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Bridging Managers' Place Meanings and Environmental Governance of the Great Barrier Reef Marine Park

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ABSTRACT

This article bridges managers' place meanings and environmental governance to provide insight on the factors that shape decisions concerning the Great Barrier Reef (GBR) Marine Park. Drawing on a thematic analysis and open coding of data from 34 semistructured interviews, we investigated the perspectives of managers from three agencies charged with protecting the GBR. We observed that a plurality of place meanings converged on five themes: (i) stewardship of the environment, (ii) utilization and access to natural resources, (iii) individualized experience, (iv) intergenerational connections, and (v) spirituality in place. Results revealed that these themes were complemented by formal and informal policy instruments that comprised our governance framework. Informal policy instruments played a particularly important role in the co-creation of knowledge, facilitated negotiations between managers and their constituencies, and increased public involvement in decision making.

Sustainable management of marine and coastal settings requires decision makers to mitigate and adapt to changing environmental and societal conditions. Anthropogenic threats—encompassing issues such as climate change, natural resource extraction, eutrophication, invasive species, and coastal development—present particularly complex and numerous challenges for maintaining ecosystems and biodiversity (Pimm et al. 1995; Worm et al. 2006; Halpern et al. 2007). To help mitigate and adapt to these impacts, scientific evidence suggests that management agencies should accommodate the perspectives of multiple publics in decision making (Folke et al. 2005; Armitage et al. 2009; Stewart, Williams, and Kruger 2013). The importance of stakeholder engagement to unveil the sentiments behind shared (or contested) landscapes cannot be understated, because providing a platform for people to voice their opinions and share knowledge built on local practices will likely yield more equitable policy outcomes and effective science in the face of environmental change (Mascia et al. 2003; Ban et al. 2013).

Given increasing levels of public participation (Shirk et al. 2012), protected area managers face tremendous challenges as they seek to reduce environmental degradation while sustaining benefits that flow from ecosystems to society. Environmental governance

regimes can create the conditions necessary for addressing these challenges through collective action performed by state, market, and civil society actors (Bridge and Perreault 2009). Governance is more specifically defined here as "the set of regulatory processes, mechanisms, and organizations through which political actors influence environmental actions and outcomes" (Lemos and Agrawal 2006, 298). Top-down and bottom-up management strategies are employed in systems of governance to balance a diversity of interests against rules and regulations that govern resource use (Jordan et al. 2005; Larson and Soto 2008; Larson, Freitas, and Hicks 2013). The resultant policy outcomes are often shaped by "expert" knowledge formed through public participation in decision making, as well as managers' experiences and professional training (Mansfield 2009).

Governance is partially enacted by managers who preserve a diversity of place meanings and stakeholders holding (dis)similar viewpoints that are negotiated and then represented to varying degrees in resource management plans. However, investigations of place meaning and governance are often conducted in isolation despite the benefits of bridging these ideas to learn how managers' personal and professional perspectives blend with those of the people they are entrusted to represent (Williams, Stewart, and Kruger 2013). Further, place research has almost exclusively focused on public perception despite the role of managers to understand and, at times, help create place meanings for competing interests such as commercial fisheries, recreational opportunities, ecotourism, and indigenous use (Hutson, Montgomery, and Caneday 2010). Therefore, this study addresses two intellectual gaps. We shift attention from stakeholders and/or residents to protected area managers, and integrate the concepts of place and governance that emerged from shared knowledge and environmental policies for the Great Barrier Reef (GBR) Marine Park.

Environmental Governance

Environmental governance is a framework that allows practitioners and researchers to better understand the ways in which human–environment relations are constructed and managed in natural area settings (Jordan 2008; Davies 2009). Conceptually, environmental governance moves beyond the ideas of governing and government to explore decentralized processes that promote public participation (Agrawal 2001) and discover collective decisions about environmental management (Ostrom et al. 1999). The sustainability of a governance regime hinges on beliefs that the decision-making process is legitimate and representative of local concerns (Bebbington and Bury 2009). That is, if policies become inconsistent with public interests, there may be noncompliance with rules and regulations (Ban et al. 2013), diminished trust in scientific expertise (Brown 2009), and potential for conflicts over competing forms of human use (Bolin, Collins, and Darby 2008).

The patterns, processes, and regulations that comprise a governance system are interrelated in a complex network of relationships (Birkenholtz 2009). To organize these factors, we follow Jordan et al.'s (2005) proposition that a system of environmental governance can be best understood by identifying policy instruments that illustrate how governing authorities operate and respond to knowledge differentials among key actors, as well as other variables that affect or cause asymmetrical power relations. We define policy instruments as the techniques used to address objectives and represent the mutual interests of managers and stakeholders (McDonnell and Elmore 1987). Specifically, we conceptualize policy instruments along a spectrum of regulation that spans formal and informal governance

mechanisms (Lemos and Agrawal 2009). On one hand, formal policy instruments (e.g., legislation dictating levels of human use in a marine reserve network) are hard aspects of governance that support decisions made after policies are established and align with centralized, top-down management structures. On the other hand, informal policy instruments (e.g., public meetings to discuss levels of resource extraction) are soft aspects of governance that engage stakeholders throughout decision making, promote partnerships, build autonomy, and form horizontal networks that encourage self-regulation (Gaventa 2006). Governance regimes should be transparent regarding the place meanings that managers bring to the fore when utilizing formal and informal policy instruments, because meanings are part of an appreciative dialogue that initiates discussion, builds trust, and shows integration among interest groups (Faysse et al. 2013).

Place Meanings

Over time and through different forms of interaction with physical and social worlds an individual responds to specific settings by ascribing meanings to places. These meanings provide insights on why attachment exists (Wynveen and Kyle 2015), are rooted in the emotional-symbolic and cognitive bonds that people share with places (Altman and Low 1992), and lie at the heart of human–place bonding that explains how people interpret the world around them (Sack 1997). Place meanings can be conceptualized through multidimensional lenses and multiple research traditions. For example, *identity* is one dimension related to the psychological bonds that define self-perception (Proshansky, Fabian, and Kaminoff 1983). Stemming from the field of psychology, there is broad acknowledgment that place scholarship can reveal important insights into the identities of individuals and communities based on their interactions with places. Another dimension, termed *dependence,* refers to the relative functionality of settings that people use to satisfy their needs (Stokols and Shumaker 1981). In this sense, place is valued for the specific outcomes it might facilitate, such as recreation opportunities. *Social bonding* is a third place dimension linked to shared experiences maintained by people and an environment (Kyle, Graefe, and Manning 2005). The relationships that people form through interactions with their family and friends gird this third dimension. These three dimensions provided a foundation for our interpretation of previous research and an initial lens through which we began to organize our data. That is, to understand the meanings participants ascribed to place, we specifically sought reference to the GBR's contribution to their individual and collective sense of identity, dependence on the resource for valued outcomes, and social ties that bind and shape meaning.

The ontological assumptions of different disciplines that espouse concepts of place are accompanied by an array of epistemological frames that have guided research over time. For example, in-depth techniques have been utilized by human geographers and others who operate within interpretivist research traditions. These scholars often inquire about why places are valued to embrace the nuances of their meaning (Tuan 1975). From this standpoint, meanings assigned to places can be rooted in personal experience (Relph 1976) and the sociocultural contexts in which human–environment interactions occur (Greider and Garkovich 1994). Conversely, post-positivist environmental psychology research tends to illustrate the strength of connections and importance of valued environments using psychometric scales (Williams and Vaske 2003; Kyle, Graefe, and Manning 2005). This approach generalizes knowledge across contexts that foster connections

between people and places. To move beyond ontological and epistemological differences, a critical pluralist framework has also been proposed in past work. Patterson and Williams (2005) argue that no single tradition holds the key to understanding human–place bonds. Rather, diverse methodologies and language can be simultaneously considered by researchers to leverage the contributions made by various interpretations of reality.

Place-related dialogues have guided studies of how individuals and groups interpret natural area settings (Lee 1972; Farnum, Hall, and Kruger 2005; Trentelman 2009). This line of research has been helpful for understanding how to reconcile preferred forms of competing human activities and identify ways to negotiate future use (Yung, Freimund, and Belsky 2003; Bolin, Collins, and Darby 2008). Previous research has also (a) shed light on environmental attitudes and behaviors (Kyle et al. 2004), (b) predicted support for environmentally friendly practices (Vaske and Kobrin 2001), and (c) gauged responses to environmental impacts (Kaltenborn and Williams 2002; White, Virden, and van Riper 2008). In this vein, scholars have focused attention on representing stakeholder opinions while managers' place meanings have been largely ignored as a research topic (Hutson, Montgomery, and Caneday 2010). This is a critical intellectual gap with profound practical implications, because a stronger understanding of managers' place meanings is instrumental to the improvement of transparency in policy outcomes, and any assessment of their alignment with public preferences (Hendee and Harris 1970; Manning 2011). This transparency has greater potential for realizing the democratic ideals from within which policy mandates have been constructed (Warren 2014).

We examined how a diversity of human–place bonds were represented in decisions about resource use and protection, and investigated how managers' place meanings were conceptually tied to formal and informal policy outcomes that governed the GBR Marine Park. More specifically, we addressed the following objectives: (1) examine how managers ascribe meanings to areas under their jurisdiction; (2) investigate a governance framework that shapes how managers articulate the decision-making process; and (3) discover the linkages between managers' place meanings and the formal and informal policy instruments that comprise governance of the GBR.

Methods

Study Context

We conducted this study within the GBR Marine Park, which extends approximately 1,500 miles along the northeastern coast of Australia in the state of Queensland. This protected area was established as a Marine Park in 1975 and was given UNESCO World Heritage status in 1981. Encompassing approximately 345,000 square miles, this area hosts one of the most biologically diverse ecosystems in the world, including an expansive network of coral reefs, continental islands, coral cays, and an abundance of marine life (Great Barrier Reef Marine Park Authority [GBRMPA] 2014). Interconnected within these habitats are extraordinarily productive and iconic biological communities valued by residents and tourists (Wynveen and Kyle 2015), which serve as a driving force for Queensland and Australia's economies (Day 2002).

Management of the GBR involves layered jurisdiction among federal and state governments that foster diverse place meanings across the protected area. The Commonwealth

(federal) government's Great Barrier Reef Marine Park Authority (GBRMPA) is the primary agency that addresses key threats to the reef, engages local communities, and accommodates multiple interests such as shipping, commercial charters, recreational activities, indigenous hunting, and scientific research (GBRMPA 2014). While GBRMPA staff members center their efforts on science and policymaking, the Department of Natural Resources and Mines includes the Department of National Parks, Sport and Racing (DNPSR), which is more focused on day-to-day management activities. This state government agency oversees the adjacent marine parks and most of the islands classified as national parks within the World Heritage Area. Fisheries Queensland within the Department of Agriculture and Fisheries is another organization that has mutually inclusive jurisdictional responsibilities with GBRMPA and DNPSR, though it remains specifically focused on regulation of commercial, charter, recreational, and indigenous fisheries. Other organizations involved in cooperative management and resource sharing in the GBR include Queensland Water Police, Queensland Boating and Fisheries Patrol, Australian Customs Service, and the Australian Maritime Safety Authority. Tourism operators, nongovernmental organizations (NGOs), and local government authorities have also played crucial roles in the development of GBR-related policy.

Research Approach

This case study was informed by grounded theory principles (Glasser and Strauss 1967) to build an understanding of the meanings that key actors ascribed to places and the environmental governance regime within which these individuals operated. A critical pluralist framework (Patterson and Williams 2005) was also embraced to extend previous place research and respond to the key concepts and patterns that were discovered throughout data collection and analysis (Marshall and Rossman 2006). All interview data were collected both in person or by telephone June–September 2010 ($n = 34$) (Table 1). Conversations were tape-recorded, noted in shorthand, transcribed verbatim, and inductively analyzed using open and axial coding in ATLAS.ti, version 4.2 (Strauss and Corbin 1998). Meaningful but distinct key words and categories were associated with segments of text, which were subsequently organized into five place-related themes and two themes of environmental governance, each of which was identified by the authors in a process of co-construction and understanding with their study participants (Cresswell 2012). Just over 33 hours of formal interview time, as well as shorthand notes, participant observations, and journaling, were completed over a 3-month period. The research questions and study design were tested and refined during a preliminary investigation of managers from a National Wildlife Refuge in the United States (van Riper, Kyle, and Yoon 2011).

Participants were selected using a purposive sampling frame, which involved identifying a pool of key actors in upper management of the three target agencies and then building a sample based on recommendations from participants until reaching a point of saturation (Heckathorn 1997). These individuals held mid- or senior-level management positions within GBRMPA, DNPSR, and Fisheries Queensland and were typically responsible for implementing policy through the direct management of one or more programs within their organization. The interview guide consisted of 25 questions about place meanings and management decision making. To assess place meanings, participants were asked to describe a special place and explain why it was important (Schroeder 1996). To better

Table 1. Sociodemographic characteristics of study participants.

Variable	n (%)
Sex	
Male	21 (61.8)
Female	13 (38.2)
Ethnicity	
Aboriginal or Torres Strait Islander	1 (2.9)
Not Aboriginal or Torres Strait Islander	31 (97.1)
Race	
Asian	0 (0)
Black or African	0 (0)
Pacific Islander	0 (0)
Caucasian	33 (100)
Education	
Primary school	0 (0)
Secondary school	1 (3.6)
Tertiary degree	2 (7.1)
Bachelor's degree	6 (21.4)
Graduate degree	19 (67.9)
Annual income	
Less than $49,999	0 (0)
$50,000–$99,999	1 (2.9)
$100,000–$149,999	3 (8.8)
$150,000–$199,999	14 (41.2)
$200,000–$249,999	3 (8.8)
$250,000–$299,999	10 (29.4)
Age (M, SD, years)	44.73 (8.87)
Years in science and management (M, SD)	17.11 (9.47)
Years in agency (M, SD)	11.09 (6.22)

understand environmental governance of the GBR, participants were asked to discuss their professional responsibilities, list relevant policies and management concerns, and describe public engagement supported by their respective agencies (Davies 2009). Participants also engaged in conversation about how decision-making processes related to place meanings.

We drew from our interpretation of interview data reflecting the perspectives of individuals employed by GBRMPA, DNPSR, and Fisheries Queensland. We did not distinguish among these three agencies, given that the formal place meaning of the GBR is that of outstanding universal value as a World Heritage Area that spans jurisdictional boundaries (GBRMPA 2014). However, we acknowledge that various meanings exist beyond this formal context. On average, participants reported more than a decade ($M = 11.09$ years, SD $= 6.22$) of experience in their current agency and nearly twice as much time in science and/or resource management ($M = 17.11$ years, SD $= 9.47$). Participants were well educated, middle aged ($M = 44.73$ years, SD $= 8.87$), and knowledgeable about GBR places and governance from training in the natural sciences rather than communications or business. There were more males than females; most identified as Caucasian and not Aboriginal or Torres Strait Islander, and fell within a high socioeconomic bracket. Such a skewed demography has implications for diversity; however, the sample reflected the structure of the management agencies and hence was unavoidable.

Study Findings

In the following section we present findings generated from a thematic analysis of qualitative data organized into three subsections: (1) environmental governance, (2) managers'

place meanings, and (3) integrating governance and place meanings. Interview excerpts are used to illustrate how we interpreted results emanating from this study.

Environmental Governance

Formal Policy Instruments

Managers employed formal and informal policy instruments to reflect the means (i.e., strategies) and ends (i.e., outcomes) of the decision-making process. Formal policy instruments included legislation, permits, treaties, zoning, and other management arrangements that informed decision making. A federal manager explained, "We act through our regulations, our zoning plans, our policies, and our permit precedence … probably the biggest tool that we use is set in legislation, so the regulations and the [Great Barrier Reef Marine Park] Act." Nine participants referred to these legislative tools as "hard" forms of regulation, one of whom noted that the adaptive management paragon was

> driven by recognition of the uncertainty in which we make decisions … So you're always sort of making informed guesses about how to achieve your management goals and invariably they won't be completely right. So as new knowledge comes on board about how you could have done it better, you want to be able to take account of that new information and tune the way you've done things.

Participants indicated the park was not governed by simply a two- or three-dimensional overlay of legislation, but instead an intricate system of marine spatial planning that accommodated commercial activities (e.g., shipping lanes, tourism operations), traditional use, and recreational and tourism experiences, and addressed coastal concerns about external impacts from the catchment area (e.g., agriculture runoff). This idea of "complementary management" was mentioned by fourteen participants and was illustrated by the following: "In Australia here … one of the important things that we have is what we call complementary management, where the state has effectively mirrored what the Commonwealth has done in terms of legislation … It is a very effective thing that we have achieved over the years."

Interview data revealed that formal policy instruments were important tools because they maintained accountability, coordinated efforts across agency boundaries, encouraged compliance with rules and regulations, and provided guidance on how managers should engage with their constituencies. Zoning, plans of management, site planning, and special management areas were several mechanisms that provided guidance on how public consultation should be balanced with top-down management styles. Participants also relied on evaluation criteria (e.g., intensity of existing use, degree of environmental impact, presence of traditional use, potential conflicts from recreation activities) to determine how best to approach public comment periods. One federal manager explained, "A new marina, or dredging, or … a big operation is automatically publicly advertised. Small tourist operations don't usually," indicating that in the case of small-scale permit applications, the use of formal policies was instrumental to decision making. However, nearly all participants recognized the importance of public engagement and sensitivity to viewpoints that were different than their own: "If some of the decisions or some of the priorities were just up to me, they would be different than if you had to take into consideration a number of other people's priorities … so management decisions are very much a compromise between … any one

group or one person." Echoing this sentiment, one state manager indicated that formal instruments were useful for solving contentious problems: "Some of our laws are quite helpful because they set out a very clear process in which to make a decision … but there are many other decisions for which there is no manual."

Informal Policy Instruments

Managers of the GBR relied on informal policy instruments, including partnerships, collaborations, and advisory committees to facilitate communication between various interest groups and managers of the GBR. For example, the Australian government operated through Traditional Use of Marine Resources Agreements (TUMRAs), managed under formal legislation of the Native Title Act of 1993, to interact with Aborigines and Torres Strait Islanders. Eleven participants spoke about this informal policy instrument and explained that it facilitated knowledge exchange between Traditional Owners and the federal government. These partnerships helped managers mitigate impacts on hunted species (e.g., dugong, green turtle) that were central to indigenous cultures, while generating mutually beneficial understandings of Traditional Ecological Knowledge for more effective management. One federal employee reflected on the meanings of TUMRAs: "The Traditional Owners self-manage traditionally and spiritually, and managers work within this agreement to meld scientific knowledge or scientific facts with their law and knowledge for better conservation." This dialogue contributed to stronger relationships between Aborigines and the government, encouraged compliance, and built leadership in local communities.

A second example of an informal policy instrument was a program called "Reef Rescue" in the Caring for our Country Program initiated by the Australian government. Falling under the rubric of Reef Rescue was the concept of reef guardianship—an effort to target behavior change and generate stewardship among students in primary schools, local councils, farmers, and commercial fisheries. Of the three participants who mentioned reef guardianship, one federal employee said this rapidly expanding program fostered ownership and protection of local resources while maintaining social relevancy: "I guess that's another way where the general public is much more involved in the business that we do … but at the same time it's a way for us to be able to get people to change the way they behave so that activities in the park are sustainable." She went on to explain that Reef Guardian councils targeted a range of ages and sectors, and maintained participatory processes that helped to minimize environmental impacts. One other participant echoed these sentiments by suggesting Reef Rescue was an adaptive and inclusive policy instrument that reached a broad demographic of people living proximate to the GBR.

Local marine advisory committees (LMACs) were a third type of informal policy instrument that fed multiple interests into management decision making at the federal level. LMACs were voluntary citizen groups comprised of key constituencies from the regional community that represented specific (e.g., commercial) interests. In 2011, 11 LMACs were spread along the GBR coast to better incorporate diverse viewpoints into management. One federal manager stated, "We've got three committees in my area, which bring together a range of vastly different stakeholders from conservation groups, commercial fishers, tourism operators, indigenous people … It's a good mechanism in many ways to get a snapshot of different regional views." However, contrary perspectives were also shared: "I haven't seen [LMACs] play any major role into input to policy making within GBRMPA." Her narrative indicated that public input did not directly change policy but was considered

integral to GBR governance, because it enabled managers to influence outcomes of greatest concern. Thus, informal instruments supported systems of governance but risked the possibility that decision makers would use these instruments to leverage personal rather than collective decisions.

Place Meanings

Results illustrated that an array of place meanings generated strong and diverse attachments formed between managers and places under their jurisdiction. From a thematic analysis of participants' narratives about the reasons why special places were considered important, we identified the following themes: (1) stewardship of the environment; (2) utilization and access to natural resources; (3) individualized experience; (4) intergenerational connections; and (5) spirituality in place. These themes reflected overlapping facets of managers' interactions with the GBR Marine Park.

Stewardship of the Environment

The first theme was entitled *stewardship of the environment*, and it illustrated managers' appreciation and need for the protection of biological resources. Place meanings associated with this theme were tied to nature-based features of the GBR that provided a basis for developing management strategies and prioritizing decisions. "Ecosystems," "resilience," "biodiversity," and "habitat protection" were central concerns raised by nearly all study participants to explain why they valued places. One state employee said, "There's a very strong sense of place, which I have constructed for, you know, Magnetic Island. And that sense of place is built around its natural values, its landscape. It still has some sense of the island as a national park. Even more than that, it's still understood natural bushland." This participant echoed the sentiments of numerous other managers who believed the environment should be maintained and preserved in its own right.

Within this stewardship-related theme, geographic locales became important when linked to species conservation, as illustrated by the following: "One thing that's important I think, too, is that when we talk about place, is probably a lot of us are concerned with species more than locations. And good examples of that would be things like turtle and dugongs." This passage emphasized the widespread belief that places served the purpose of providing habitat for marine life that should be protected across spatial scales. One federal manager stated, "So as a part of my emerging sense of conservation and the environment, there was a very strong campaign to protect the Great Barrier Reef against the perceived threat of oil drilling and mining." He was one of five participants who indicated that the iconic status of the GBR generated a sense of stewardship. He also believed that "the broader Australian public takes great pride in that, and sees it as something that they want looked after. We have a sense of responsibility and pride and stewardship over it." Normative claims such as this one indicated meanings ascribed to places were reinforced by the assertion that managers were stewards of nature and responsible for place-based management of biological resources.

Utilization and Access to Natural Resources

The second theme was labeled *utilization and access to natural resources*, and it was linked to the notion that particular places warranted managerial attention because they provided (in)direct benefits to society. That is, managers found meaning in places that were

functionally useful for themselves and their constituencies. These places were discussed in terms of involvement in activities that reflected multiple identities and facilitated connections to the GBR, such as "catching a really good fish and eating it," "trail running on the weekend," and "recreational activities and fishing values." A multiple-use philosophy resonated with 21 participants who suggested the government should be responsible for allocating resources among various interest groups. For example, one federal employee indicated he was "very pleased that some areas are protected. I'm very pleased that some areas you can use … I don't believe in locking things up … I actually believe that the more people see something and appreciate it, the more support you will have … Places become special because you can use them." Other related place meanings expressed by managers were rooted in the perceived importance of the GBR as an economic engine for tourism/recreation and commercial fisheries, as illustrated by the claim that the GBR was "a driving force for the economy of northern Australia and, you know, in part for the entire continent."

Individualized Experience

The third theme was termed *individualized experience* and it related to personal interactions with different environments (e.g., familiarity, knowledge acquisition, learning) and perceived responsibilities to mediate human–nature relationships. Seven participants said familiarity was instrumental to meaning creation, one of whom believed, "I'm probably a better marine park manager because I actually use the park all the time. So I'm familiar with it. I'm familiar with the issues that they're deriving from … and why they like the park and why they use it." Ten participants mentioned that their individual identities were tied to the GBR and their abilities to construct understandings of places were based on intellectual stimulation and curiosity: "A big part of it is knowledge. Just seeing what's out there and the beauty of it." The collection of meanings linked to this theme indicated that enthusiasm and deep-seated concern for environmental protection were manifested in the process of learning about the GBR. In total, 17 participants mentioned the word "passionate" when describing their positions. One participant proclaimed, "You don't just have a job. You have a vocation and for most of us we're keen to protect and ensure the most sustainable aquatic environment possible so you do it 24/7." These findings suggested the individualized experience theme reflected managers' place meanings that were centered on personal engagement with places and a strong desire to protect and manage the GBR.

Intergenerational Connections

The fourth theme, *intergenerational connections*, was rooted in concern for future generations and the importance of providing opportunities for other people to discover and create connections with the physical world. Managers aimed to impart to their constituencies the knowledge they had acquired in their careers and saw themselves as, "acting as a custodian to sense of place … I see that that's my job to try and ensure that the GBR is there for the years to come." Twelve participants strived to maintain and facilitate experiences for the sake of future generations. When asked why a place called Lizard Island was appreciated, one federal manager said, "I feel a strong sense of responsibility to, uhm, people that don't have those things going for them. Likewise, I feel a strong sense of responsibility given that I have opportunity to look after landscapes and seascapes and ecosystems that, you know, current society can't look after." Stakeholder engagement at public meetings and other fora also expanded managers' understandings of why the GBR was special. In these contexts,

knowledge exchange resulted in an accumulation of place meanings that were central to the theme of intergenerational connections. That is, socialization and the public's shared experiences with managers enabled participants to imbue places with meanings based on the transmission of place-related knowledge.

Spirituality in Place

The fifth theme was labeled *spirituality in place* and it was tied to the importance of appreciating and maintaining intangible values of place. When asked why particular areas in the GBR were important, five participants discussed human–place bonding in terms of their spiritual backdrops. For example, one federal manager noted, "You know, for me sense of place means sort of a grounding or almost a spiritual kind of connection to country or to the place." He went on to describe his work with Traditional Owners and meanings felt by Aboriginal populations derived from their ancestral roots. Participants spoke of the spirituality of Aboriginal communities and more recent settlers through sharing use practices and understandings that had cultural affiliations: "There's a strong spiritual value for me in the country … there's some appreciation, like the beauty of the rainforest or the other open country … the remoteness or the feelings of moving away from civilization and not being part of, you know, the sort of ant hills of human population."

Integrating Place Meanings and Environmental Governance

We discovered linkages among our five themes, which were complemented by formal and informal instruments used to manage the GBR Marine Park. Figure 1 illustrates our conceptualization of the relationship between five place-related themes and two governance mechanisms that guided decisions. Managers' place meanings were central to their professional worlds, in that participants embraced their roles as managers and identified as facilitators of place meaning. Indeed, many of the meanings that were shared carried normative orientations and positioned managers as stewards and custodians of the GBR.
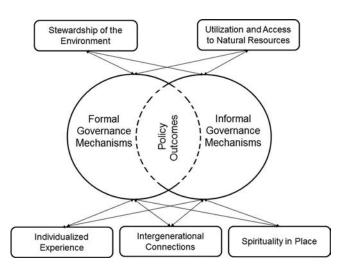

Figure 1. Conceptual model of the relationship between five dimensions of managers' place meanings and formal and informal governance mechanisms that shape policy outcomes.

When asked how decision making was related to place meanings, personal connections to places provided insight on effective management decisions. One manager who worked for a state agency said, "When it comes time to review the management plan for a place like Hinchinbrook Island, having that personal experience there, understanding the way in which that place can move people will give me, I think, greater insight into how we can structure a management plan to protect those very values." However, this participant went on to caution, "There is a risk and an opportunity there that those personal experiences will bias that decision, but ultimately we have to make a call about how these lands and waters are used … I guess that connection to place for me is a valuable addition into that decision-making process." Managers exercised an understanding of places in their daily work to engage with their constituents knowing that their place meanings might not converge with select interest groups. In this sense, informal policy instruments were important for gathering information in support of collective decisions and co-creating knowledge about how best to allocate coveted resources.

The relationships managers shared with places were constructed through an interplay between their personal lives and professional duties. One participant who had worked for federal and state governments spoke of a special place called Crocodile Creek:

> For me, it's about learning how the ecosystem functions. And I mean I'm targeting fish. Also, I'm interested in where the fish move to and when they're doing certain things … how often do I see marine turtles feeding in the mouth of the creek? … What sea birds am I seeing when I'm fishing? What land birds can I hear?

Using an analytical lens sharpened through his professional world, this participant deepened interactions with places in the GBR through his life's work. Other participants were driven by desires to experience different environments and better communicate with stakeholders: "Part of my job is to talk about or to be … fluent in issues with respect to protected species so when I talk about marine turtles, quite often I'll put that into a context of place … these locations represent these things in an ecological context, but to me they represent something as not just the ecological context but also that sense of place about why is the marine park important." This quote illustrated managers' efforts to develop an intimate understanding of the sociocultural context and sciences that would allow them to create spaces for learning, stewardship, and trust with their constituencies.

It was through human–place bonds and governance mechanisms that participants were better able to designate areas for human use and negotiate contested topics in the public arena. In some cases, attachment provided common ground between managers and stakeholders. Many believed that the practical and personal experiences of agency employees could alleviate concerns about decisions being made in ignorance without considering diverse viewpoints. Several participants echoed these sentiments by referencing "street credit" and "trust capital" when asked how place meanings contributed to decision making. This point was illustrated well by "the boat ramp test": "If you're trying to talk to people about an issue. If the guys out at the boat ramp on Saturday morning don't understand it, you've got no chance." Accordingly, managers' personal connections to places, knowledge and experience with issues of interest, and ability to clearly communicate with lay audiences enhanced the decision-making process.

Discussion

Managers, as gatekeepers of the environment, are worthy of investigation to better understand the relationship between place meanings and environmental governance. Our data drawn from in-depth interviews with managers of federal and state agencies revealed an array of meanings that supported plurality in place research. We also observed how managers were guided by formal policy instruments (e.g., legislation, management plans) that relied relatively less on public input throughout decision making and informal policy instruments (e.g., partnerships, citizen groups) that were more akin to deliberative ideals in public participation (Jordan et al. 2005; Lemos and Agrawal 2006). This study extended past research that has investigated concepts of place among residents and visitors by shifting focus to managers responsible for representing the democratic will of the people and interpreting place meanings for the environments they govern (Hutson, Montgomery, and Caneday 2010). Our participants were aware of their own place meanings and addressed management concerns through the co-creation of knowledge built from interactions with their constituents and their professional training. We contend that place meanings interpreted by publics and managers likely interact and materialize throughout decision-making processes. The degree to which this blending occurs can support and/or impede public participation (Farnum, Hall, and Kruger 2005). In other words, managers' place meanings are relevant to decision making and should be considered alongside stakeholder viewpoints to reach negotiated policy ends (Flint 2013).

We drew on the idea of critical pluralism (Patterson and Williams 2005) to extend and refine previous place research, while maintaining sensitivity to the multiple paradigms that could inform the interpretation of our study findings. Specifically, five place-related themes were used as an organizational framework (Lyon 2014) to unveil the multifaceted connections formed between managers and places under their jurisdiction. First, *stewardship of the environment* indicated that participants' engagement with the environment and the iconic status of the GBR underpinned the reasons why places were valued and responsibility ascribed for managing biological resources. This finding aligns with past research that has suggested human–place bonding is supported by nature-based meanings (Davenport and Anderson 2005). Second, the *utilization and access to natural resources* theme suggested that participants derived meaning from multiple uses, which in turn contributed to identity (i.e., place meanings attributed to the self) (Blake 2002). In this sense, the tangible and economic benefits of places in the GBR satisfied the needs of study participants. Third, *individualized experience* was characterized by personal interactions with places, including knowledge acquisition, familiarity, and solitude (Wynveen and Kyle 2015). Fourth, *intergenerational connections* related to shared experiences in places that created meaning because of what managers taught and learned from interactions with other people (Hidalgo and Hernandez 2001; Kyle et al. 2004). Finally, *spirituality in place* grew from managers' appreciation of intangible values (Harmon 2004) and cultural connections between Traditional Owners and protected areas (Ramirez-Gomez et al. 2016).

Managers' place meanings were tied to an environmental governance regime that guided decisions and supported managers' roles as custodians of places. Specifically, formal and informal policy instruments were presented as complementary, flexible, and adaptable structures that guided decision making and recognized multiple interest groups that engaged with the GBR environment. Through the use of these tools, managers reserved

the right to address environmental interests using their scientific expertise, and provided space for public constituencies to express and debate their perspectives. We found that managers sought to balance their use of formal and informal instruments in an effort to encourage public acceptance of policy outcomes (Bebbington and Bury 2009). Informal policy instruments were particularly important aspects of governance that helped managers provide public benefits, fulfill their responsibilities as natural resource stewards, and facilitate involvement in decision-making.

Our participants used policy instruments to support decision making in different ways. Formal policy instruments were viewed as tools to maintain consistency in practices and ensure accountability. Decisions were also shaped by informal policy instruments that characterized the GBR model of management as a system of governance rather than government (Jordan et al. 2005). In structural terms, these bottom-up processes illustrated that participants negotiated with stakeholders to address place-based concerns (Berkes 2004). Engagement with informal policy instruments provided managers with insight on how to interpret formal instruments and increase the capacity of governing authorities (Jordan 2008). Managing these nodes of governance is inherently political because public deliberation tends to occur in response to issues of great importance involving equity and access to natural resources (Larson and Soto 2008). Therefore, an appropriate balance between consensus-based practices and trust in scientific expertise should be considered in future management scenarios.

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