toward effective, jointly determined environmental priorities and subsequent outcomes.

Generally, policy makers set the framework and funding arrangements for landscape-scale environmental management programs. Scientific advisors play a multi-faceted role in describing current resource conditions, modeling potential resource outcomes (Commonwealth Scientific and Industrial Research Organisation 2012, Bryan et al. 2011), and evaluating the success of actions through program evaluation (Hajkovicz 2009). Increasingly, legal frameworks require the consultation and support of communities through some defined structure, such as a local NRM board (Hickey and

Citroen 2007) or forms of co-management with local people or communities (Sandstrom and Widmark 2007, Pinkerton et al. 2008). Community involvement in decision making can have an impact on the tangible outcomes of NRM initiatives and thus understanding who the stakeholders are (Reed et al. 2009) and the context of advice being provided is important (Baggett et al. 2008, Newig et al. 2008, Seymour et al. 2010). Methodologies for stakeholder analysis have evolved from business management to use in NRM; however, there is little data on their applicability and relative effectiveness (Reed et al. 2009).

In practice, policy makers, scientific advisors and rural communities are neither constructing their attitudes toward environmental policies based on a shared ontology, nor are they necessarily drawing from a similar framework of values. An outcome is that regional actors and overriding government policies are often discordant at the fundamental level of motivation. The setting and attainment of resource condition targets is sometimes viewed as the means to achieving the social "end" for a regional community (Wallington et al. 2008). However, without a better understanding of the values of each group, how they relate to each other, and how these values are expressed in NRM, public policy in this domain may consistently fall short of expectations.

Definitions of "values" vary across academic disciplines involved in NRM (McIntyre et al. 2008). Approaches to understanding values may focus on the concern for nature through relationship to nature (Schultz 2001) or developing models, such the values-beliefs-norms approach (Stern

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2000), or a broader environmental worldview (Dunlap et al. 2000). Brown and Raymond (2007) explore the relationship between assignment of landscape values and special place psychometric scales.

Interpretation of results in terms of attitudes and environmental values from many of the existing psychometric scales is contentious (Ryan and Spash 2012). However, Reser and Bentrupperbaumer (2005:128) note that: "There is a broad consensus that 'values' are and represent important individual and collective investments and judgments about what in this world and in this life is truly important, worthwhile and meaningful."

Heberlein's (1981, based on Rokeach 1973) definition includes the concepts of stability and centrality of values in belief systems. These definitions concord with the concept of "held values" (Brown 1984) in the economics literature where: "Held values are associated with ideas, behaviors, outcomes, and experiences... While held values may be adapted over time, they generally are seen to be stable" (Adamowicz et al. 1998:54). Value expressing the relative importance or worth of an object within a particular context or trade-off has been called an "assigned value" (Brown 1984, Brown and Manfredo 1987). "Assigned values are not assumed to be stable; rather, they reflect adaptation to changing conditions in the goods or services themselves, in market supply or demand, or in the larger environment" (Adamowicz et al. 1998:54). Uncovering different value types would assist in understanding motivations including toward NRM.

Another classification is that of intrinsic value as opposed to instrumental or "use" value (Reser and Bentrupperbaumer 2005). Intrinsic values indicate that an environmental asset has a value in and of itself, without any reference to human beings; the analog in economics is of non-use values, whereas instrumental values are anthropocentric, describing assets in terms of how people use them, even if only "to look at", the analog in economics is ecosystem service benefits.

We describe and reports on a qualitative interview methodology for revealing the values and motivations of those involved in regional NRM. Specifically, this research focuses on individuals identified as being "community NRM leaders." These community leaders are either knowledgeable about NRM or representative of a particular segment of the regional community, and often both. We assume that, in this context at least, values influence, in part, community NRM leaders in their advice, decisions, and actions. Using a grounded theory approach, text coding and analysis of the transcribed in-depth interviews, we gain new insights into what these community NRM leaders value in their landscape. In this way, the project captures a snapshot of the values of these community NRM leaders. We find that although the community leaders hold non-use values such as existence values, they emphasize anthropocentric values. They are unwilling to consider large

trade-offs that would seriously harm the regional economy but preserve species or restore floodplain vegetation. The prominence given to "peoplescape" over landscape is a key finding that may affect the uptake of and translation of evidence-based policy in collaborative NRM.

BACKGROUND

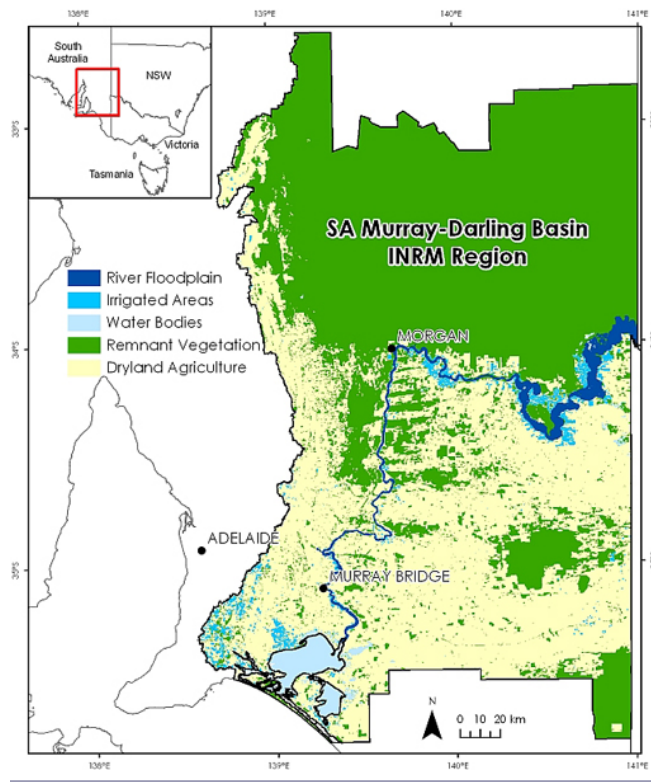
Australia provides an example of a semi-devolved NRM system operating across a wide geographic area with a relatively sparse population. Trends in public sector management have shifted responsibility for meeting resource condition targets onto quasigovernment regional NRM bodies. The NRM regions are a product of the bilateral agreements signed in 2002–03 between the Commonwealth government and State governments where the NRM regional groups are identified as the primary delivery agents (Hajkowicz 2009). Many of the 56 NRM regions have well developed rural agricultural economies which sit on the periphery of urban economies. This system has been evolving from voluntary community participation to more formalized decision-making institutions but retain strong connections to their volunteer base (Pannell and Roberts 2009).

This research project was undertaken in the South Australian Murray Darling Basin Natural Resource Management (SAMBDRM) Board region (Fig. 1) in 2007–08. The region is semi-arid and sparsely populated covering a total area of 56,000 km². The region supports irrigated horticulture and viticulture near surface water sources such as the River Murray and dryland cropping and grazing further away from the River Murray. It also supports 30 748 km² (55%) of remnant native vegetation including wetlands of international significance (Ramsar Convention 1971).

The stated purpose of the 2004 South Australia [Natural Resource Management Act](#) is to put in place an integrated scheme to assist in the achievement of ecologically sustainable development. The Act establishes a role for a peak NRM Council and NRM Boards. Natural Resource Management Boards can collect an NRM levy and are responsible for the distribution of these funds. They also have a modicum of regulatory power but there is ongoing tension between regional devolution and centralization. At the time of the study, community representatives enter the development of NRM policy processes at three key points: NRM Council, NRM Boards, and community advisory groups to the boards.

Peak institutions in the community such as the Local Government Association, the Conservation Council, and the Farmers Federation recommend representatives for NRM Council and NRM Boards. Various calls for nominations occur to attract community members with various types of expertise. Although there are review panels in place, the final selection resides with the Minister. In many instances, individuals essentially self select unless positions are oversubscribed.

Fig. 1. Location of the Study Area



The nature of these advisory panels is markedly different from bureaucrats and researchers as these community NRM leaders are asked to represent the interests of their community as well as provide technical knowledge (soil conservation or fisheries). As such, understanding the values, interests and priorities (Fraser et al. 2006, Stringer et al. 2006) of these community NRM leaders hold toward environmental assets becomes the key to working effectively with them.

METHODS

We outline a qualitative methodology developed to help policy makers and their scientific advisors understand the values underpinning the policy advice sought from community NRM leaders. Such analyses are not frequently undertaken for a suite of reasons, such as unease about what the results may reveal and ethical concerns about cataloging the views of others (Reed et al. 2009). Nevertheless, Reed et al. (2009) argue that it is important to conduct analysis to understand who has a stake, what the nature of their stake is, and how they interact with others to ensure that the appropriate mix of stakeholders are represented in NRM. Here, the emphasis is on understanding the values associated with a set of natural resource assets and ecosystem services across a landscape for a specific group of community NRM leaders.

In this project, a set of semi-structured in-person interviews were undertaken to answer the central question: what do community NRM leaders value in the environment? We employed a qualitative grounded theory research method (Strauss and Corbin 1990, Charmaz 2006) to explore the nature of value in the discussions and stories about the landscape. The overarching challenge of this project was to find an approach to allow community NRM leaders to talk about an intimate subject: values, and how those personally held values frame their beliefs about the environment, and subsequently drive advice, that impacts government NRM policies.

Social researchers, and particularly oral historians, debate the relative usefulness of interviewing as a form of data gathering and the degree to which it can reveal “facts” or truths about an area of research interest (Teski and Climo 1995, Grele 1998, Rubin 1999, Thomson 2006). However, the technique is useful in gaining in-depth insights (Reed et al. 2009), and subjective information that cannot be gleaned from other sources (Armstrong 1997, Thompson 1998). Values, by their very nature, are sensitive and subjective, and semi-structured interviews allowed for a more open-ended and exploratory approach than, say, a questionnaire designed to test theory-based hypotheses and models.

As a research team, we began the research with some ideas and theories based on the existing literature. Values represent a highly contested area of inquiry across disciplines. However, interviewers needed a solid, consistent and broad working definition of values as a guiding point in the interviews and adopted the following definition (Heberlein 1981):

Values...tend to be single, stable beliefs, which are used as a standard to evaluate action and attitudes. Values have two notable characteristics which differentiate them from most attitudes. First, they transcend objects. ...Second, values are most central in a person’s belief system. Values are the basis for evaluating beliefs, and other linkages among beliefs.

In the context of this project, the debate about the nature of value (Hill 2006), whether anthropocentric or eco-centric, was resolved by our methodology (Kortenkamp and Moore 2001). The Heberlein (1981) definition was deliberately chosen as it does not include a position on intrinsic valuation. The aim of the methodology was for an interviewer to guide participants through their stories, encouraging them to continue speaking and explaining their thoughts, until they arrived at value statements. This technique provided consistency across the team of three interviewers without leading community NRM leaders to pre-constructed conclusions: the words and ideas of the community NRM leaders shaped the investigation. Community NRM leaders were not given a solid framework of value definitions to work within, and so they expressed their own: many participants described natural assets as having intrinsic values, whereas others described only instrumental

values. Many different interpretations of “value” were captured in the transcripts and subsequently analyzed. Allowing the interviews to flow in this way permitted researchers to follow the lead of the interview participants, and not prescribe a framework for the information provided.

Sampling Strategy

The SAMDB NRM Board identified a group of community NRM leaders it wished to understand better, namely those that could affect its performance (Grimble et al. 1995, Reed et al. 2009). The Board supplied researchers the names and contact details of all the NRM Group members, key regional advisory staff to the NRM groups, and other knowledgeable community NRM leaders. A non-proportional quota sampling methodology (Tashakkori and Teddlie 2003) was used to ensure adequate representation of people knowledgeable of NRM (landholders, policy staff, Aboriginal respondents, youth, and people identified as being community NRM leaders) and of subregions. Half of the 56 people interviewed were members of a NRM Group. There were two youth representatives, two Aboriginal cultural representatives, four board members, and four staff; the remainder were identified as being knowledgeable about a particular region or a particular area of expertise, e.g., soils, hydrology, or land management, and considered to be a knowledgeable community leader, e.g., a veterinarian or a teacher. For a further breakdown, see Table 1 (see also Cast et al. 2008).

Table 1. Interviewees profile.

	NRM Group	Non-NRM Group
Male	22	18
Female	6	10
Lived in study area entire life	14	12
Shortest residence, years	3.5	2
Completed tertiary education, %	50	30

Script Development

The community leaders group shared a common geographic community, but not necessarily a common community of practice. They were not motivated to participate in NRM projects through wages; most were volunteers or paid a nominal sitting fee, nor were there strong procedural rules to which their reputations and wages were linked. Rather, their motivations were broadly personal, and so interviewers asked about personal motivations, values, and outlooks.

This group of community NRM leaders, like most of us, were not accustomed to articulating values in a relatively short interview; however, unlike most of us, they were accustomed to acting on their values in policy settings. From the outset, community NRM leaders made it clear to the interviewers that they wanted the opportunity to fully formulate and articulate their values as they related to the environment.

The interview team developed a script (Reed et al. (2009) describe this as a “schedule” that provided the interviewers with a baseline definition of values to assist them in developing an appropriate and consistent set of probing questions. The script also provided consistency in the quality and depth of information provided by the interviewer, and a consistent technique to help participants move from comfortable stories about their activities back to less familiar descriptions of their values. The semi-structured interview process included four different entry points to the topic of values: 1) open-ended questions; 2) natural-asset based prompts; 3) ecosystem service based prompts; and 4) spatial mapping prompts. Our focus here is solely on the first three entry points used in the in-depth interview.

Each entry point used a different approach for eliciting environmental values. The open-ended questions required community NRM leaders to talk freely about how their connection to the landscape. However, to ease them into thinking about these issues, the first questions was specifically about how “they came to be a community leader.” Interviewers then attempted to move to a discussion of their values in a way that would flow from natural conversation patterns. Interviewers asked about the NRM activities or actions they undertook on their property and in the area, and then the interviewers queried the goals those actions represented as the next question. Again, there was an emphasis on staying with the natural conversation pattern. Interviewers then asked about the attitudes that led to the formation of those goals and, finally, the values the attitudes represented. Participants were then able to unpack their activities themselves and create narratives that helped express their values. Participants were able to use this framework to attach the abstract concept of value to concrete activities.

Most interviews were conducted at the interviewee’s home. Each respondent was allocated a single 2-hour visit, but interviews ranged in length from 90 minutes to three hours. The interview process incorporated open-ended questions, semi-structured questions, and maps, to allow interviewees the flexibility (Reed et al. 2009) to express their values through discussions of landscapes and the personal stories that relate, but sometimes only peripherally, to their involvement in natural resource activities.

Interviewers then prompted participants to explore their values toward each category of environmental asset with the second point of entry. Participants were prompted to discuss the values they held toward SAMDB Board-defined regional natural assets: water, land, biota, and the atmosphere. This exercise allowed participants to think about natural assets individually and captured their views in areas that might not have come across in the unprompted section. However, participants tended to drift back into stories and conversations relating to areas of most concern. As part of a third point of entry,

interviewers asked the same general set of questions in regard to ecosystem services. Researchers provided a broad framework of provisioning, regulating, cultural, and supporting ecosystem services (Millennium Ecosystem Assessment 2005) as a means of eliciting information on what participants' value in their environment and why. In testing the interview scripts as part of an initial pilot set of interviews (n=3), researchers found that these ecosystem service categories were not well understood. A similar result was found by the Commonwealth Scientific and Industrial Research Organisation (2012). The interviewers quickly regrouped to agree upon an approach to modify these categories to short phrases that captured the meaning using plain Australian-English language. This flexible and iterative approach is central in stakeholder analysis and in grounded theory approach used here (Charmaz 2006, Reed et al. 2009). The phrases are summarized in Table 2.

Table 2. Plain English definitions of ecosystem service categories.

Provisioning	Providing for people's needs. These are the things humans gain from the environment for food, shelter, physical existence, and quality of life.
Cultural	Providing for people's wants. What we want from ecosystems, including their contribution to our cultural and spiritual values, and our understanding of the world; our ties to a locality, and our heritage, recreation, and eco-tourism uses.
Regulating	Regulating the environment around you. These are ways the ecosystems and the environment self-regulate and process themselves in your region.
Supporting	Supporting the long-term health of the planet. What we feel is important in maintaining the long-term health of the planet. The impacts of these are usually indirect.

The fourth and final entry point for exploring environmental values was a spatial mapping exercise. The mapping process allowed people to enter discussions about their environmental values from a spatial perspective. The mapping exercise and quantification of values through a spatial mapping exercise is discussed in Raymond et al. (2009) and Bryan et al. (2010). Interviewers did not prompt the participants about potential trade-offs during the first part of the semi-structured interview. The participants were only explicitly required to make trade-offs as part of the spatial mapping exercise that came at the end of the interview (quantitative results of the mapping reported in Raymond et al. 2009).

Transcription Coding

Once an interview was completed, the recordings were downloaded and transcribed. Completed transcripts were then

mailed or emailed back to participants for editing and expurgation. The final transcripts were compiled to encompass some 1600 pages of text. AnSWR shareware, designed for coding and analyzing interview transcripts and historical documents, was used. The database of interview transcripts provides an extensive overview of the collected views and perspectives of a diverse group of people and provides a useful tool and "basis for comparison and categorization" (Reed et al. 2009:1944). The volume of qualitative data required a means of separating and sorting the text. Grounded theory coding allows for a systematic approach to concise naming of segments of text (Charmaz 2006).

Grounded theory coding begins with an initial organizing and summarizing of the qualitative information. The initial coding and codebook was based on the key natural resource assets and ecosystem services. For example, every instance of surface water along with relevant surrounding text was coded for the natural resource asset. Any paragraph of interview text may have multiple codes if the discussion included other assets or services.

After an initial coding of the interviews, it became apparent the initial categories of natural resource assets and ecosystem services were inadequate. Grounded theory requires an openness and flexibility in the analysis of text. The interviewers confronted this "problem" by adopting the language of the community NRM leaders and revising the coding to incorporate the ideas being expressed in the interviews.

RESULTS

The transcripts as a whole represent a collection of stories and discussions revealing the key values community NRM leaders hold toward environmental assets and the ecosystem services they provide. In the literature, values are discussed in terms of the links between values, beliefs, and personal norms (Stern et al. 1993, Seymour et al. 2010), cognitive hierarchy theory (Vaske and Donnelly 1999), or Ajzen's theory of planned behavior (Nancarrow et al. 2008). However, our initial script testing revealed that community NRM leaders were not comfortable discussing their values in terms of attitudes and how these related to goals and subsequent actions. They were more comfortable when they were encouraged to drill backwards from their activities toward their values.

After the initial coding, the codebook was expanded to incorporate categories and ideas that emerged from the words of the community NRM leaders. This is an example of how active engagement of community NRM leaders and bottom-up approaches can direct research (Rowe and Frewer 2000, Hare and Pahl-Wostl 2002). An outcome from the grounded theory approach was recognition of values surrounding the centrality of people in this landscape. People were included as an "asset" and the physical infrastructure associated with people separately categorized alongside ecosystem categories.

Fig. 2. Coding matrix.

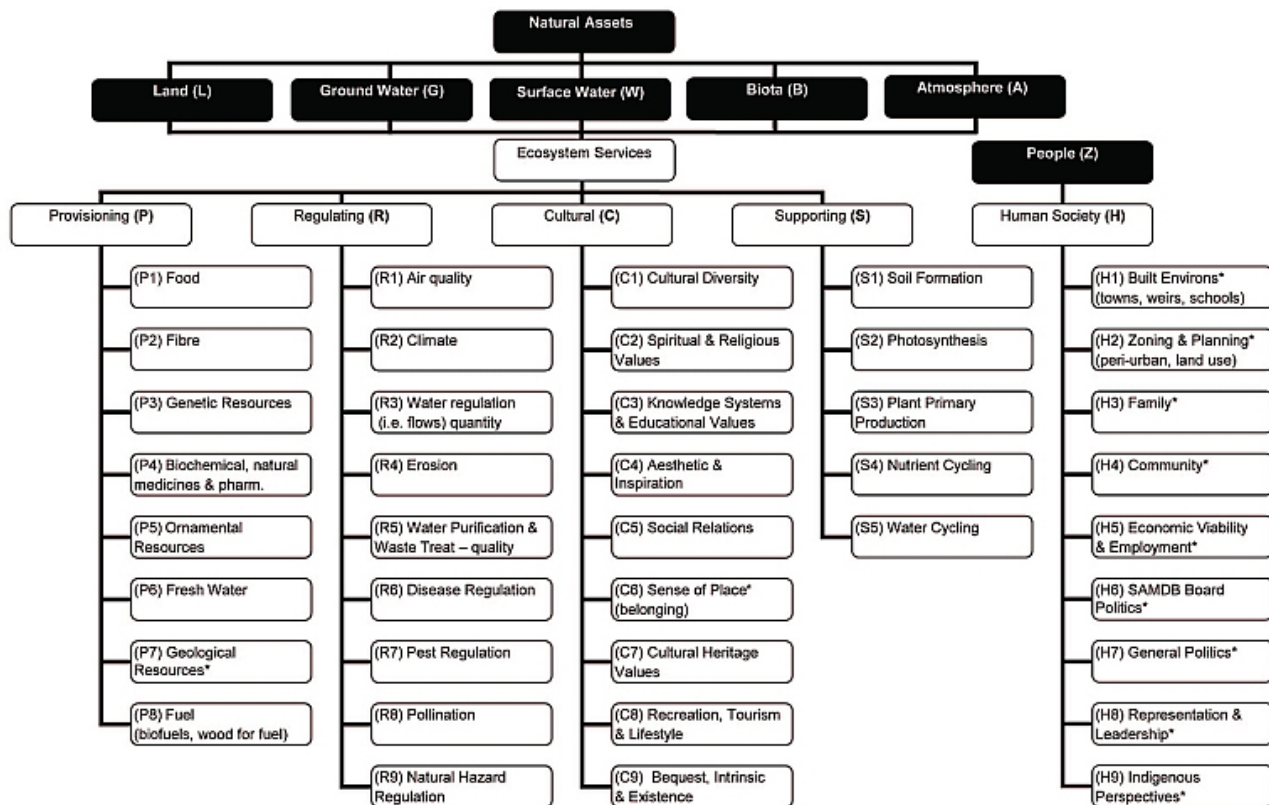


Fig. 2 illustrates the coding matrix that was developed.

AnSWR was used to generate text reports on the expanded sets of assets or ecosystem services. The text reports were checked and then the frequency distributions of the assets and services were summarized on Excel spreadsheets. In Table 3, the “source frequency” lists the number of participants, out of a maximum of 56, who discussed the value and the “segment frequency,” the number of times the value was discussed across the entire set of transcripts. The number of segments exceeds the source count because an individual participant might have discussed a service or asset multiple times over the course of an interview.

Figure 3 presents the frequency of segments relative to the whole database of transcripts. Since each of the natural asset and the ecosystem service categories were prompted categories, the frequency of discussion will be higher than in a completely unscripted interview. The built and social capital sub-categories were unprompted, and provide some useful impressions of the centrality of people in this landscape. To assist in reading the figure, note that the median angle is the category “social relationships” with a code frequency of 110 across the 56 interviews.

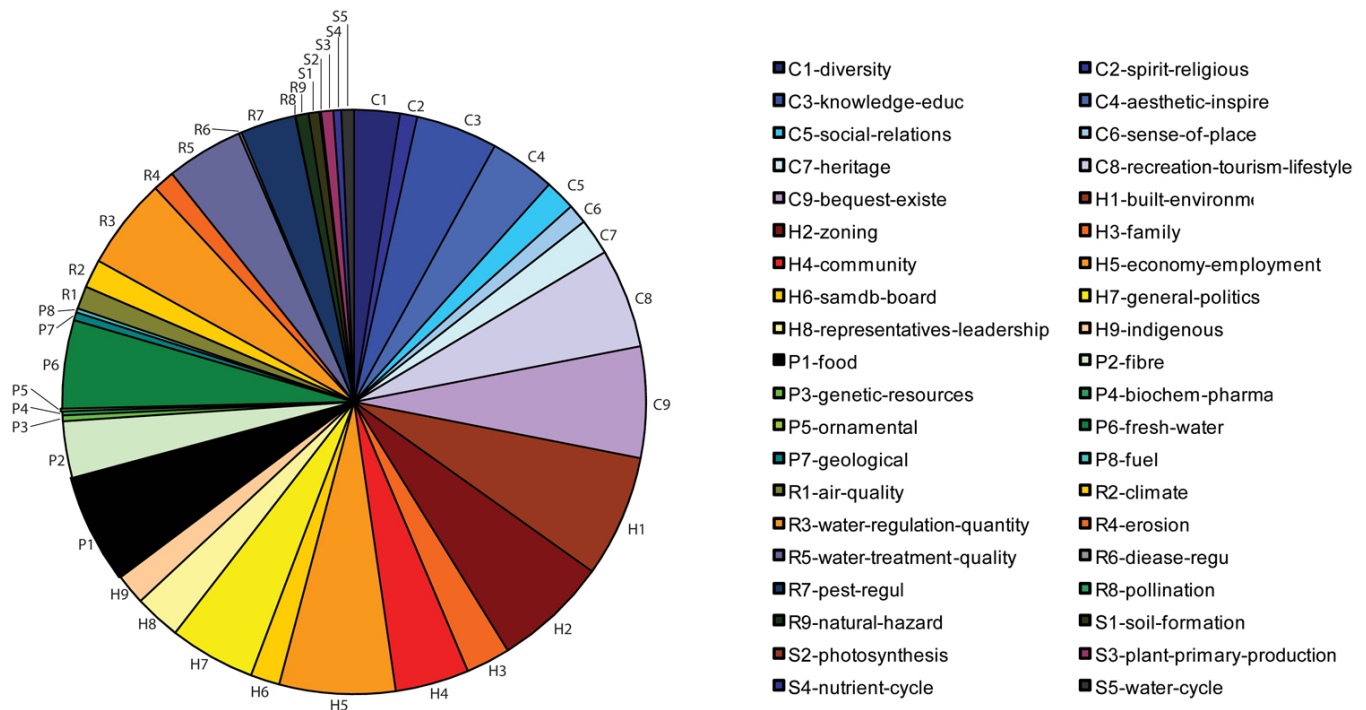
Table 3. Frequency of codes ordered by frequency of occurrence.

Value	Source	Segment
Fresh water	55	318
Economic viability and employment	55	418
Bequest, intrinsic, and existence	55	399
Water regulation (quantity)	54	329
Water purification and waste treatment (quality)	54	278
Recreation/tourism/lifestyle	54	359
Knowledge systems and educational values	53	295
Zoning and planning (peri-urban, land use)	52	412
Pest regulation	52	199
Food	52	394
Built environments (towns, weirs, schools)	52	440
Aesthetic and inspiration	51	237
Community	50	266
Fibre	39	204

Values and Methodology

The analysis of the text reveals key findings about how this group of community NRM leaders valued assets and services across this landscape, how these values related to each other, and whether there were any perceived trade-offs between

Fig. 3. Code frequency of different services.



them. Our first concern was to describe community NRM leaders' values as they related to the environment. Overall, they expressed anthropocentric values, and viewed people as being central to the landscape. They expressed this not only in terms of managing desolate areas or feral animal control, but also in terms of building infrastructure. Although interviewers explicitly avoided prompting participants on discussions of social relationships or built infrastructure, nine out of ten participants discussed their values in terms of how an asset, service, or place in the landscape impacted individuals, families, and communities. It should be noted that not all the comments on the role of people or built infrastructure were positive, as many of the participants acknowledged the mixed impact of people on landscapes.

Community NRM leaders valued their families and local communities and used these social structures as a lens through which to view how their values related to the environment. They saw people as central to this landscape, and there was no evidence that there was much room for trade-offs with wellbeing of people and communities. This did not translate into an attitude of unbridled exploitation of natural resources. Participants expressed a series of bequest, intrinsic, and existence values which are not strictly ecosystem services. Also significant and often discussed in conjunction with sentiments about the role of humans in the landscape, were the perceived mechanisms for keeping regional communities

thriving to undertake the necessary management. Overwhelmingly, participants believed the key to a successful resource policy lay with their custodianship of the region. This translated into a profound and pronounced sense of responsibility for the environment, but also a sense of entitlement to it.

The frequency with which participants spoke about the ecosystem services they valued is a (personal) indicator of its relative importance. Clusters of topics emerged from the discussion. The three most frequently discussed services were not ecosystem services at all. Participants talked about their built environment (towns, weirs, schools, etc.), economic viability, and employment and land use zoning and planning (440, 418, and 412 times, respectively). When discussing ecosystem services, the most frequently discussed were the services humans have created for themselves in the environment and the economic viability of continuing to inhabit the landscape.

The next three most frequently discussed topics were new categories followed by a mix of assets and services. The existence value of environmental assets, the production of food, and recreation and lifestyle were discussed 399, 394, and 359 times, respectively. These three categories are tangibly related to the immediate health and happiness of regional residents. Participants were also aware of and willing to discuss many of the less tangible ecosystem services: water

quantity, water quality, and the purifying services of wetlands (329, 318, and 278 times, respectively). The ongoing drought at the time of the interviews may have prompted these reflections. Overall, as ecosystem services became more distant from immediate consequences on the economy and “enjoyment” of environmental assets, the less they were discussed. This is despite the relative frequency of discussion (295 times) on the services the environment provides to knowledge systems and educational values associated with the landscape.

Extracting information from the body of interviews by asset category drew out several locally important discussions around how participants viewed the general asset categories. In discussions of water, participants generally talked about the River Murray, even in the dryland areas that do not draw water from the river system. In discussing the land, participants concentrated on the role of primary production and their deep concern for the viability of the rural economy.

When discussing biota, participants spoke passionately about the system of conservation areas and reserves, and the flora and fauna within those parks. Fewer spoke about the flora and fauna on their own land. Spatially and intellectually, these were two separate arenas of activities in which to express different set of values, roughly one for economic viability and one for “the environment.” Finally, “atmosphere,” one of the natural resource asset categories, was conspicuous by its absence. Although people valued clean air and good weather (meaning adequate rain), they did not feel the same sense of stewardship over the atmosphere that they expressed in regard to more tangible environmental assets. The ability to identify such a hole in the dialog is a key advantage of participatory approaches (Reed et al. 2009).

DISCUSSION

Decision-making bodies tend to subdivide themselves into asset and ecosystem service projects, departments, and agenda items. Categorizing participants’ discussions according to assets and ecosystem services allowed researchers to identify the expression of values by community NRM leaders in ways that could actively inform practical policy programs and decisions.

Similarly, the topics that people did not discuss or the silences revealed information about participants’ values. Participants were less likely to volunteer a personal narrative that involved a supporting or regulating ecosystem service, but stories relating to food production, recreation, or educational value of the landscape were frequent. This may reflect the fact that participants (and the public in general) are unfamiliar with the concept of ecosystem services (Commonwealth Scientific and Industrial Research Organisation 2012). This disconnect between the implementation of NRM and landscape science

underpinning policy decisions might have less to do with value discord, but rather, might indicate a limited understanding of ecosystem functions and services.

The interview methodology revealed values that could be readily coded and analyzed. Nevertheless, the methodology presented challenges. Researchers had to define a coding matrix and a way to interpret text as a starting point. The recording of count data is a first pass on the identification of the extent and relative weighting of values of the community NRM leaders. Additionally, we cannot be sure that all values were elicited; some held values or taboo values, which are regarded as “sacrosanct and nonnegotiable” (Adamowicz et al. 1998:54), may be implicit in responses but not explicitly stated.

The generalized lesson from the analysis of the transcripts is that community NRM leaders are highly committed individuals that value the direct services of the landscape. These values are discussed in tangible terms that relate to the financial and social welfare of their families and communities. The closer an ecosystem service comes to directly impacting the viability and enjoyment of their community, the more they are willing to support the management and preservation of that service. This leaves some ecosystem service categories and some assets, such as atmosphere, in danger of being under-represented in NRM policy.

As a secondary finding, the four entry points of the interview process elicited qualitative information of sufficient breadth and depth that governments and the NRM board could use to understand and enhance their collective advisory structures. In general, this interview process revealed information about one aspect (values) of the basis on which community NRM leaders are giving policy advice that is unlikely to be revealed without the semi-structured interview. The process revealed a snapshot of community values (a similar sentiment is quoted in Reed et al. 2009:1945–6) that is accurate in terms of what was openly discussed. The reasons for omissions could not be explored and remain a limitation.

The interview process revealed that these community NRM leaders think about environmental issues at least in part in terms of trade-offs. Interviewers were careful not to actively encourage participants to discuss trade-offs, except in the mapping exercise which came last in the sequence, as this might overemphasize the quantification and ranking of assets, services, and places in the interviews. Regardless, enough participants spontaneously discussed trade-offs that it became clear this was actually how they thought of environmental issues. Structuring most discussions was a framework of family and community as the prime motivation for maintaining environmental services and so these were not in any sense “tradable.” People were not willing to live with fewer

community or family services to suit environmental management policies; rather, they viewed the environment as a bundle of assets that can be diverted to serve socially constructed institutions. However, they were willing to trade some cultural services such as recreation to enhance economic and environmental viability. These discussions provide some information on the prioritization of ecosystem services that likely underpins community advice and influence practical policy outcomes.

Community NRM leaders interpreted prompts about “sustainability” to include discussions of a sustainable “peoplescape.” They were clear that a sustainable family depended on being located in a sustainable and active community. Only in this context would they feel empowered as custodians to provide the environmental management needed to reach the environmental goals of the broader community. To do this, they felt they needed to succeed in three key areas. First, they needed a stable income to maintain family and social ties. Second, they needed the social cohesion in the community to ensure that neighbors would voluntarily participate in community enhancement. Finally, they felt they needed the time and ability to participate themselves in a cohesive community, which often meant taking part in NRM activities and nature-based recreational activities. These sentiments arose repeatedly throughout interviews, even though interviewers were careful to not prompt participants to talk about people and the community. The overall impression is that this body of community NRM leaders did not see itself as having a stake in environmental policies that did not actively support their ability to build and maintain their own community as part of that environment.

This research focuses on the advice that community NRM leaders provide to an NRM Board in a devolved system of program delivery. It is a unique contribution to the literature in terms of the methodology employed (which is flexible and replicable), the group that has been interviewed, and the extensive database of interview material (1600 pages). There are underlying personal, community, and experiential motivations that shape community NRM leader advice: this research provides some insights into one of these aspects, that is, personal values. The research complements the case-study approach to stakeholder processes in NRM (Moore et al. 2001), analysis of conflict (Apostolopoulou and Pantis 2010) and research that has focused on more broadly on landholders (Farmar-Bowers and Lane 2009).

CONCLUSIONS

The purpose of this research was to explore whether a grounded theory approach in interviewing could reveal useful information for NRM boards and state government decision makers about the advice of community NRM leaders groups. We set out to develop an effective interview process for exploring the values that ultimately drive the policy advice of

newly empowered community NRM leaders. The interview process itself was exploratory and represents only these knowledgeable NRM community leaders. Feedback from participants suggests that it helped them articulate their values as much as it helped researchers capture them. The coding matrix used to analyze the interviews allowed researchers to put their findings into a framework NRM boards and policy makers could use to inform existing programs. Many of the findings were specific to the assets of the region, such as the River Murray, salt interception schemes, and the condition of national parks in the region. On a broader level, the process allowed researchers to look at the wider framework of values driving local acceptance of policies and implementation programs. The construction of a navigable database of values could be applied in other contexts.

This project provided a tool; a “soft system, i.e., a space or platform that facilitates a learning among stakeholders by sharing” (Reed et al. 2009:1935) for discussion of community NRM leader perspectives. The grounded-theory approach and the emphasis on the participant generating insights and knowledge revealed the centrality of people in this landscape. Although interviews began with some categories for natural capital assets and ecosystem services, the words, stories, and insights of the participants revealed a much more composite picture about the importance of people and physical infrastructure in the landscape. If the interviewers had imposed a strict script, based on an ecosystem-service approach, this key message from interview participants would have been lost. By allowing free flow in the discussion, the prominence of provisioning and cultural services became clear, along with the lack of import given to regulating and supporting services, and to the atmosphere. This result partially concurs with those reported in Reed et al. (2009) in their UK Rural Economy and Land Use Programme Floodplains case study where little attention was given to supporting services and where the focus on regulatory services, primarily floodwater storage, and drainage, is a direct feedback into the livability and sustainability of the community.

Participants in this project and audiences for preliminary results have found some of the priorities expressed in the analysis to be confronting, such as the strong anthropocentric theme that underwrote values. The analysis of interview material helped people to accept these confronting issues and to balance them; for instance, existence values were also expressed by the participants. This, in turn, can potentially assist facilitate a stronger connection between policy decisions and community engagement within the framework of their values.

By being flexible and responsive to these community NRM leaders, we were able to adapt the order of the questions and use the natural flow of conversation to reveal assigned and held values for the assets and ecosystem services across this

landscape. This application to natural resource management has revealed insights that could be adapted for modeling and testing alternative theories around values.

In many nations, there is a new reliance on non-profit groups, donors, and volunteers for NRM delivery. The success of the methodology in eliciting values from community NRM leaders supports its extension to eliciting the values of other agents that underpin community-led or supported NRM. For instance, in the case study area, non-profits, volunteers, and irrigators who donate water and or access to private irrigation and pumping infrastructure are involved in the on-the-ground implementation of community-based environmental watering projects. Understanding donor and volunteer motivations and values could aid federal agency and non-profits in developing frameworks for the prioritization of community-based projects across landscapes as well as in the choice of models of community engagement.

Responses to this article can be read online at:
<http://www.ecologyandsociety.org/issues/responses.php/5191>

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