Marine Policy 71 (2016) 121–131

Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol

Values towards waterways in south east Queensland: Why people care

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ARTICLE INFO

Article history:
Received 22 February 2016
Received in revised form
23 May 2016
Accepted 23 May 2016
Available online 30 May 2016

Keywords:
Values
Environmental management
Moreton Bay

ABSTRACT

The management of waterways, including marine parks, typically centres on assessment of biophysical phenomena, whilst social dimensions are relatively neglected. The diverse ways people interact with and relate to aquatic environments are consequently overlooked in planning and management. This misses opportunities as people's decisions and actions have direct and indirect impacts on how natural systems function. Effective management requires appreciation of how people interact with these environments in order to tailor, and build public support for, management plans and ensure compliance. This qualitative study, using 30 semi-structured interviews, explores people's values towards Moreton Bay Marine Park and its tributary rivers in south east Queensland, Australia. The values offer a powerful means to understand the different ways people relate to these waters. The study found that these waterway environments provide people with a diversity of rich and meaningful experiences, and that individuals hold several values each; they are not discrete. Some types of value frequently occur together. These clusters of values suggest new ways of working with the public to achieve management goals of protecting and improving waterway environments.

1. Introduction

Management of waterways, including rivers, estuaries and marine parks is typically predicated upon knowledge of biophysical systems, with limited attention directed towards understanding the social dimensions of these intertwined systems. There is increasing recognition within the environmental management field of the imperative to include social alongside biophysical assessments in management planning [11,19,20,31]. This view stems from an acknowledgement that people's cognition and behaviour directly and indirectly affect biophysical elements. In many marine parks in Australia, for example, more attention is directed towards studying the impacts of sediment and nutrient loads on the environment, than to understanding the values of the people who influence or are influenced by these problems. This can result in a disconnect between the issues that need to be addressed and the people who need to be involved in solving the problems. Problems associated with sediment, for example, should not only be framed as a problem involving those whose actions increase sediment loads, but also involve people who experience and value the rivers, creeks and coastal areas in other ways, including those that enjoy the beauty, the ecological significance and natural amenity of the waterways.

Research informing waterway management should thus include exploration of the cognition underpinning people's interactions with marine and terrestrial environments [24]. This is important to build knowledge of how intertwined social and ecological systems function to enhance decision-making and ultimately improve environmental outcomes [5]. It is also important, however, for ensuring that management decisions support the relationships people have with those environments which align with, and can potentially promote, achieving management objectives.

Human values are a fundamental aspect of cognition which underpin the more changeable attitudes, norms and behaviour [7], and which shape preference judgements (Brown [3]). A study of values thus offers a useful means for understanding how people relate to waterway environments: what do these places mean to people and how do they interact with them? The term “values” is defined and used in many ways [12]. The social sciences recognise values as a form of human cognition, inseparable from their

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http://dx.doi.org/10.1016/j.marpol.2016.05.027
0308-597X/

creators [21]. In the natural sciences, values are often referred to as though inherent in species or landscapes, e.g. "world heritage values", as though the values can exist independently of beholders. According to [21], values "represent important individual and collective judgements about what in this world and this life is truly important, worthwhile, and meaningful". They are understood to form in childhood, taking shape through social interactions and experiences within the world, and remain relatively stable throughout adult life [14,27,30]. Values provide a foundation for attitudes and beliefs [7], which in turn influence behaviour [7,29]. They are described as "more fundamental", "salient" and "influential" than preferences and attitudes ([21], p. 141) and are thus suited to exploring the deeply held, emotional basis of people's relationships with the natural world. A study of values can thus provide rich insight into the ways people relate to waterway environments.

The cognitive hierarchy model of human behaviour [29] explains how a person's view of their environment is organised into a cognitive structure. This hierarchy is described as an inverted pyramid consisting of values, value orientations (i.e., clusters of basic values), attitudes/norms, behaviour intentions and behaviours [7], with each element layered upon others. Values represent the most basic element of this structure: they are few in number and slow to change [7,29]. This research draws upon [21] to define values as representative of "important individual and collective judgements about what in this world and this life is truly important, worthwhile, and meaningful".

Among several typologies of values that are relevant to the environment [2,9,18,22,26], Kellert's typology of universal nature-based values (Table 1) provides a comprehensive and well tested set [14]. The typology represents 10 different ways people value the natural world [13]. This typology is associated with the "biophilia hypothesis", explained as "the inherent inclination to affiliate with the natural world instrumental to people's physical and mental health, productivity and well-being…It reflects fundamental ways we attach meaning to and derive benefit from the natural world." ([16], p. xii). The "universal" quality of Kellert's conception of values is linked to the assumption that people have an inherent, albeit weak, genetic tendency to value nature [15]. These genetic tendencies are shaped by culture, experience and through learning.

This study documents how people value Moreton Bay Marine Park in south east Queensland, Australia, and surrounding rivers, creeks and estuaries that flow into it[1] (Fig. 1). It also explores the implications of understanding these values for management, particularly to support and strengthen the relationships people have with the waterways studied, with a view to achieving positive environmental outcomes.

Moreton Bay Marine Park supports a diverse range of habitats, including wetlands of international significance, as well as populations of rare and endangered marine species [28,33]. This area is adjacent to the state capital, Brisbane and is under serious threat from rapid urban and rural development, and from multiple uses. Over the past decade there has been significant research attention directed towards understanding the biophysical dimensions of Moreton Bay and the marine park, with particular emphasis placed upon understanding and monitoring the impact of sediment and nutrient loads upon water quality and marine life within the park. Few studies have been conducted which focus on the human dimension of the marine park, however.

By exploring the values of a broad range of stakeholders of the bay and its catchment, this research builds knowledge of the social dimensions of the Moreton Bay Marine Park, in order to provide managers and decision makers with more comprehensive information of this essential element of the socio-ecological system.

Table 1.
Kellert's nature-related values typology [14,16].

Value	Brief definition
Aesthetic	Physical appeal and beauty of nature
Dominionistic	Mastery, physical control, dominance of nature
Ecologistic-Scientific	Systematic study of structure, function, and relationship in nature
Humanistic	Strong emotional attachment and 'love' for aspects of nature
Moralistic	Ethical concern for nature
Naturalistic	Direct experience of nature
Negativistic	Fear, aversion, alienation from nature
Spiritual	Feelings of transcendence; reverence for nature
Symbolic	Use of nature for language and thought
Utilitarian	Practical use and material exploitation of nature

2. Methodology

Following a pilot testing phase, qualitative semi-structured interviews were conducted with a range of people who use and interact with the waterways differently. Heterogeneity sampling, a non-probability sampling method, was applied to capture a broad spectrum of values. Heterogeneity sampling is a type of purposive sampling approach that is suited to identifying a diversity of views (in this case "values") rather than representing those views proportionately to a population. The sampling approach was thus designed to involve a broad range of participants, in order to identify the diversity of ways in which people value the bay, creeks and rivers. First, mind maps were created to identify the different ways people use and interact with waterways in the study area. Major categories were recreational users, education and research, industry and business, community members and groups, environment groups and government. All of these had many subcategories. For each of these, typical organisations, businesses, community members or groups engaging in the different uses or roles were identified. Active individuals (e.g. office bearers) from these organisations or groups were contacted and invited to participate. In selecting organisations, we also aimed for spatial diversity throughout the Moreton Bay area and lower catchments. Table 2 lists the number of people interviewed from each major category identified, and their genders and ages. It is important to note that people's relationships to waterways are multi-dimensional and are thus not fixed to a single category. For example, an interviewee was selected as representing work in a water-based industry, but explained at interview that they used the waterways for recreational fishing. Although management organisations (including government) and Aboriginal Traditional Custodians were identified on the mind map, they took part in a different aspect of the overall research project, the findings of which are to be reported separately.

Interviews were conducted face-to-face at the interviewee's home or workplace. They lasted approximately 45 min, enabling a significant amount of detailed information to be collected. In the interviews, participants were presented with a map of the study area and asked to mark on it the waterways that are particularly important and meaningful to them. They were then asked to explain why. Probing questions were used to gain deeper insight into the values they attach to specific places.

Interviews were audio recorded and transcribed verbatim. The data was analysed using NVIVO[10]. The transcripts were coded by

[1] The geographical scope of the study extended onshore from the Moreton Bay Marine Park, in acknowledgement that terrestrial and marine systems are interrelated. The ways people value the rivers and creeks flowing into the bay are thus important for managing these interconnected systems.